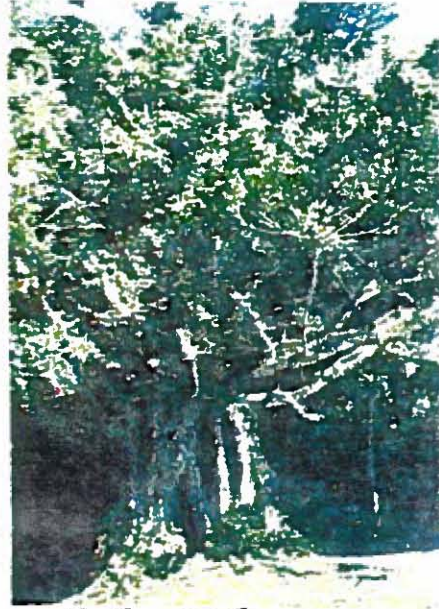
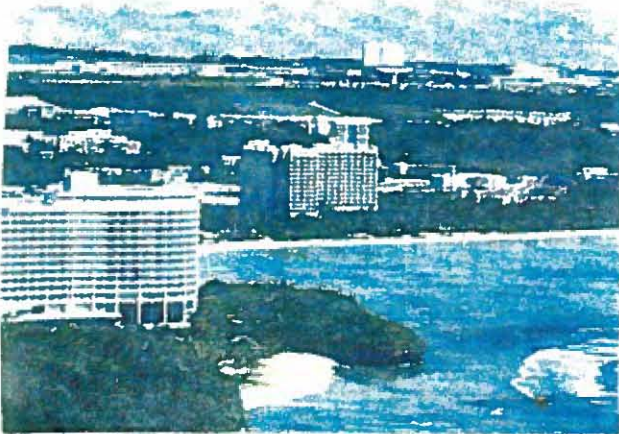


GUAM HEALTH PLANNING AND DEVELOPMENT AGENCY



Guam Health Plan 2001 and Beyond



JUNE 1996



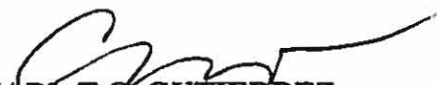
OFFICE OF THE GOVERNOR
TERRITORY OF GUAM



We are pleased to accept the Guam Health Plan as this Administration's general health policy for our Island. This plan is in conformity with our efforts to improve the health of our population by the year 2001.

It is very evident that an enormous amount of time and effort were put into the development of this document. The Lt. Governor and I also realize that there is still an enormous amount of work that lies ahead as we all work together towards implementation.

The Lieutenant Governor and I wish to convey to the Guam Health Coordinating Council and the Guam Health Planning and Development Agency staff and management our support for health planning so that we can improve the health care delivery system by the year 2001.


CARL T.C. GUTIERREZ
Governor of Guam


MADELEINE Z. BORDALLO
Lieutenant Governor

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Bureau of Planning

FOREWORD

To the People of Guam:

The Guam Health Coordinating Council is very pleased to present the **GUAM HEALTH PLAN: 2001 and Beyond** which was developed with the technical assistance of the staff and management of the Guam Health Planning and Development Agency and many task forces from the community. The plan provides directions for improvement of our community's health status and health care system. As it is an interim plan, it is not as complete as the final version will be. Up-to-date health status data and/or information will be obtained for the final version, which will be presented by the end of the calendar year 1996. The health plan is an excellent source of information and a very useful guide and tool for anyone concerned about the health status and health system of our island.

Sincerely,

GEORGE P. MACRIS, M.D.
Chairperson, GHCC

ULLA K. CRAIG, DrPH
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MESSAGE FROM MANAGEMENT

The Third Edition of the Guam Health Plan - 2001 and Beyond, is provided for your use through the extensive and diligent efforts of the Guam Health Planning and Development Agency (GHPDA), the Guam Health Coordinating Council (GHCC), the Governor's Task Forces relating to health and the health care infrastructure, and the Vision 2001 Task Force on Health Care. Additionally, the assertions and suggestions made by members of the Task Forces and the individuals in the public and private sectors give credence in the content, validity, priority, and needs established in the Plan. It would not have been possible for GHPDA to develop a plan without the help of the aforementioned group. Although developed by GHPDA and adopted by the GHCC, it would be inaccurate to state that the Guam Health Plan - 2001 and Beyond is in its final form.

The dynamics of health and health-related issues due to environmental, social, and technological changes requires continuous monitoring, evaluating, and coordinating. Data on mortality, as well as data on the incidence and prevalence of diseases on our island, are not bounded and may require closer scrutiny. Implementing this Plan must be consistent, due to austere financial measures, with current human and material resources. The shortage in manpower, funds, and infrastructure must not hinder the health community's path of providing for the needs of the people. Without sacrificing individual safety and well-being, initiative, motivation, and innovation measures should be sought and used to help our people receive the best quality care.

Therefore, the health status priorities in the Plan may be modified, through strategic intervention, to meet the resources of health entities in meeting the goals and objectives in the Plan. Additionally, the Guam Health Planning and Development Agency whenever necessary will be providing addendums to the Plan.

The Guam Health Planning and Development Agency, the Guam Health Coordinating Council, and the Governor's Task Forces on Health and Health Care encourage the use of this Plan. We also encourage further comments and recommendations beneficial to our people's health and the quality of care given and received by our people. It is our way of moving forward in helping the people of Guam.

Helen B. Ripple
HELEN B. RIPPLE
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Guam Health Plan

I. INTRODUCTION

Guam Health Plan

Third Edition

Guam Health Plan

I. Introduction

A. The Need For Health Planning

Guam's health care system has developed rapidly over the past decades from the initial U.S. Navy-administered hospital and public health programs to a sophisticated network of government and private providers delivering health care to the island residents. The growth of the health care delivery system has had beneficial influences on the health status of the island population. It has also altered disease patterns, moving away from the diseases caused by environmental conditions to those associated with more stressful living, faulty diets, excessive smoking and drinking, and lack of exercise.

The change in health status demands an evaluation and change in the availability of health resources and health services, as well as the use and the acceptance of the services by the island population. However, any proposed change must proceed in an efficient and effective manner through comprehensive health planning which provides policies, guidelines, goals, objectives, and setting priorities for improving the health status of the Territory. All these can be made possible in a plan document.

The Guam Health Plan, prepared by the Guam Health Planning and Development Agency (GHPDA) in association with the Guam Health Coordinating Council (GHCC) and the Governor's Task Forces on Health, provides the statement and framework for improving the health of Guamanians through a healthful environment and accessible quality health care at reasonable costs. The fundamental purpose of Guam's health system should be to provide a system that is worthy of respect and support of the community it serves.

B. Planning Under U.S. Public Law 93-641, Local Public Law 14-150, Public Law 16-120, and Public Law 20-200

Guam, like most states of the United States, has also undergone a tremendous change in health planning. The National Health Planning and Resources Development Act of 1974 (U.S. Public Law 93-641) was signed into law in January 1975. The Act provided federal guidelines and funding for the development and implementation of state level health planning entities to ensure that equal access to quality and affordable health care would be made available to the people. Furthermore, the Act funded the State Health Planning and Development Programs throughout the U.S. and the territories for 10 years. Section 1536 of the federal law prescribed the functions of the Agency as a State Health Planning and Development Agency. Each state and territory was mandated to produce a 5-year health plan and to update such plan in its third year.

Locally, Public Law 14-150 established the first Guam Health Planning and Development Agency in 1978 as an instrumentality under the Executive Branch. The local law mirrored the national law, accepting all its guidelines.

However, in the latter part of 1986, the United States Congress ceased funding for the state agencies and repealed the former provisions of the original act. The Guam Health Planning and Development Agency was disestablished on September 30, 1987 with most of the functions of the Agency transferred administratively to the Bureau of Planning. The only function not transferred was the Certificate-of-Need Program. The Certificate-of-Need Program could not be delegated to another entity due to the specific wording in the statute and would require an amendment to the statute.

In August 1990, the Agency was reestablished with the passage of Section 3, Guam Public Law 20-200. It became a "functional" office in August 1991 when the total work force authorized for the Agency was in place and the executive order was promulgated. The Governor appointed a 5-member Health Coordinating Council who were sworn into office October 1991. The Council was 11 members short as required by P. L. 14-150 and was static in their role and the planning process. It was not until Governor Guterrez's administration that a 16-member Council was selected and appointed assuming its role in the developing the Guam Health Plan. Additionally, under Executive Order 95-09, the Agency was given the responsibility to render all technical assistance and coordination of the Governor's Council on Physical Fitness and Sports' activities and responsibilities.

The Governor saw the importance of our citizens physical fitness and despite an abundance of physical fitness opportunities and activities on Guam, a significant percentage of Guam's population is not physically fit. Furthermore, there is a need for centralized planning and coordination of physical fitness opportunities and activities which will stimulate and encourage physical fitness in Guam's population. With tremendous responsibilities, the roles and functions of the Agency, the Guam Health Coordinating Council, and the Governor's Council on Physical Fitness and Sports must be delineated and integrated through the health planning and development processes.

1. Roles and Functions

The roles, functions, and responsibilities of the Agency as outlined in P. L. 14-150 and 16-120 along with the Governor's Vision 2001 Health Care were to:

a. Guam Health Planning and Development Agency:

- (1) Assume the lead role in monitoring the progress and achievement of the Governor's 2001 Health Goals as mandated by the Governor.
- (2) Coordinate, monitor, and evaluate plans and programs on health and health related issues and provide recommendations on health care policy issues and the health care delivery systems.
- (3) **Primary functions include:**
 - (a) **Data management** - The Agency's data management activities focus on the collection, compilation, and analysis of data pertaining to the population's health status, the health care delivery system, the utilization of the health care services, and the extent to which the availability and use of these services influence the health of the island population;
 - (b) **Plan development and implementation** - the primary objective of the plan development and implementation section is to promote the development of health services, manpower and facilities which will meet the identified needs of the island's population;
 - (c) **Public involvement and community education** - as directed by the Governor or the Council, the Agency will participate in a variety of health and civic organizations, legislative sessions, and will serve on several Government committees that address Guam's health status and health care system;

- (d) **Support to the Guam Health Coordinating Council** - the Agency will provide the necessary staff support to the Guam Health Coordinating Council.
- (e) **Support to the Governor's Council on Physical Fitness and Sports** - provide the necessary staff support to the Governor's Council on Physical Fitness and Sports.
- b. Guam Health Coordinating Council:**
 - (1) Review and approve the plans and programs of the Agency and for that purpose shall have the following duties:
 - (a) Advise the Governor on the appointment of the Director and the Deputy Director and their performance;
 - (b) Review the Agency's budget; and
 - (c) Review the Agency's annual work.
- c. Governor's Council on Physical Fitness and Sports.**

Executive Order 95-09 - Relative to establishing the Governor's Council on Physical Fitness and Sports - places the Governor's Council on Physical Fitness and Sports under the authority of the Agency and will render all technical assistance and coordination of the council's activities and responsibilities. It also outlines the composition of the council, term of appointment and meeting criteria and the major goals of the council. The major goals outlined in the Executive Order presented in Chapter IV of this Plan and in the Guam Physical Fitness and Wellness Plan.

C. Planning Process

Health planning is a process to describe "what is" (the status of the community's health and its health care resources) rather than "what ought to be," and to specify how to attain "what is desired." This activity is a process where the element of change is very important. The planning process is intended to propose positive change which is directed in the most effective and efficient manner.

An analytical approach is stressed at all stages of this plan's development. Additionally, the premise is followed that in the development of goals, the process begins with consideration of the needs of Guam's present and projected population, rather than the needs of the existing facilities and resources, based on current utilization patterns." Therefore, realistic projections of future demands for a variety of health care resources can only be developed by planning which is based on the needs of the population. Appropriate alternatives for improving the health status of the population can be determined by defining the health care needs of the population in relationship to the health care system's needs.

Health planning, as with any other planning process, is based upon information. The type of information in this process includes data on the health of the population that is being "planned for," and data on the health care services which are provided to that population.

1. Guam Health Plan - Planning Process.**a. Data Collection:**

In the planning process used for the development of this plan, the data used includes information on:

- (1) the geographical, historical, and cultural considerations of the island;
- (2) information on the characteristics of the population, including the number of people, their ages, sex, ethnicity, education, income, etc.;
- (3) information on the health status of the people, e.g., morbidity, mortality, etc.; and
- (4) information which describes the delivery of health care services to the people of Guam, e.g., facilities and their locations, public health services and programs and their locations, and population groups served.

b. Data Validity and Prioritization:

Once the information base is established, it is then analyzed for determination and prioritization of health problems or health concerns for the population and the health care delivery system. The characteristics used to identify health problems and health concerns are:

- (1) availability of the services to the population, or the capacity of the services to provide care to the population;
- (2) accessibility of the services for the population's use;
- (3) the cost of the services or the economic value of resources expended to provide the services;
- (4) the quality of the services or the maintenance of acceptable standards in health care delivery;
- (5) acceptability of services to the population; and
- (6) the continuity of the services or how well the services meet the needs of the population over time, including how well a service is coordinated with other related services.

c. Additional Factors for Analysis:

In further analysis of data on the population and its health care delivery systems, other factors are also taken into consideration. These other factors include:

- (1) Executive and Legislative priorities for health planning as required by P. L. 14-150, 16-120 and P.L. 20-200;

- (2) island-wide health problems and health concerns as prioritized by the Governor and the Guam Health Coordinating Council;
- (3) GHPDA's purpose, policies, and principles relating to health plan development; and
- (4) program planning or evaluation by other health and health-related entities on island.

2. Health Goals

a. Governor's Task Forces on Health and Health Care.

In 1987 and 1990, two Governor's Conference on Health were conducted by health professionals on Guam to establish health goals and objectives leading into the 21st Century. The First Governor's Conference on Health in 1987 resulted in the identification of 151 Health Objectives for 1990 and Beyond. The Second Governor's Conference reviewed the 151 health objectives and developed focused health goals and objectives for the Year 2000. Thus, 13 focus areas were developed which became the 13 Territorial Goals for the Year 2000.

The goal development process focused on 3 health categories--prevention, promotion, and protection. The conclusion was presented in a format comprised of the focus area, proposed goal statement, original goal statement, individual category frequency, and average frequency. The strategic planning included the establishment of the Governor's 13 Task Forces on Health for each of the 13 areas, the purpose of the Health Task Force, lead agencies for each Task Force, overall lead agency to monitor progress, and submission of annual reports to the Governor. The work of the 13 Task Forces on Health progressed until 1994 with the change of Administration.

In 1995, the new administration, under Governor Carl Guterrez, placed priorities on health and health related issues via the appointment and activation of two Task Forces on Health, the Governor's Health Care 2000 Task Force and the Governor's Vision 2001 Task Force on Health Care. The former was convened in February 1995 with the task of looking at ways and means to help the Guam Memorial Hospital obtain accreditation. The latter, appointed in July 1995, was tasked to focused efforts in the areas of availability, accessibility, manpower, and prevention of diseases.

The Governor's Health Care 2000 Task Force looked at contributing factors to the health care delivery system and health care policy issues. These factors were availability, accessibility, quality, acceptability, health care cost, and continuity. In the course of several months of meetings, several areas in our island's health care delivery systems were identified, observed, and evaluated especially on the contributing factors to the problems on the health care delivery system. The findings, conclusions, and recommendations by the Governor's Health Care 2000 Task Force were submitted in October 1995 to the Governor and have been incorporated into Chapter V of this Plan. Prior to the conclusion of the Governor's Health Care 2000 Task Force, the Vision 2001 Task Force on Health Care was assembled. The Governor gave his direction to the Task Force July 1995 with the commencement of strategic planning sessions in September 1995. As a result of the sessions, Governor's Vision 2001 Health Care goals and long term objectives were established and made public in November 1995. Strategic plans to

meet the Vision 2001 Health Care long term objectives are incorporated in Chapter III of this Plan.

b. Guam Health Plan and the Governor's Vision 2001 Health Care Goals and Objectives.

The priorities stated by the Governor and developed by the Vision 2001 Health Care Task Force along with the work of other health professionals in previous Task Forces on Health were used in the development of the Guam Health Plan.

3. Guam Health Plan-Review

Copies of the Guam Health Plan will be transmitted to the participants in the health planning efforts—including health providers, agencies delivering health care or health-related services, consumer groups, government agencies, and interested consumers from the community. These people, individually and collectively, will examine the Plan and will be encouraged to make comments and recommendations. Addendums, when necessary and approved by the GHCC, will be used in updating the Plan.

D. Purpose, Use, and Limitations.

The Guam Health Plan serves as a statement of the Government of Guam's policies and plans for improving the health status of the community. This document **assesses the population's health status based on available data or information**, identifies the desired health status of the island population, and prioritized the consumers' and providers' health concerns. Thus, it outlines the necessary actions to reduce the gap between the current and the desired level of health.

The Plan also assesses the current health system which includes programs and the health care care provided and provides guidance for the development of the island's health system. As such, the Plan identifies the desired changes to the health system required for the delivery of an effective and efficient array of health services that are responsive to the community's needs. Consumers, private as well as public health care providers, and public officials are encouraged to use this document as a reference when determining how best to allocate the community's health resources.

The assessment of the population's health status is dependent upon data or information published or written by other departments, agencies, and organizations in the Government of Guam and the private sector. Thus, the assumption is made that information from official documents, records, reports, and publications are concise and precise.

E. Plan Summary

This document, which is the third edition of the previous Guam Health Plan (1982 and 1985 Edition) prepared for the island, reflects an effort to consolidate and expand the health information base for policy-making and program planning on the island. It contains a wide range of information relevant to health care planning through the years to come. However, the Plan cannot address each individual component of the health care system. But, it does provide guidelines and a comprehensive framework for addressing those problem areas and priority issues that are currently addressed in the Plan, as well as for future

consideration of additional health services components.

The Plan is organized into seven sections. The first three sections - Introduction, Island Profile, and Health Status - present the primary information base from which all remaining sections are expanded. These preliminary sections describe the Territory's approach to health planning, the nature of the Territory's population, and the health status of its residents.

Section IV of the Plan, Vision 2001 Health Care expands on the 4 focus areas deemed important by health professionals. Furthermore, this section provides information about the health care issues deemed to be of utmost concern to the public (consumers and providers). Goals and objectives to meet these concerns are listed.

The remaining sections of the Plan, Health Care Delivery System, Health Care Policy Issues, and Planning for the Future, present information on the current availability of facilities and services within the health care system; identify issues and trends relevant to these areas and their impact on the health status of Guam residents; and present goals and objectives for future change in the system. In total, this Plan serves as a comprehensive planning reference for the health care system of the island of Guam.

Guam Health Plan

II. ISLAND PROFILE

Guam Health Plan

II. Island Profile

A. Geography and Climate

Guam, situated in the Western Pacific, is the United States' western-most territory. Guam is the largest and southernmost of the Mariana Islands and lines up along the 145th meridian, east of Greenwich at 13 degrees north latitude. The island was formed by volcanic action, coral growth and uplift of submarine mountain ranges. It is 32 miles long, 4 to 12 miles wide, and encompasses 212 square miles. The island lies 5,800 miles (12 hours flight time) from the U.S. neighbor, Hawaii. Guam, while being remote from the United States, is much closer to the Asian rimlands. Tokyo, Taipei, Manila, and Hong Kong are all within 2-3 hours flight time.

The northern third of Guam is a broad limestone plateau with steep coastal cliffs and no surface rivers. Most of this area is occupied by military installations. The central part of the island lies northeast of a fault line that crosses the middle of the island from the villages of Agana to Yona. Central Guam consists of coastal low lands and high limestone terraces and it is the most urbanized and heavily populated, especially in the Agana and Tamuning areas. The southern area of Guam is distinguished by a line of volcanic peaks. A mixed terrain slopes eastward from the peaks, with several rivers flowing through eroded valleys to the coast. The villages of Umatac, Merizo, Talafofo and Inarajan, dot the southern coast line, and represent the most rural part of Guam's population.

The climate is tropical, with high humidity and an average annual temperature of 82 degrees Fahrenheit (daily range, 74-96 degrees). The early months of the year, the "dry" season, are marked by cool prevailing tradewinds from the east and northeast. The later months are dominated by monsoon winds from the south and southwest, bringing the humid and wetter "rainy" season. Guam receives 90 inches of rainfall annually, 75 percent of which occurs in the wet season. Typhoons are a recurrent feature each year. The super-typhoons, Karen in 1962, Pamela in 1976, Russ in 1990, Yuri in 1991, and Omar in 1992 destroyed millions of dollars worth of property. Early warning systems of both the military and local government have prevented loss of lives or serious personal injuries. The major earthquake in August 1993, which registered 8.2 on the Richter scale caused severe damage to some large buildings such as hotels but also did not result in loss of lives or serious personal injuries.

B. Historical Background of the Territory

The first settlers in the Marianas were the Chamorros, related by linguistic and archaeological evidence to people in the Philippines, Malaysia, and Indonesia. Their arrival has been tentatively dated at 1500 to 2000 B.C. It was achieved in outrigger sailing canoes and marked by the importation of a neolithic technology and food plants such as taro, coconut, yam and breadfruit. When first seen by the sea-faring Europeans, the Chamorros were living in villages along the coast, dependent upon fishing and farming.

With the landing of Magellan in 1521 in the southern village of Umatac, the Spanish period began. However, it was not until 1565 that Guam was declared officially declared as a Spanish possession and serious attempts at colonization were made in 1668 which led to open warfare between the native Chamorros and the Spaniards. Guam had become a supply station of water and fresh foods for Spanish galleons sailing each year from Mexico to the Philippines. By the end of the 17th Century, the Chamorro

population had been reduced by war, disease and famine to some 3,000 survivors, one-tenth their number before European contact. Over the next two centuries there was a progressive assimilation of the Chamorro race and culture, as Spanish, Mexican, and Filipino forces acted on the Chamorros' native habitat.

After the Spanish-American War in 1898, the U.S. occupied Guam and retained it when the Spanish sued for peace, thus initiating the American pre-war period. The U.S. Navy was given responsibility for maintaining Guam as a naval station, a fueling stop for warships traveling between Hawaii and the Philippines. During the American pre-war period (1898-1941) nearly 10,000 Chamorros lived on Guam; about half residing in Agana with the rest in 14 villages throughout the island.

On December 8, 1941, Japanese aircraft bombed and strafed Guam as a prelude to the Japanese Occupation (1941-1944). The Chamorro way of life was severely curtailed and many Chamorros were killed during these years of hardship under Japanese rule.

On July 1944, U.S. Forces reoccupied the island in a battle that ended with the additional loss of Guamanian lives. A Naval Government was reestablished in 1946 and functioned much as it had before the war. The island was rebuilt, and the economy expanded with high demand for goods and services by both civilian and military population.

On August 1950, the U.S. Congress passed the Organic Act of Guam which established Guam as an unincorporated Territory and changed the status of Guamanians from nationals to citizens of the U.S. Responsibility for the island's administration was shifted from the U.S. Navy to the Department of the Interior. Congress authorized Guamanians to elect their own Governor in 1970 and a non-voting delegate to Congress in 1972. Negotiations for a new political status with the U.S. are underway to replace the Organic Act and to put Guam on a new footing. The chosen political status of Commonwealth is expected to be more satisfactory than the present territorial status Guamanians now hold.

C. Unique Characteristics of Guam

The planning for, and provision of, health care services on Guam is affected by several factors not commonly found in communities of comparable size in the U.S. mainland. Some of these factors are unique characteristics of the territory and are presented to provide a better understanding of the island's health care delivery system.

1. Isolation

While Guam has established frequent and reliable communication and transportation links, the island is relatively isolated from the United States because of the high cost involved in overcoming distance. Isolation from its main source of supplies poses numerous procurement problems for medical supplies and equipment (e.g. shipping delays, high transportation costs, large fluctuations in inventory levels, etc.). Isolation causes problems for the medical profession by limiting the availability of on-island continuing education programs necessary to keep them abreast of the latest developments in medicine and medical technology. Given the island's small population base and its financial inability to support highly specialized health care services, isolation also limits the population's access to these services which are available in distant major population centers. Figures 1, 2, and 3 shows a Map of Guam in the Western Pacific, a Map

of Guam in the Mariana Island, and a Map of the Island of Guam.

2. Political Status

The island's status as an unincorporated territory of the United States can be described as politically ambiguous at best. Although vested with U.S. citizenship, the island residents do not enjoy all the rights of citizenship granted to citizens in the fifty (50) states. However, this does not preclude the island from participating in the material benefits made possible through the federal government.

In the health field, Guam has been the recipient of various federal grants, i.e., health facility, sewer construction grants, nutrition, communicable disease control, maternal and child health, and other service delivery grants, as well as the Medicare/Medicaid programs.

However, Guam's political status does prevent the island from participating fully in some federally funded health-related programs. Two examples of restrictions are the unwillingness of the U.S. Congress to extend the Supplemental Security Income (SSI) program to Guam's citizens and the unique fixed ceiling on the federal share of Medicaid. Medicaid and SSI are the principal sources of financing long-term institutional care for the aged and group homes for the mentally retarded. In the absence of such funds, our people with such disabilities are placed inappropriately and at risk in the community.

The fixed ceiling on the federal share of the Medicaid program forces the Government of Guam to provide more than fifty percent (50%) of the program's funding needs. This differs from the practice in the mainland where Medicaid funding is provided on no less than a 50:50 matching ratio by the state and federal governments. Additionally and more importantly, the limit on federal funding curtails the medical services provided to Guam's Medicaid clients.

3. Health Care Delivery System

Organized health services used to be provided free-of-charge to the people of Guam by the U.S. Navy, who built and staffed the first hospital in Agaña as well as dispensaries in various villages. Diverse public health services and programs were introduced to the island and physicians opted to independently practice medicine on Guam. At present, a sophisticated network of private and governmental providers delivers health care to the island residents in a variety of ways. Licensed private physicians have increased from 22 in 1971 to 90 in 1985 to 153 in 1994. The government salaried physicians have increased from 16 in 1981 to 32 in 1994. However, plans are currently underway by the Guam Memorial Hospital to contract physicians from the private sector. Currently, 83 percent of Guam's health care is provided by private providers. This is largely due to the establishment of such third-party payment mechanisms as Medicaid, Medicare, and the various health insurance plans which encourage and enable individuals to seek treatment from private health care providers.

The government still dominates the island's health system through its control of Guam's only civilian hospital; its operation of district public health centers; its participation in the federal Medicaid and Medicare programs; and its status as the island's largest employer providing health benefits to over ten thousand employees, retirees and survivors.

Figure 1 Map Guam in the Western Pacific

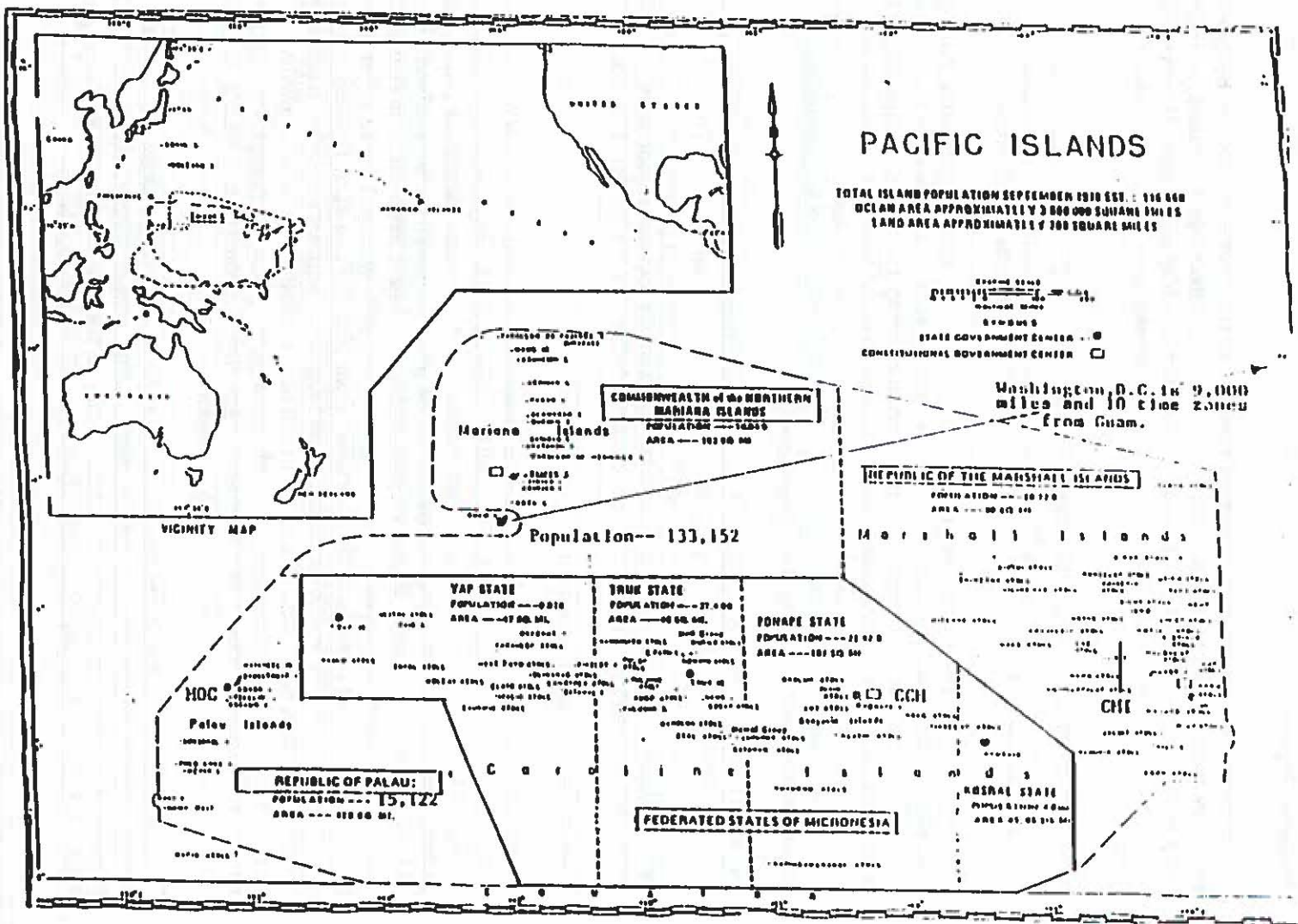
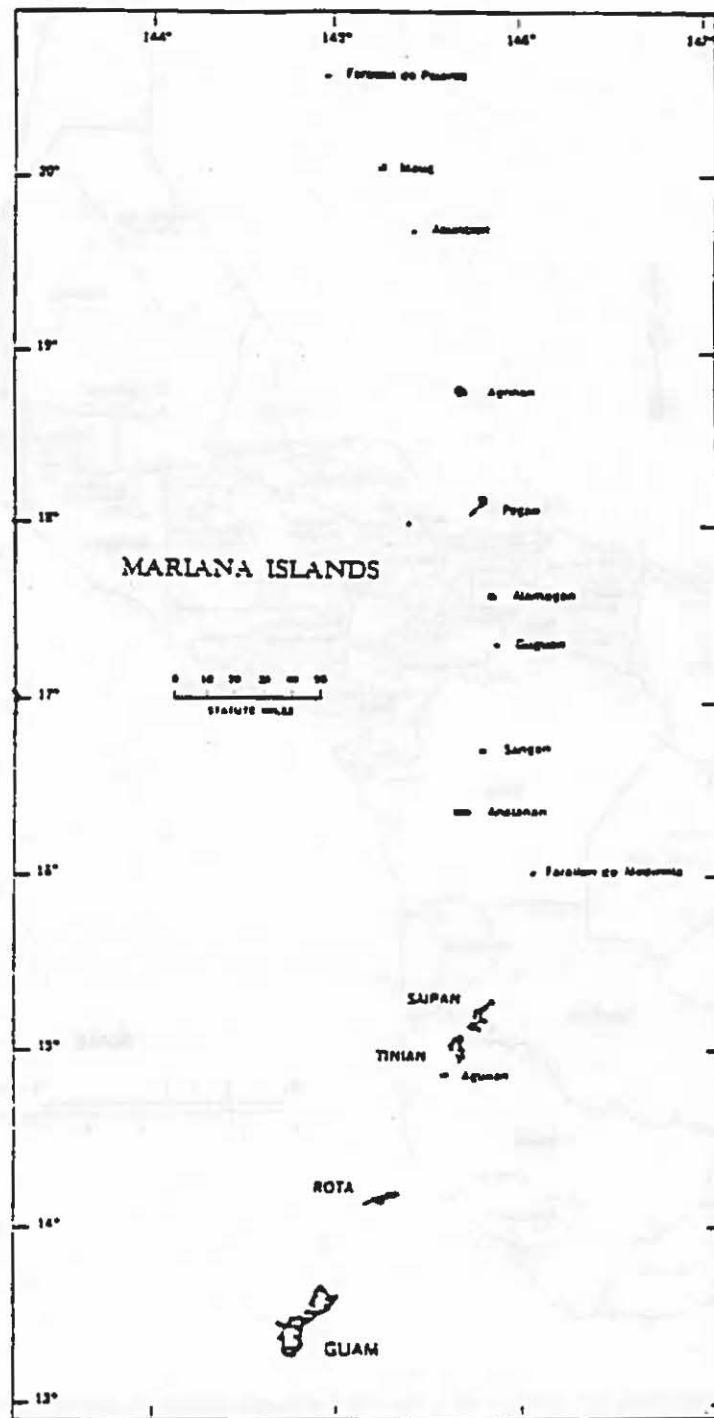


Figure 2 Map Guam in the Mariana Islands

GUAM IN THE MARIANA ISLANDS



4. Changing Disease Patterns

Negative behavioral factors (i.e., smoking, excessive alcohol consumption, poor dietary habits, and the lack of physical activity) increase a person's chances for incurring hypertension, heart disease, stroke, cancer, and a host of other chronic diseases for which medical science has no ready cure. Better health is often equated with advanced medical treatment. This thinking may have stemmed from earlier days when communicable diseases (over which the individual had little or no control) were the leading causes of morbidity and mortality on Guam. However, preventive medicine is the most logical, cost effective approach. Health planning must now emphasize prevention and quality lifestyle education programs for a healthier island population.

5. Vulnerability to Communicable Diseases

Guam has become a center for commerce, education and tourism in the Pacific. A substantial number of tourists, visitors, alien laborers, and temporary residents arrive daily on Guam from the neighboring Pacific Islands, Japan, the Philippines, the Federated States of Micronesia, and other Asian countries. All of these persons are possible users of the health care system; therefore, the system must be large enough to accommodate not only the island residents but also the visitors (potential patients). Of greater importance, however, is the fact that this large influx of transitory people makes our island vulnerable to imported communicable diseases, such as tuberculosis, sexually transmitted diseases, including HIV and AIDS, cholera, leprosy, measles, etc., which puts an additional strain on Guam's Communicable Disease Control and health service resources.

D. Demographic Information

Sound health system planning must be based not only on a careful analysis of local health status, services, and resources, but also on a thorough understanding of the population. In fact, meaningful health planning is population based, integrating the demographic characteristics of a community into the planning process.

Demography is the study of human population, the factors which affect change, and the results of these changes. It focuses primarily on three variables --fertility, mortality, and migration. The additional characteristics of residency status, age and sex, marital status, ethnicity, and socio-economic status define the population more accurately. Fertility and mortality rates, along with overall migration rates, serve as predictors of future population growth. Characteristics such as age and sex are indicators of the specific health needs of the community. The latest available statistics for these variables and characteristics are used in the Health Plan.

When discussing Guam's residents, a distinction between total and civilian populations must be made. The total population includes a contingent of approximately 20,000 military personnel (active Navy, Air Force and Marine servicemen, dependents, and support personnel). This military population fluctuates with the homeporting and deployment of large Navy carriers, and specific military activities. Local residents, stateside-hired persons, habitual residents, and temporary aliens comprise the civilian population. Guam's health planning efforts are primarily concentrated on the civilian population.

1. Total Population of Guam

Over the last 90 years, Guam's population has experienced rapid growth and a considerable shift in ethnic composition. The greatest changes occurred right after World War II, when the population more than doubled with a large influx of Caucasian military personnel and Filipino contract workers.

a. Ethnic Distribution

At the turn of the century, Guam's indigenous population, the Chamorros, was estimated to be approximately 10,000. In 1920, 12,216 Chamorros represented 92 percent of the total population, the remaining 8 percent were Filipinos, Caucasians, Asians, and others. When the 1980 census was taken, Chamorros numbered 48,675 which represented 45.9% of the total population. During the same time, Chamorros shared their island with 22,447 (21.2%) Filipinos, 19,751 (18.6%) Caucasians, and 15,106 (14.3%) persons of various other races, mostly of Asian and of Pacific Island ethnicity.

The 1990 census showed a remarkable population increase from 105,979 in 1980 to 133,152 in 1990. It depicted the Chamorros at 57,648 (43.3%), Filipinos 30,043 (22.6%), Caucasians 19,160 (14.4%), and others 26,301 (19.8%). See Tables 1 and 2, and Figure 4.

b. Population Distribution

Besides the shift in ethnic composition, Guam has also experienced a major change in population distribution. The choice of residency of the original inhabitants of Guam was dictated by the topography of the island. Since they subsisted on farming and fishing, they had to reside close to the arable land and the fresh water sources in the central and southern regions as well as in the coastal lowlands and accessible shoreline areas. After the war and due to the expansion of Guam's commercial economy, people tended to gravitate towards the north and central areas of the island to be close to the places of employment and the amenities of urbanization. This trend has continued. In 1990, 77.8 percent of the total population (103,579 people) resided in the central and northern regions of the island.

Tables 3 and 4 show in greater detail the changes in population distribution by village and region from 1960 through 1990. To arrive at the estimated Year 2000 population, the growth rates between the 1980 and 1990 censuses were used.

c. Guam's Transient Population

The nature of Guam's population composition makes it necessary to consider the transient population, since a growing tourism industry, a fluctuating temporary alien work force, and a large military presence impact to various degrees on the local health care system.

The number of visitors to Guam has increased rapidly due to the efforts to make the island a major tourist destination, particularly for the people from Japan, the Asian rim-countries, the United States mainland, and Australia. Visitors have increased 187 percent from 378,146 in 1985 to 1,086,720 in 1994 with 72 percent (773,349) coming from Japan. The average daily visitor census was approximately 2,977 in 1994, and visitors generally stayed 4 days. Health

4. Changing Disease Patterns

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Table 1
Ethnic Composition of Total Population, Guam: 1920 to 1990

Year	Total Population	Chamorro ¹	%	Filipino	%	Caucasian	%	Other	%
1920	13,275	12,216	92.0	398	3.0	280	2.1	383	2.9
1930	18,509	16,402	88.6	365	2.0	1,205	6.5	537	2.9
1940	22,290	20,177	90.5	569	2.6	785	3.5	759	3.4
1950	59,498	27,124	45.6	7,258	12.2	22,920	38.5	2,196	3.7
1960	67,044	34,762	51.8	8,580	12.8	20,724	30.9	2,979	4.4
1970 ²	84,996	47,472	55.9	10,172	12.0	23,934	28.2	3,418	4.0
1980	105,979	47,845	45.1	22,447	21.2	19,751	18.6	15,936	15.0
1990	133,152	57,648	43.3	30,043	22.6	19,160	14.4	26,301	19.8

Source: U.S. Bureau of Census 1990; Interagency Committee on Population, 1988; Tung, Guam Health Plan 1985-1990 (1985); GHPDA.

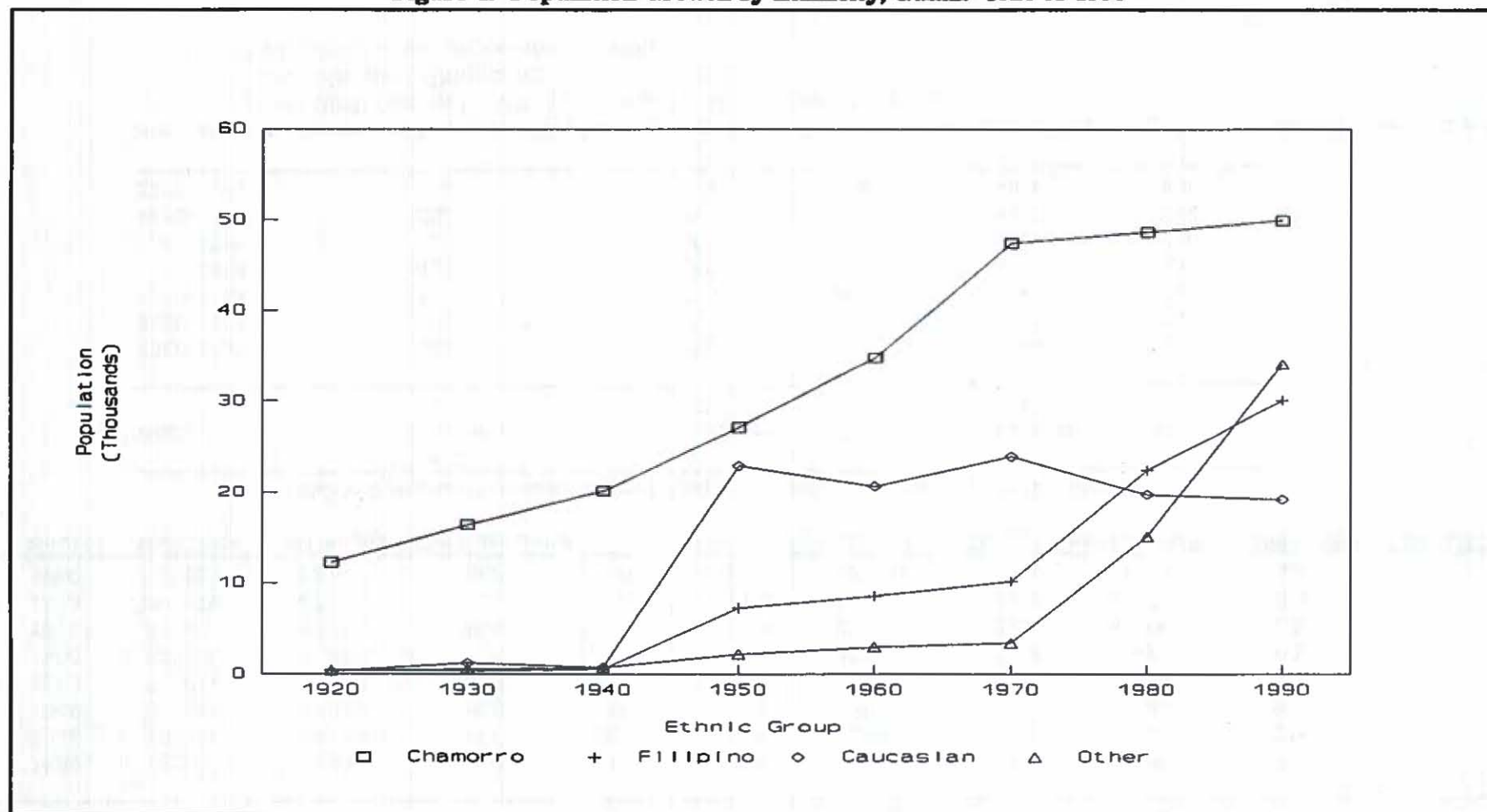
Table 2 Annual Growth Rate of Total Population, Guam: 1920 to 1990

Period	Total Population %	Chamorro %	Filipino %	Caucasian %	Other %
1920-1930	3.3	2.9	-0.8	14.6	3.4
1930-1940	1.9	2.1	4.4	-4.3	3.5
1940-1950	9.8	3.0	25.5	33.7	10.6
1950-1960	1.2	2.5	1.7	-1.0	3.0
1960-1970	2.4	3.1	1.7	1.4	1.4
1970-1980	2.2	0.1	7.9	-1.9	15.4
1980-1990	2.3	1.9	2.9	-0.3	5.0

Source: U.S. Bureau of Census, 1990; Interagency Committee on Population, 1988; Tung, 1981 in Guam Health Plan 1985-1990 (1985); Guam Health Planning and Development Agency.

¹ Includes part Chamorro, 1980 and 1990.

² Ethnicity based on country of origin.

Figure 4: Population Growth by Ethnicity, Guam: 1920 to 1990

Source: U.S. Bureau of the Census; Guam Health Planning and Development Agency.

Table 3
Growth Rate by Village and Total Population, Guam: 1960 to 2000

Village	1960	1970	1980	1990	Total Estimated Year 2000 Population	Growth 1960-2000 %	Average Annual Growth %
Agana	1,642	2,119	896	1,139	1,008	-39	-1.2
Agana Heights	3,210	3,156	3,284	3,646	3,804	19	0.4
Agat	3,107	4,308	3,999	4,960	5,797	87	1.6
Asan	3,053	2,629	2,034	2,070	1,819	-40	-1.3
Barrigada	5,430	6,356	7,756	8,846	10,409	92	1.6
Chalan Pago/Ordot	1,835	2,931	3,120	4,451	5,980	226	3.0
Dededo	5,126	10,780	23,644	31,728	58,255	1,036	6.1
Inarajan	1,730	1,897	2,059	2,469	2,780	61	1.2
Mangilao	1,965	3,228	6,840	10,483	18,317	832	5.6
Merizo	1,398	1,529	1,663	1,742	1,875	34	0.7
Mongmong-Toto Maite	3,015	6,057	5,245	5,845	7,288	142	2.2
Piti	1,467	1,284	2,866	1,827	1,966	34	0.7
Santa Rita	12,126	8,109	9,183	11,857	11,769	-3	-0.1
Sinajana	3,862	3,506	2,485	2,658	2,347	-39	-1.2
Talafofo	1,352	1,935	2,006	2,310	2,762	104	1.8
Tamuning	5,944	10,218	13,580	16,673	23,514	296	3.4
Umatac	744	813	732	897	955	28	0.6
Yigo	7,682	11,542	10,359	14,213	17,448	127	2.1
Yona	2,356	2,599	4,228	5,338	7,011	198	2.7
Total	67,044	84,996	105,979	133,152	162,889	143%	2.2%

Sources: U.S. Bureau of the Census, 1990; Interagency Committee on Population, 1988; GHP&DA.

Table 4
Total Population by Region
Guam: 1960 to 1990

Region	1960	%	1970	%	1980	%	1990	%
North	18,752	28.0	32,540	38.3	47,583	44.9	62,614	47.0
Central	25,479	38.0	31,266	36.8	34,526	32.6	40,965	30.8
South	22,813	34.0	21,190	24.9	23,870	22.5	29,573	22.2
TOTAL	67,044	100.0	84,996	100.0	105,979	100.0	133,152	100.0

Regional Definitions (By Village):

North: Dededo, Tamuning, Yigo

Central: Agana, Agana Heights, Asan, Barrigada, Chalan
 Pago/Ordot, Mangilao, Mongmong-Toto-Maite, Piti, Sinajana

South: Agat, Inarajan, Merizo, Santa Rita, Talafofo, Umatac, Yona

Source: U.S Bureau of Census, 1990; Interagency Committee on Population, 1988; Guam Health Plan 1985-1990.

hazards, such as coral punctures, abrasions and fractures due to accidents, sunburn, sunstroke, and occasional drowning are associated with tropical island tourism and expected to occur with regular frequency.

Guam has a fluctuating number of temporary alien workers depending on the island's construction activities. In December 1991 there were 10,316 foreign laborers on Guam under the H-2 special work program. Health concerns of the particular population include the importation of undiagnosed communicable diseases and work injuries.

The military population ranged from 20,266 in 1980 to 7,884 in 1994 a decrease of 38.9 percent below 1980. The health implications of the military contingent, 5.4 percent of the total population, are increased by the fact that the military down-sizing may include the once developed health care system that provides most of the necessary medical services to all active and retired military personnel and their dependents. Additionally, as the military population interacts with the civilian population, there exists a continuing risk of spreading communicable disease in the community.

d. Vital Events

Vital events provide a fairly accurate means for establishing and estimating future population changes. To calculate such change, we look at the population at the end of a period, at the beginning of a period, at the births and deaths recorded during the period, and at in-migration and out-migration to arrive at a true figure for that period.

A review of Guam's vital events from 1982 to 1992 (Table 5), indicates a slight fluctuation in birth and death rates. However, overall population growth is expected to continue unless out-migration highly exceeds in-migration.

Table 5
Vital Indicators and Rates
Guam: 1982 - 1992

Year	Total Population	Live Births	Crude Birth Rate*	Total Deaths	Crude Death Rate*
1982	110,929	2,992	27.0	443	4.0
1983	113,490	3,184	28.1	462	4.1
1984	116,110	3,067	26.4	450	3.9
1985	118,791	3,197	26.9	441	3.7
1986	121,534	3,309	27.2	451	3.7
1987	124,340	3,355	27.0	486	3.9
1988	127,210	3,548	27.9	492	3.9
1989	130,147	3,565	27.4	544	4.2
1990	133,152	3,850	28.9	557	4.2
1991	136,226	3,921	28.8	607	4.5
1992	139,371	4,214	30.1	585	4.2

*Per 1,000 total population.

Source: DPH&SS, Guam; GHP&DA.

e. Projection of Population: 1990-2000

In the mid - 1980's various planners and demographers had originally foreseen a continuous acceleration of population growth for the rest of the decade to 1990. After the final 1990 census figures were established, earlier predictions of growth were significantly within the actual annual growth rate of 2.3 percent (total population from 105,979 in 1980 to 133,152 in 1990). The average annual growth rate of the civilian population for the same period of time was 2.2 percent.

Table 6 shows the actual total, civilian, and military populations for 1980 and 1990. The projection for the civilian population for the year 2000 is based on the 2.2 percent growth. However, the total military population is based on military growth between 1990 through 1993 due the downsizing of military personnel on the island. It is difficult to project the military population due to the current controversy of the Base Realignment and Closure Committee's recommendation to close the Naval Air Station and to relocate the Ship Repair Facility to ports in the mainland.

Table 6
Projection for Total Civilian and Military Populations
Guam: 1990 - 2000

Year	Total Population	Civilian Population		Military Population	
		#	%	#	%
1980	105,979	87,421	82.5	18,558	17.5
1990	133,152	109,051	81.9	24,101	18.1
2000	162,889	142,889	87.7	20,000	12.3

*Year 2000 total, civilian, and military population estimated.

Source: U.S. Bureau of the Census 1990; GHP&DA.

2. Guam's Civilian Population

When looking at the island's health care needs and required services, the civilian population is the determining factor for planning. The following is a discussion of the population characteristics essential to the planning process.

a. Civilian Population Growth

Between the years 1980-1990, Guam's civilian population increased from 87,421 to 109,051 at an annual rate of 2.21 percent. This significant growth is attributed to natural increase and immigration. Net natural increase refers to the number of people added to the population given the number of births less the number of deaths in any particular time interval. Net immigration is the number of people coming to the island in excess of the number of people leaving the island.

As shown in Table 7, there was a decline in the civilian annual growth rate for the years 1980-1990, down .80 percentage points from the 3.01 percent annual rate of increase between 1970 and 1980. An annual growth rate of 2.21 percent is projected for the years 1990-2000.

b. Age Distribution

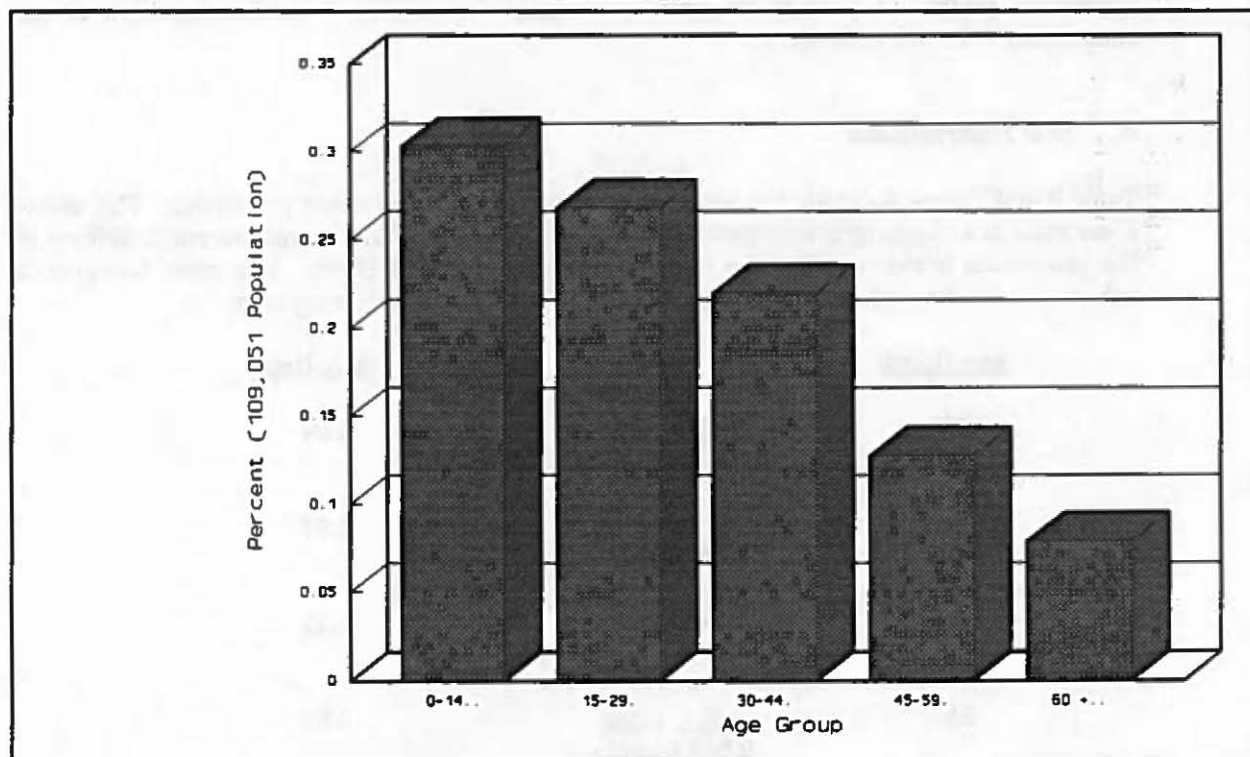
Figure 5 shows that Guam has a very young population; the median age calculated from the 1990 census for the total population was 25.0 years. In 1990, 53,077 or, 48.7 percent of the civilian population, were under the age of 25 and 33,122 or 30.4 percent were children below 15. Birth rates have only slightly increased over the last decade (from 28.31/1,000 in 1980 to 28.91/1,000 in 1990) and the proportion of the population aged 20 and below is not likely to increase much of it all in the future. However, over the next decades there will be a large demand for medical services as well as prevention and protection programs pertaining to maternal and child health.

Table 7
Civilian Population Growth, Guam: 1970 - 2000

Year	Civilian Population	Annual Growth Rate Percent
1970	64,680	
1980	87,421	3.01
1990	109,051	2.21
2000 (Projected)	136,033	2.21
Overall Percent Change:	1970-1980: 35.16	1970-2000 = 110.32
	1980-1990: 24.74	
	1990-2000: 24.74	
Annual Growth (Percent):	1970-1980: 3.01	1970-2000 = 2.48
	1980-1990: 2.21	
	1990-2000: 2.21	

Source: Office of Vital Statistics, DPH&SS; GHP&DA.

Figure 5
Civilian Population by Age
Guam: 1990



Source: U.S. Bureau of the Census, 1990; Guam Health Planning & Development Agency.

The demand for senior care services is likely to increase in the near future. Whereas 2,938 or 3.4 percent of Guam's civilian population was age 65 or older in 1980, the proportion of the elderly has increased to 4.7 percent (or 5,162) in 1990. These figures are expected to rise further to 9,070 or 6.7 percent of the civilian population in 2000. The sharp increase in the senior population makes it necessary to investigate the available health and support services for seniors, since an older population consists of heavy users of the health system. Besides the physical and mental infirmities expected with old age, Guam's inhabitants have a high incidence and prevalence of diabetes, hypertension, and neurological diseases with all the attending complications of these diseases. There is an urgent need for the planning of community and institutional long-term care services.

c. Dependency Ratio

In a population with an unusually large number of children or elderly, calculating a dependency ratio becomes important. The dependency ratio is defined as the ratio of children aged 0-14 and persons 65 years or older to the persons between the ages of 15 and 64. The Guam dependency ratio in 1980 was 65.7, for the civilian population and dropped to 54.1 in 1990 which compares well with the U.S. The composition of these dependents is expected to change by 2000. Data shows that there will be a reduction in the 0-14 age groups and an increase in those over 65.

The implications of a dependency ratio are primarily economic, since the proportion of the population unable to provide for their need must be sustained by the members of the community's formal work force.

d. Sex Distribution

Table 8 and Figure 6 details the sex distribution of the Guam civilian population. The use of a sex ratio is a meaningful interpretation of this distribution. The overall sex ratio, defined as the proportion of males to females in a population, was 1.07 in Guam. This ratio, however, is not consistent through all ages groups, as can be seen in the following page.

<u>Age Group</u>			<u>Sex Ratio</u>
0-19	<u>22,241 males</u> 21,437 females	=	1.04
20-34	<u>14,174 males</u> 13,233 females	=	1.07
35-64	<u>17,517 males</u> 15,287 females	=	1.15
65 +	<u>2,514 males</u> 2,648 females	=	0.95

Guam's consistently male-dominated sex ratio is unusual when compared to the U.S. mainland

where, after the age of 45, females usually outnumber males by a large margin (Table 8 and Figure 6 on the following page).

Table 8
Civilian Population by Age and Sex, Guam 1990

Age	Males		Females	
	#	%	#	%
0-4	6,041	5.54	5,828	5.34
5-9	5,498	5.04	5,324	4.88
10-14	5,346	4.90	5,085	4.66
15-19	5,356	4.91	5,200	4.77
20-24	4,814	4.41	4,585	4.20
25-29	4,846	4.44	4,485	4.11
30-34	4,514	4.14	4,163	3.82
35-44	8,158	7.48	7,205	6.61
45-54	5,354	4.91	4,594	4.21
55-59	2,092	1.92	1,905	1.75
60-64	1,913	1.75	1,583	1.45
65+	2,514	2.31	2,648	2.43
Total	56,446	42.4%	52,605	39.5%

Source: GHP&DA.

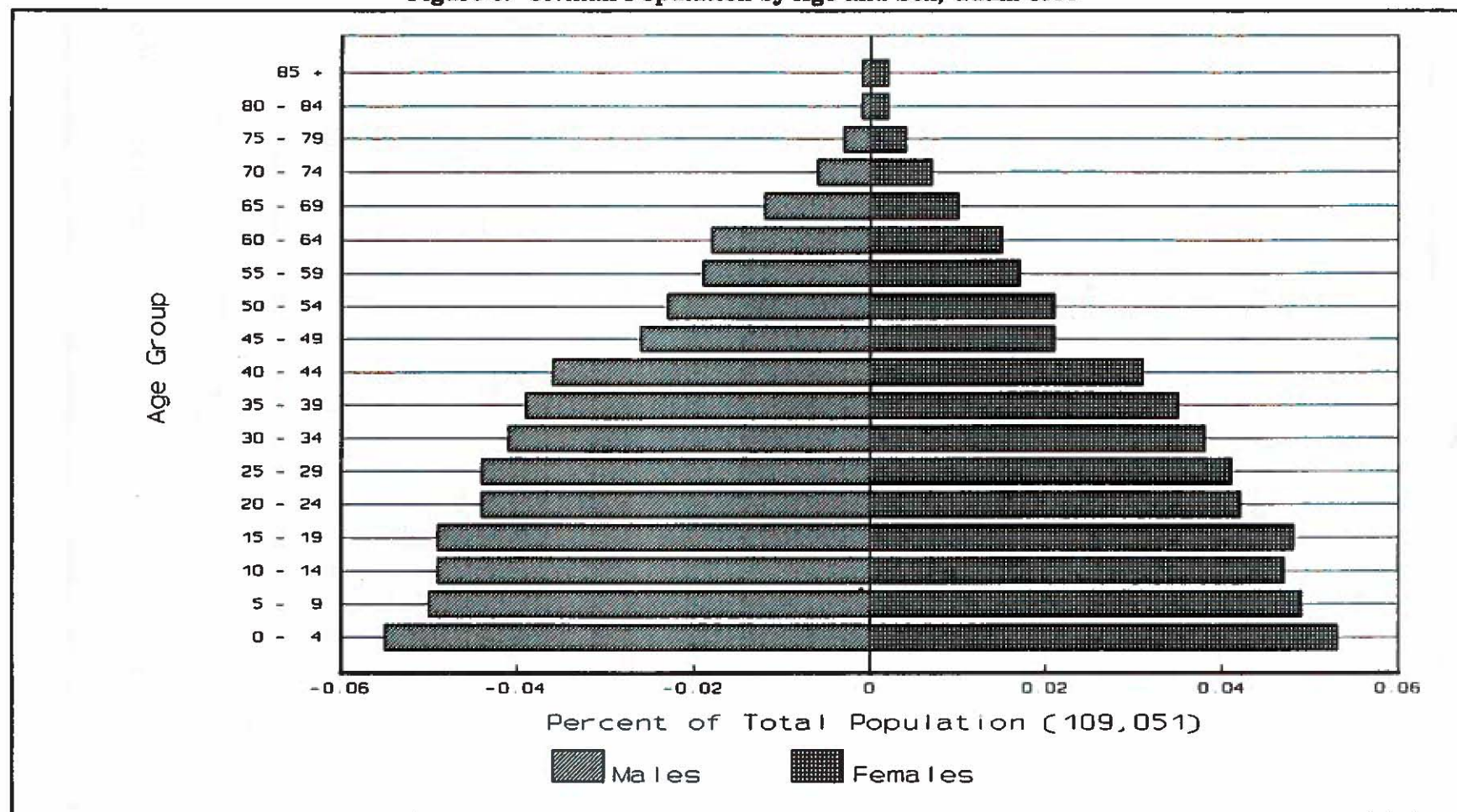
e. Ethnic Composition of the Civilian Population

Guam is a truly multi-cultural island with the major ethnic groups of Chamorros (indigenous inhabitants), Filipinos, and Caucasians sharing the island with people from the various Asian countries, and elsewhere (Figure 7). According to the official census figures of 1990, those persons reporting themselves to be of Chamorro or part-Chamorro heritage comprised 51 percent (55,629) of the civilian population. Filipinos made up 25 percent of the population (27,368). The next largest ethnic group was Asians with 8 percent of the civilian population (8,704). Whites were 6,687 in number (6%). Ethnicities originating from islands within the Freely Associated States (FAS)--the Federated States of Micronesians (FSM) and the Republic of the Marshall Islands (RMI) accounted for 3 percent of the civilian population (2,989). All "others" (Pacific Islanders, Blacks, etc.) constituted 7 percent of all civilians (7,674).

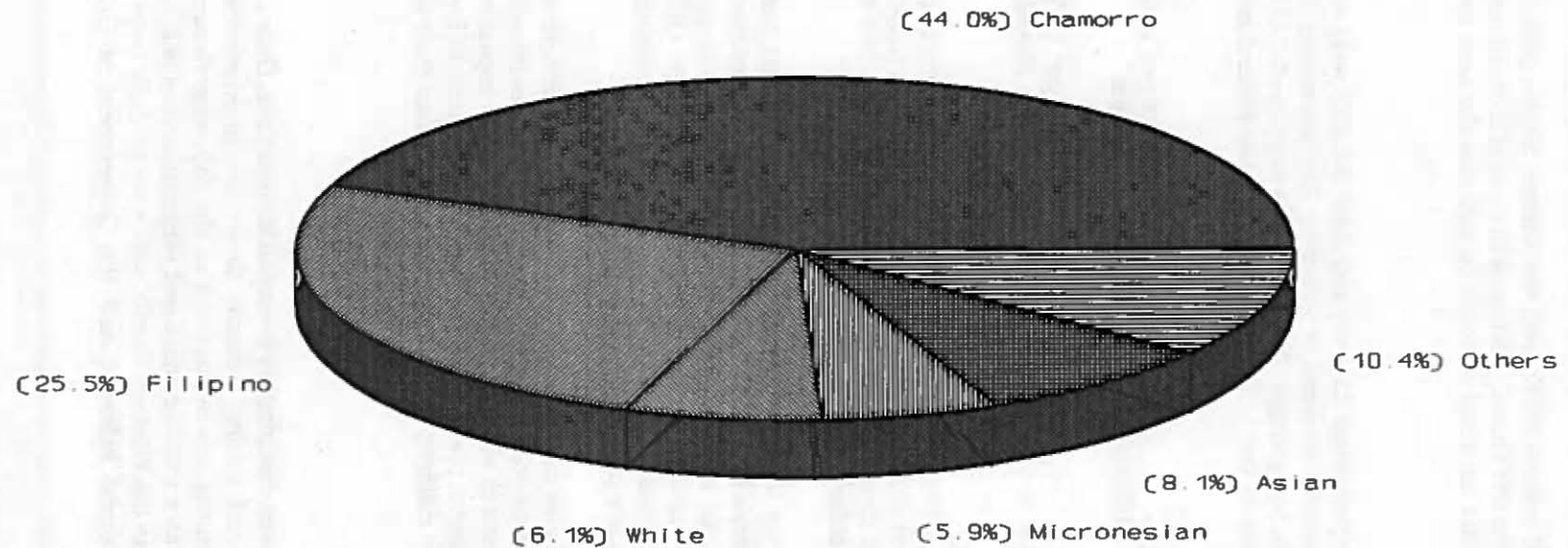
Whereas all of Guam's civilian population has experienced a steady growth over the decades, the Filipino population has grown the most of any identified ethnic group. After World War II, with the easing of immigration laws and regulations in the 1960's and again during the years 1970 to 1980 when Guam experienced a heavy economic and construction boom.

The Compact of Free Association Act of 1985 between the Federated States of Micronesia

Figure 6: Civilian Population by Age and Sex, Guam 1990



Source: U.S. Bureau of the Census, 1990; GHP&DA.

Figure 7: Ethnic Composition for the Civilian Population, Guam 1990

Others include Blacks, Multiple Ethnic and Unclassified or Not Reported Groups
Micronesians include Carolinian, Palauan, Chuukese, Kosraean, Marshallese, Pohnpeian, Yapese, and Other Pacific Islanders

Source: U.S. Bureau of the Census, Department of Commerce, Detailed Social Economic Characteristics, Guam, 1990.

(FSM), the Republic of the Marshall Islands (RMI), and the United States greatly increased the number of Micronesian immigrants into Guam. High growth rates of these immigrants from the Freely Associated States (FAS) are expected to continue well into the next decades.

f. Marital Status

In 1990, 57.7 percent (53,811) of the population 15 years and older (93,200) were married, and 9.3 percent (8,630) were either separated, divorced or widowed. The remaining 33.0 percent (30,759) have reported themselves as being single. Vital Statistics registered 1,433 marriages in 1990. The crude marriage rate was 11 per 1,000 population, and the general marriage rate per unmarried persons aged 15 and

$$\begin{aligned} \text{Crude Marriage Rate} &= P = \frac{M}{133,152} = \frac{1,433}{133,152} = 10.8 \text{ Marriages per 1,000 total population} \\ \text{General Marriage Rate} &= \frac{M}{P_{15+}} = \frac{1,433}{30,759} = 46.6 \text{ Marriages per 1,000 population age 15 and over} \end{aligned}$$

above was 47 per 1,000 population. The figure for the crude marriage rate is obtained by dividing the total marriages (1,433) in 1990 by the total population (133,152) times 1000. The general marriage rate is obtained by dividing the total marriages (1,433) in 1990 by the total unmarried population 15 years and older (30,759) times 1000.

Table 9, on the following page, shows the percentage distribution of marital status for the island's total population across the years, from 1920 to 1990. The proportion of married people has shown a slow upward trend in an irregular pattern. Prior to 1940, the proportion of married males to married females was fairly even; however, since 1950 the Office of Vital Statistics has recorded more married females than males. This may be due to the influx of alien laborers and military personnel who are predominantly single males.

Divorce has increased among both males and females, but is still below numbers experienced on the mainland. Widowhood has decreased from both males and females but females lose their husbands at almost three times the rate at which males lose their wives. It appears that people marry at a later age. This current trend, particularly for women, may result in lower fertility rates since women tend to have more children in their marriage rather than their single years.

g. Socio-Economic Status

Due to political-historical influences and changing socio-economic conditions, Guam has shifted from a rural, subsistence farming and fishing economy to an urbanized, services-oriented, commercial economy. This development can be ascribed to the following factors: Guam's potential as a finance center as well as a transshipment and communications link between the U.S. and Asia; the military presence in the Western Pacific, with a particularly large contingent stationed on Guam; the sizeable tourist industry; and the Government of Guam's large bureaucracy.

Table 9: Marital Status of the Population, Guam: 1920 to 1990

Marital Status	1920	1930	1940	1950	1960	1970	1980	1990
Males								
Never Married	41.7	46.9	42.4	55.1	34.4	34.1	33.3	36.3
Now Married, Except Separated	51.8	47.8	51.6	39.7	61.9	61.7	62.2	57.4
Separated	u	u	u	u	0.6	0.6	0.9	0.9
Widowed	6.1	4.8	5.6	u	1.4	1.3	1.4	1.3
Divorced	0.3	0.4	0.4	u	1.5	2.2	2.3	4.1
Females								
Never Married	39.7	35.7	39.0	31.5	23.1	29.6	26.2	29.1
Now Married, Except Separated	46.9	53.0	50.3	59.0	67.7	63.4	63.4	58.1
Separated	u	u	u	u	1.1	0.9	1.3	1.1
Widowed	13.0	10.8	10.3	u	6.8	4.9	5.5	5.9
Divorced	0.4	0.4	0.3	u	1.1	1.1	3.5	5.8

*Population 14 years and older. All other figures pertain to the population 15 years and older.

**Note: "Separated" is included with "Now Married" for 1930-1950. "Widowed" and "divorced" were combined as one category in 1950. u = Information for these years is unavailable.

Source: U.S. Bureau of the Census, 1990; Interagency Committee on Population, 1988; GHP&DA.

The statistics gathered by the Guam Department of Commerce show that in March 1994, 46,970 people comprised the civilian labor force, out of which 43,800 were employed and 3,170 people were unemployed. The unemployment rate (percent of labor force) was 6.7 during the same period. Compared to March 1984, the civilian labor force increased 40.3 percent (from 33,490 to 46,970) with an increase in persons employed by 42.8 percent (30,670 to 43,800). Additionally, the unemployment rate comparing the same time periods declined from 8.4 to 6.7.

Per capita taxable income was \$9,300. The average hourly earning rate in the private sector was \$9.25 in June 1994. The Consumer Price Index (CPI) during that time rose to 454.4 (1978 Base Year), and the purchasing power of the consumer dollar continued its decrease to \$0.20 based on 1978 prices.

The Department of Public Health and Social Services continues to provide assistance to a large segment of the population in need of public assistance. Table 10 on the following page lists the number of people who received assistance from particular programs in June, 1994, many of them from several programs, since assistance benefits are not mutually exclusive. The Table, also, provides June 1994 expenditures, and accumulated expenditures for the first six months of CY1994.

Table 10
Persons Receiving Public Assistance
Guam: June 1994

Public Assistance Programs	Number of Recipients	June, 1994 Expenditures	January-June 1994 Expenditures
Foodstamps	15,862	\$ 1,881,960	\$ 10,892,363
AFDC - Aid to Families With Dependent Children	7,124	1,060,597	6,007,440
APTD - Aid to the Permanently and Totally Disabled	104	20,716	121,820
OAA - Old Age Assistance	915	197,150	1,155,363
GA - General Assistance	1,292	225,011	1,245,103
AB - Aid to the Blind	1	186	1,602
Total	25,298	\$ 3,385,620	\$ 19,423,691

Source: Department of Public Health and Social Services, Government of Guam.

The same were eligible for Medicaid, and 6,642 medically indigent and other persons were eligible for local public assistance. Besides having a large number of people dependent on public assistance, Guam is faced with another problem: 30 percent, or approximately 28,000 persons, were not covered under any healthy insurance plan, and not qualify for Medicare or Medicaid. This has far-reaching implications when planning for the health care delivery system, and will be discussed in detail in Chapter VI-Health Care Policy Issues.

E. Summary

The island of Guam is faced with the challenge of developing and maintaining a health care system which will adequately meet the needs of a predominantly young and growing population, and which will also address the problems of the rapidly increasing number of elderly. Several factors will have to be integrated into the planning process:

1. Guam's civilian population is expected to grow at a rate of approximately 2.21 percent per year. At this rate, the island will have added about 28,947 persons to its population by 2000. Attention must still be focused on obstetric and pediatric services.
2. Guam's senior population will increase from 4.7 percent in 1990 to 7.9 percent in 2000. There must be an increase in the existing health and senior support services, as well as planning for more community and institutional long-term care services.
3. The trend will continue towards residing in Guam's north-central and northern areas.
4. Limited health resources and an insufficient population base will inhibit the planning and implementation of highly specialized health services, facilities, and equipment in the near future, but such specialized services must be considered as a long-range goal.
5. Off-island referrals are expected to continue for specialized diagnosis and treatment for the next several years.
6. Prepaid HMO services provided to approximately 50 percent of the population will continue to significantly impact on the delivery and utilization of health care on the island.
7. The trend to "westernize" local lifestyles will continue as will the health care system that is patterned after the U.S. models.
8. Regardless, if the political status of Guam eventually changes to that of a U.S. Commonwealth, federal participation and assistance in the development of facilities and services will still be required in view of the island's limited financial resources.

Taking into account the above factors, the planning process is designed to develop and maintain a system which will provide adequate health care services in an equitable manner to all of Guam's inhabitants. The outcome will be dependent not only on the visions of health planners, but on the dedication and cooperation of the health services deliverers, and the political and governmental systems in carrying out these visions.

III. Health Status

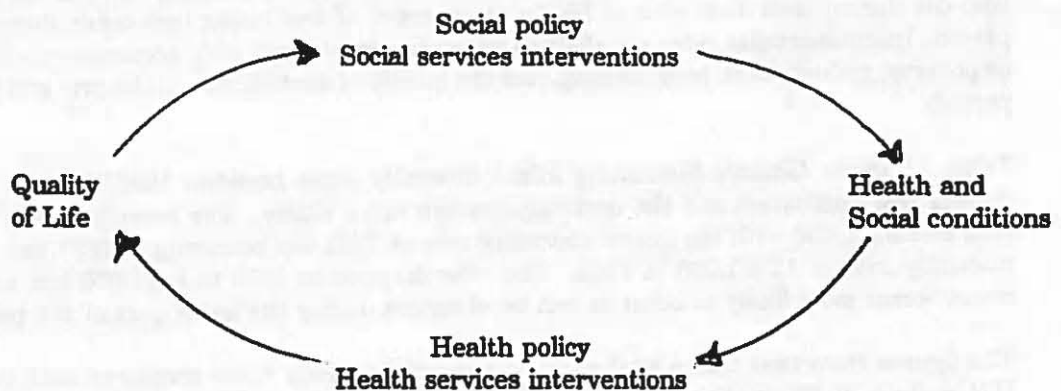
A. Definition of Health Status

Health is a **value** rather than an instrument. Health is a condition of being sound in **mind, body, and spirit**. It is not only the absence of disease or illness. Health is influenced by biological, physical, genetic, and environmental factors which are the basis for individual lifestyle choices—a quality of life process. **Quality of life** means one's perception of having human needs met and having open opportunities to achieve happiness and fulfillment. Assessment of "quality of life", though difficult, can be done through objective means (e.g., mortality rates, morbidity rates) or subjectively by using information provided by the community members and measured against proportionate adjustment between life's stressful events and personal or social resources.

Health planning is a process of defining health needs, establishing health priorities, identifying the causes of the problems, assessing resources and barriers, and finally, allocating resources to achieve the inferred objective and/or goal. Health maintenance is interdependent on society. Therefore, it is important to realize that there is a reciprocal relationship between health and social problems. Figure 8 below shows this relationship.

The arrows show that social stability and quality of life influence the health of an individual or the people in a community at the same time that quality of life and social problems affect health. The cause-effect relationships, however, can be mediated by social policy, social services interventions, health policy, and health programs.

Figure 8
Health and Social Policy Cycle



Source: Green and Kreuter, Health Promotion Planning

B. Health Status Indicators

While the status of a person's complete physical, mental, and social well-being is hard to measure, health officials and statisticians have developed certain methods for assessing health status. This section,

therefore, examines the health of the Guam population in terms of the traditional measures of mortality (death rate and morbidity (disease rate)). Mortality indicators are static and thus believed to give a broad picture of ongoing health in a community. Morbidity measures, on the other hand, are dynamic indicators and as such provide a much better basis for facility planning than do mortality measures.

Mortality and morbidity data are used by health statisticians as health indicators and as a tool to assess public health problems amid its limitations. The lack of a centralized health information system in Guam further impedes the accuracy of the data. Morbidity data is often lacking due to inadequate reporting, especially for chronic disease. However, in the absence of any other acceptable evaluation tool, mortality, accident, and morbidity information for the island population is being used to establish Guam's health status. The data are helpful in determining increasing incidence of certain fatal or debilitating conditions and in developing strategies for overcoming them.

Mortality indices include infant and general mortality rates, life expectancy data, and information about the leading causes of death. Since accidents (motor vehicle and others) are contributors to both mortality and morbidity indices, they are included in this section. Morbidity indices are presented using data for communicable and infectious diseases, maternal and child health, acute and chronic conditions, as well as disabilities.

C. Mortality Indices

1. Infant Mortality

The infant mortality rate is widely used as an indicator of a community's health status. Rates are customarily reported for the neonatal period (birth to 27 days) and the post-neonatal period (28 days to 1 year). The infant mortality rate is calculated by relating the number of infants who die during their first year of life to the number of live births that occur during a given period. Infant mortality rates are affected by environmental and socio-economic conditions such as poverty, malnutrition, poor housing, and the quality of medical care in the pre- and post natal periods.

Table 11 shows Guam's fluctuating infant mortality rates between 1983 to 1992. Figure 9 depicts this fluctuation and the unsteady pattern more visibly. The average infant mortality rate was 9.2/1,000 with the lowest mortality rate at 7.2/1,000 occurring in 1987 and a peaked mortality rate at 12.3/1,000 in 1989. The rate dropped in 1990 to 8.6/1,000 but an upward trend seems most likely to occur as can be observed during the latter part of the period.

The figures show that Guam's infant mortality rate is erratic when compared with that of the U.S. mainland. While the tendency for the U.S. rate is declining, Guam's rate is on an incline. For instance, the U.S. rate for 1992 was 8.5/1,000 compared to Guam's rate of 9.7/1,000 for the same year. The rate of infant deaths among certain ethnic groups on Guam, however, is not as favorable.

The Chamorro and Micronesian infant mortality rates were higher in the same 10-year period when compared to other infant mortality rates for all ethnicities. The Filipino infant death rate decreased in 1984 and has been consistently falling below or at the average rate for all ethnicities. Caucasians exhibited the most distinguishable improvement in infant mortality rates

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since 1985, while other ethnicities continue to fluctuate. Figure 10, in the following pages, depicts the infant mortality rate by ethnicity.

Neonatal deaths accounted for the majority of infant deaths during this 10 year period. The average neonatal death rate was 6.0/1,000 and the post-neonatal rate was 3.2/1,000. The

Table 11
Infant Mortality Rates Per 1,000 Live Births
Guam and U.S.: 1983 - 1992
(Based on Deaths of Infants Born on Guam)

Year	Neonatal Mortality Rate		Post-Neonatal Mortality Rate		Infant Mortality Rates	
	Guam	U.S.	Guam	U.S.	Guam	U.S.
1983	6.6	7.3	3.5	3.9	9.1	11.2
1984	5.5	7.0	4.2	3.8	9.8	10.8
1985	8.4	7.0	2.2	3.7	10.6	10.6
1986	6.6	6.7	1.8	3.6	8.5	10.4
1987	4.5	6.5	2.7	3.6	7.2	10.1
1988	3.9	6.3	3.9	3.6	7.9	10.0
1989	8.7	6.2	3.6	3.6	12.3	9.8
1990	6.0	5.8	2.6	3.4	8.6	9.2
1991	5.9	5.6	2.3	3.4	8.2	8.9
1992	4.0	5.4	5.7	3.1	9.7	8.5

Sources: Office of Vital Statistics, DPH&SS, Guam; Health United States 1993, U.S. Department of Health and Human Services.

Figure 9
Infant Mortality Rates Per 1,000 Live Births
Guam and U. S.: 1983 to 1992

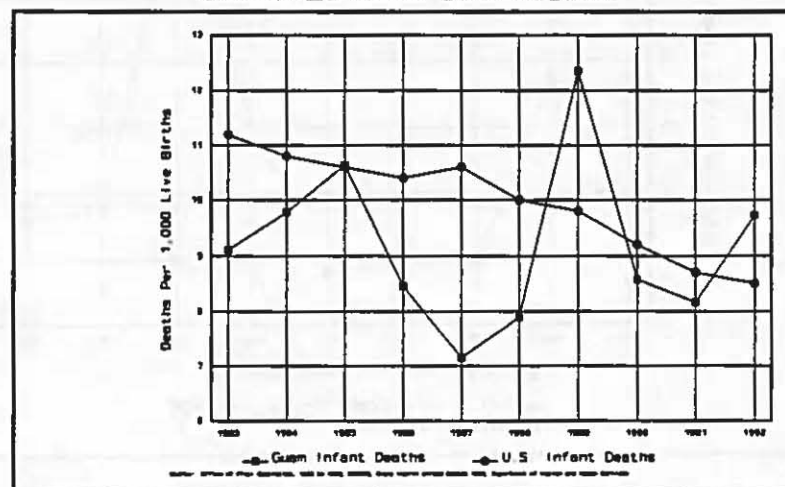


Figure 10
Infant Mortality Rates By Ethnicity
Guam: 1983 to 1992

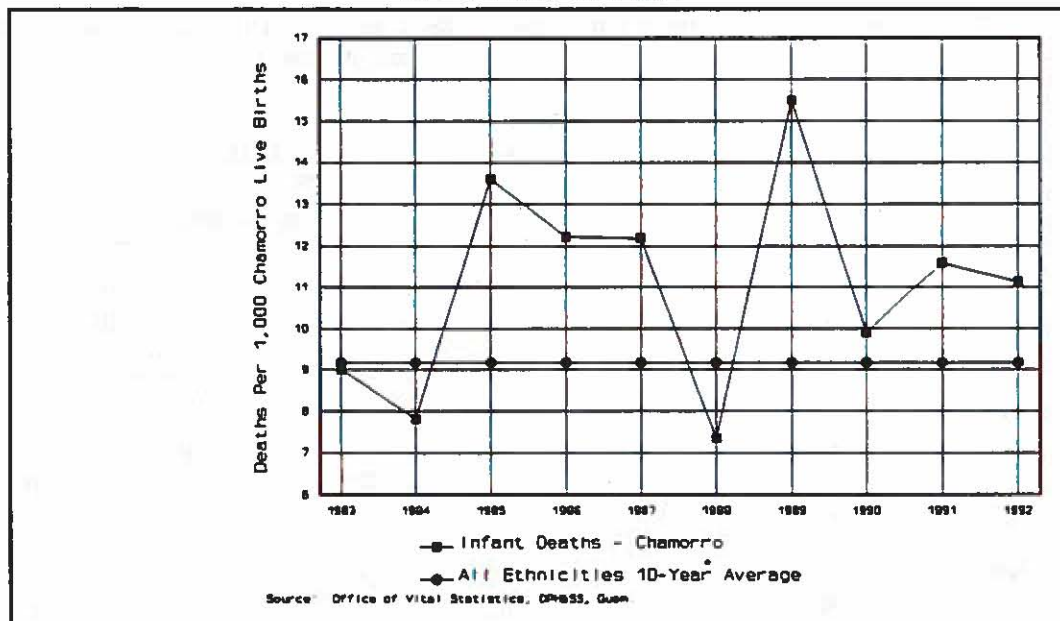


Figure 10 (Continued)
Infant Mortality Rates By Ethnicity
Guam: 1983 to 1992

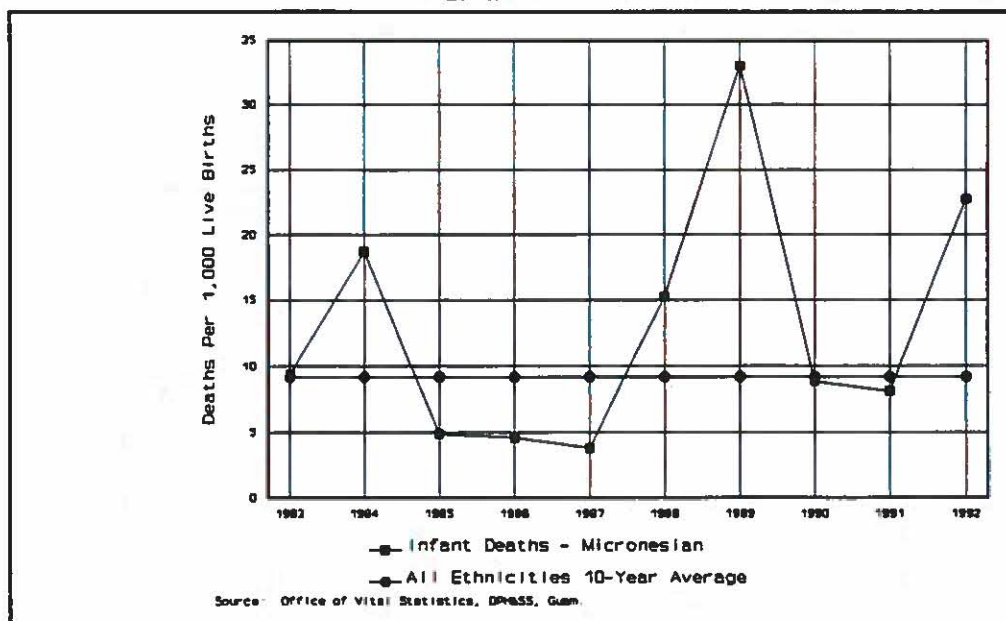


Figure 10 (Continued)
Infant Mortality Rates By Ethnicity
Guam: 1983 to 1992

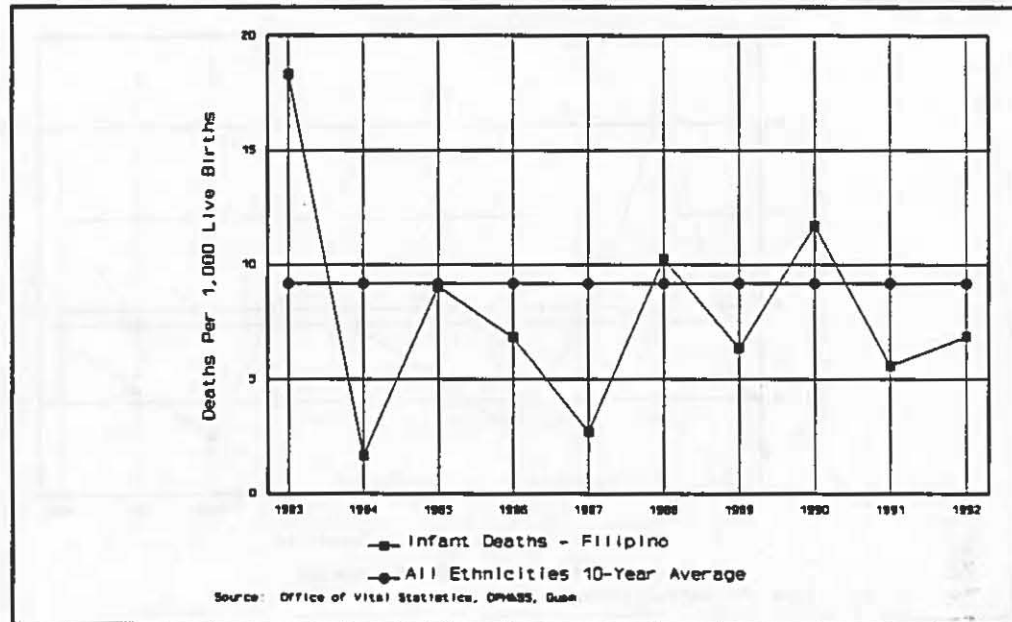


Figure 10 (Continued)
Infant Mortality Rates By Ethnicity
Guam: 1983 to 1992

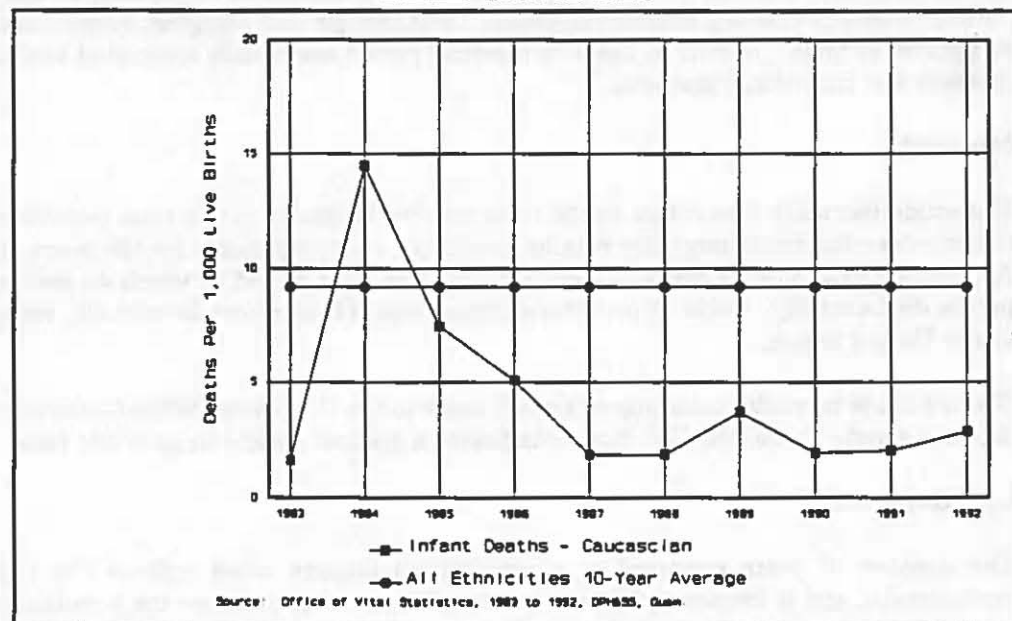
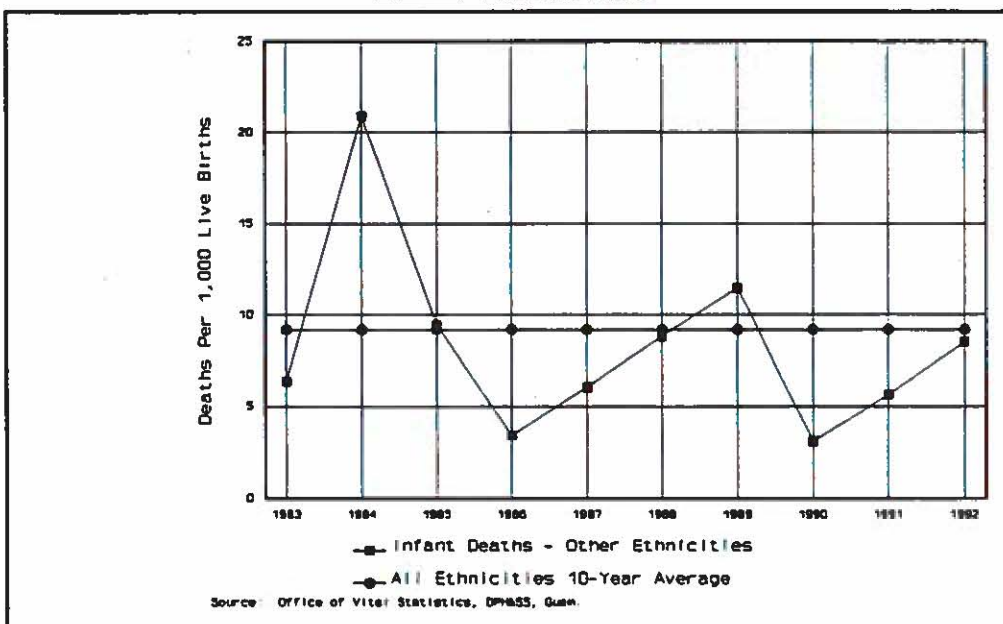


Figure 10 (Continued)
Infant Mortality Rates By Ethnicity
Guam: 1983 to 1992



average infant mortality rate for the same period was 9.2/1,000. The major causes of neonatal deaths were prematurity, congenital anomalies, other conditions originating in the perinatal period, disorders relating to short gestation, birth trauma and asphyxia, respiratory distress, or injuries at birth. Deaths in the post-neonatal period are usually associated with infectious diseases and nutritional problems.

2. Mortality

The crude mortality rate refers to the total number of deaths in the total population, and in Guam's case the crude mortality rate has remained relatively stable for the years 1983-1992. An average rate of 4.0/1,000 was calculated for this time period in which an average of 507 people died annually. Table 12 provides a comparison of Guam's crude mortality rates to those of the United States.

Guam's crude mortality rates appears much lower to the U.S. rates. While Guam's crude rates shows a steady figure, the U.S. figures indicates a gradual decline in its crude rate.

3. Life Expectancy

The number of years expected in a population's lifetime often reflects the population's environment, and is frequently used with other indicators to measure the population's health status. Life expectancy figures calculated by Tung for the years 1969-71 and 1976-1978, Flores for 1980-1982, and for 1988-1992, are shown in Table 13.

Table 12
Crude Mortality Rates Per 1,000 Population
Guam and U.S.: 1983-1992

Year	# of Deaths	Mortality Rates	
		Guam	U.S.
1983	462	4.1	11.2
1984	450	3.9	10.8
1985	411	3.7	10.6
1986	451	3.7	10.4
1987	486	3.9	10.1
1988	492	3.9	10.0
1989	544	4.2	9.8
1990	577	4.2	9.2
1991	607	4.5	8.9
1992	585	4.2	9.1
Avg.	507	4.0	10.0

Source: Office of Vital Statistics, DPH&SS, Guam 1986-1992;
 Health United States 1992 and Healthy People 2000
 Review, U.S. Department of Health and Human Services.

Table 13
Years of Life Expectancy
Guam and U.S.: 1969-1992

Years	Guam		U.S.	
	Males	Females	Males	Females
1969-1971*	65.5	75.9	67.0	74.6
1976-1978*	69.7	78.7	69.2	77.1
1980-1982	69.6	74.5	70.4	77.9
1988-1992	71.4	77.2	72.3	79.0

* Excluding military population.

Source: Tung, S., Economic Research Center, Department of Commerce, Guam; Flores J., Census and Population Division, Department of Commerce, Guam.

The 1969-71 life expectancy at birth for females was 75.9 years and 65.6 years for males, as compared to the respective U.S. values of 74.6 and 67.0. The 1976-78 life table shows a significant increase of 2.8 years for females to 78.4 years, and of 3.8 years for males to 69.7

years, which compared favorably with the U.S. figures. The 1980-82 life table is computed from total population data and shows a decrease in life expectancy, particularly for females where a drop of 4.2 years occurred. The 1988-1992 life table shows a slight increase for males to 71.4 and females to 77.2.

No analysis on longevity of the major ethnic groups has been performed to date, but the majority of older persons presently living on Guam seem to be Chamorros. However, this is more a reflection of the immigration patterns after the war rather than an indication of any extended life expectancy for this particular ethnic group.

In a given population, the number of years expected in a lifetime often reflects the environment and is frequently used with other indicators to measure the population's health status.

4. Premature Mortality: Years of Potential Life Lost

The concept of "years of potential life lost (YPLL)" has been used by the Centers for Disease Control since 1982. In analyzing the causes of premature deaths, YPLL is found to be a more useful health planning tool over mortality statistics which are influenced by conditions associated with age. YPLL measures premature or preventable mortality before the age of 65 years which is derived by subtracting the age at death from 65 years. Table 14 show the YPLL for Guam from 1983 to 1992.

5. Guam's 10 Leading Causes of Death

Table 15 shows the leading causes of death in Guam at certain periods within the last 3 decades (1972, 1982, and 1992). The leading causes during this twenty-one year period in descending order are heart disease; malignant neoplasm (all sites); cerebrovascular disease; motor vehicle accidents; and other accidental causes. These are followed by certain diseases of early infancy and immaturity unqualified; pneumonia, all types including newborn; diabetes mellitus; other diseases of the central nervous system (ALS and Parkinson); diseases of the liver; suicide, and homicide.

All of the identified prominent causes of death on Guam, with the exception of malignancy, are preventable. This means that the people died prematurely. Public information and public education programs must continue to reach out to the public and must be made readily available.

Table 16 summarizes the leading causes of death on Guam from 1983 to 1992. There has been a slight increase in the number of deaths caused by heart disease and malignant neoplasms, or cancer. Deaths from cerebro-vascular diseases show a fluctuation, but no major changes are seen over the years. Deaths from diseases of the central nervous system appear to have dropped over the last four years. Motor vehicle accidents have ranked consistently in the five leading causes of death, as have accidents and other adverse effects. Not much change however has been observed in deaths from diseases of the liver or diabetes, and deaths from pneumonia have declined.

Table 14
Years of Potential Life Lost Before Age 65
Guam: 1983 to 1992

Cause	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Diseases of the Heart	755	831	690	678	607	775	562	689	568	630
Neoplasms	507	424	681	423	493	729	558	498	532	629
Cerebrovascular Disease	160	218	203	220	155	139	156	158	264	263
Diabetes Mellitus	113	112	54	45	141	153	217	178	191	256
Accidents and Other Adverse Effects	466	587	575	122	750	400	984	629	802	655
Suicide	273	167	331	393	402	504	365	627	536	732
Motor Vehicle Accidents	1003	812	641	952	903	407	807	854	1025	681
Certain Conditions Originating in the Perinatal Period	704	517	281	768	321	316	378	1008	740	821
Pneumonia	48	9	213	210	160	267	244	158	161	168
Homicide	557	466	277	382	351	482	362	482	354	293

Source: Office of Vital Statistics, DPH&SS, Guam; GHP&DA.

Table 15
Leading Causes of Death
Guam: 1972, 1982, and 1992

Cause of Death 1972	Percent of Deaths	Cause of Death 1982	Percent of Deaths	Cause of Death 1992	Percent of Deaths
Disease of the Cir- culatory System	17.3	Diseases of the Heart	26.2	Diseases of the Heart	21.7
Malignant Neoplasms	9.8	Malignant Neoplasms	14.5	Malignant Neoplasms	15.9
Motor Vehicle Accidents	8.8	Cerebrovascular Disease	5.6	Cerebrovascular Disease	7.2
All Other Accidents	8.9	Other Diseases of the Central Nervous System	5.4	Diabetes Mellitus	7.2
Certain Conditions of Perinatal Period	6.6	All Other Accidents	3.6	All Other Accidents	5.1
Cerebrovascular Diseases	6.1	Diabetes Mellitus	3.8	Suicide	4.8
Pneumonia	5.4	Chronic Liver Disease	3.4	Motor Vehicle Accidents	4.4
Diabetes Mellitus	3.9	Motor Vehicle Accidents	2.5	Conditions Originating in Perinatal Period	2.9
Cirrhosis of Liver	3.2	Pneumonia	2.3	Pneumonia	2.7
Congenital Anomalies	2.7	Suicide	2.0	Homicide	2.4

Source: Office of Vital Statistics, DPH&SS, Guam.

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Table 16
The Ten Leading Causes of Death
by Percent of Total Deaths
Guam: 1983 to 1993

Causes	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Diseases of the Heart	29.7	25.1	24.9	31.0	22.4	26.0	22.6	21.7	20.6	21.7	22.4
Neoplasms	13.0	13.3	15.0	12.6	13.6	18.5	12.1	14.9	12.4	15.9	14.4
Cerebrovascular Diseases	4.8	6.7	7.0	6.9	7.4	5.7	5.5	6.1	8.6	7.2	5.9
Diseases of CNS ALS/PD	3.2	3.3	3.9	2.2	2.7				2.8		
Accidents and Adverse Effects	3.5	5.1	4.8		5.8	3.5	6.8	11.5	5.4	5.0	4.3
Diabetes Mellitus	3.2	6.7	5.0	3.5	3.9	5.3	6.1	5.6	4.9	7.2	8.9
Chronic Liver Disease and Cirrhosis		2.4				3.5	3.5	3.1	2.6		2.3
Motor Vehicle Accidents	6.3	5.3	4.8	6.9	5.3	3.3	6.3		6.4	4.4	6.6
Pneumonia	3.7		4.3	5.8	4.3	3.9	4.4		2.8	2.7	2.8
Suicide			2.5	2.7	3.1	2.8	2.9	4.7	3.6	4.8	4.5
Homicide	3.5	3.6		2.7	2.5	3.3	2.8	2.9		2.4	1.7
Certain Conditions Originating in the Perinatal Period	2.6	2.0		3.1				3.6		2.9	
Congenital Anomalies			2.7								
Chronic Obstructive Pulmonary Disease								5.7			

Source: Office of Vital Statistics, DPH&SS, Guam, 1983-1992.

Deaths from homicide and suicide were listed for 9 years out of 11, as a leading cause of death. Deaths from homicide and suicide average 2.8 percent and 3.5 percent from the total deaths per year, respectively. The ten leading causes of death for the United States, are detailed in Table 17 below.

Table 17
Ten Leading Causes of Death
U.S.: 1991

Rank	Cause of Death	Rate/1,000 Population	% of Total Deaths
1	Heart Disease	2.83	33.1
2	Malignant neoplasms	2.03	23.8
3	Cerebrovascular Disease	0.57	6.7
4	Unintentional Injuries	0.36	4.2
5	Chronic Obstructive Pulmonary Diseases	0.35	4.1
6	Pneumonia and Influenza	0.30	3.5
7	Diabetes Mellitus	0.20	2.4
8	Suicide	0.12	1.4
9	Human Immuno-Deficiency Virus Infection	0.12	1.4
10	Homicide and Legal Intervention	0.11	1.3

Source: Health United States 1992 and Healthy People 2000 Review

For the year 1991, Guam compared well with the United States when looking at the major causes of death. While heart disease, malignant neoplasms, and pneumonia were the leading causes of death in both countries, Guam experienced a lower rate of death from these diseases than did the United States. However, a much greater proportion of the population on Guam died of diabetes, cerebrovascular disease, and cirrhosis and other liver diseases than in the United States. Amyotrophic lateral sclerosis (lytico or ALS) and Parkinsonism Dementia (bodig or PD) were in the 10 leading causes of death for first 5 years of the 10 year period, 1983 to 1992. However, it did not rank during the next three years, 1988 to 1990, as a leading cause of death in Guam until 1991. Guam reports mortality caused by motor vehicle accidents in separate category from other accidents and adverse effects. If these categories had been combined into one classification which reported "all accidents," the combination would have been ranked as the third leading cause of death on Guam in 1991. Nonetheless, for 1991, the figure for "all accidents," 5.4 percent, was greater than that of the U.S., 4.2 percent.

If the deaths from homicide, suicide, motor vehicle, and other accidents had also been combined into one category, such as for "sudden and unexpected death," this category would have ranked second in 1991.

D. Accidents

Accidents were a leading cause of death in all age groups. The greatest number of accidental deaths were motor vehicle fatalities, but deaths caused by mishaps such as drowning, falls, shooting, etc. have been so high as to rank among the leading causes of death. Accidents have also caused a considerable amount of injury and disability; however, no reliable data as to the extent of such injury is available since accidents are not reported consistently.

1. Motor Vehicle Accidents

Motor vehicle accidents placed in the top ten causes of death in ten out of the eleven year period (1983-1993). During the same period, an average of 29.3 people per year lost their lives on Guam's roads and highways. Table 18 details the age and sex distribution for motor vehicle victims and Figure 11 shows the 5-year average of mortality rates by age and sex for these years.

With the exception of the years 1983, 1984, 1986, and 1993 males between the ages of 25 and 44 account for the majority of motor vehicle accidents. However, the yearly average in this age group compares to the yearly average for males in the 15-24 age group. The female average is slightly over 25 percent of the male average in the 15-24 age group and over one-third the male average in the 25-44 age group.

2. Other Accidents and Adverse Effects

Accidental deaths by drowning and falling are the leaders in this category, which reported 29 fatalities for the total population in 1992. As with motor vehicle accidents, male victims outnumber females considerably. The male rate of 0.151/1,000 was more than two and a half times higher than the female rate of 0.057. Male accident mortality highest rate, 0.072/1,000, was found in the 25-44 age group followed by males in the 15-24 age group with a rate of 0.029 per 1,000. The yearly average for the last 5 years was 28 deaths, with a rate of 0.216 accidents per 1,000 total population. More details are presented in Table 19 and Figure 12 on the following page.

Table 20 shows the breakdown of the causes and numbers of accidents resulting in fatalities for the civilian population only (military accidental deaths are excluded). The numbers are widely fluctuating with poisoning, water transport, and fire and flame as the next highest causes of accidental deaths reported within the 5-year period.

E. Morbidity

Morbidity refers to the extent and frequency of illness or disability in a population, and is usually expressed in terms of the incidence or prevalence of certain conditions within the population. Morbidity data provides a basis for direct measurement of health status, and in many cases, is a highly significant indicator of the problems and health care needs of the population. While this represents an improvement over mortality data, morbidity data is less readily available than mortality data.

Table 18
Motor Vehicle Fatalities of Civilian Population
by Age and Sex
Guam: 1983 - 1992

Deaths	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	Yearly Average
All Ages	29	25	21	31	26	16	34	38	39	26	28.5
Male	20	18	19	21	16	10	28	28	29	20	20.9
Female	9	7	2	10	10	6	6	10	10	6	7.6
0-14 Years	3	1	4	4	7	3	2	2	4	2	3.2
Male	3	1	3	1	3	0	1	2	3	1	1.8
Female	0	0	1	3	4	3	1	0	1	1	1.4
15-24 Years	14	13	5	13	8	4	9	9	12	10	9.7
Male	11	9	5	9	6	4	9	7	10	7	7.7
Female	3	4	0	4	2	0	0	2	2	3	2.0
25-44 Years	8	7	8	8	10	4	13	16	16	10	10.0
Male	4	7	7	6	6	4	10	12	12	9	7.7
Female	4	0	1	2	4	0	3	4	4	1	2.3
45-64 Years	3	4	2	5	1	2	8	8	6	3	4.2
Male	2	1	2	4	1	1	7	5	3	2	2.8
Female	1	3	0	1	0	1	1	3	3	1	1.4
65+	1	0	2	1	0	3	2	3	1	1	1.4
Male	0	0	2	1	0	1	1	2	1	1	0.9
Female	1	0	0	0	0	2	1	1	0	0	0.5

Source: Office of Vital Statistics, DPH&SS, Guam.

Figure 11
5-Year Average of Motor Vehicle Fatality Rates, Guam: 1988 - 1992

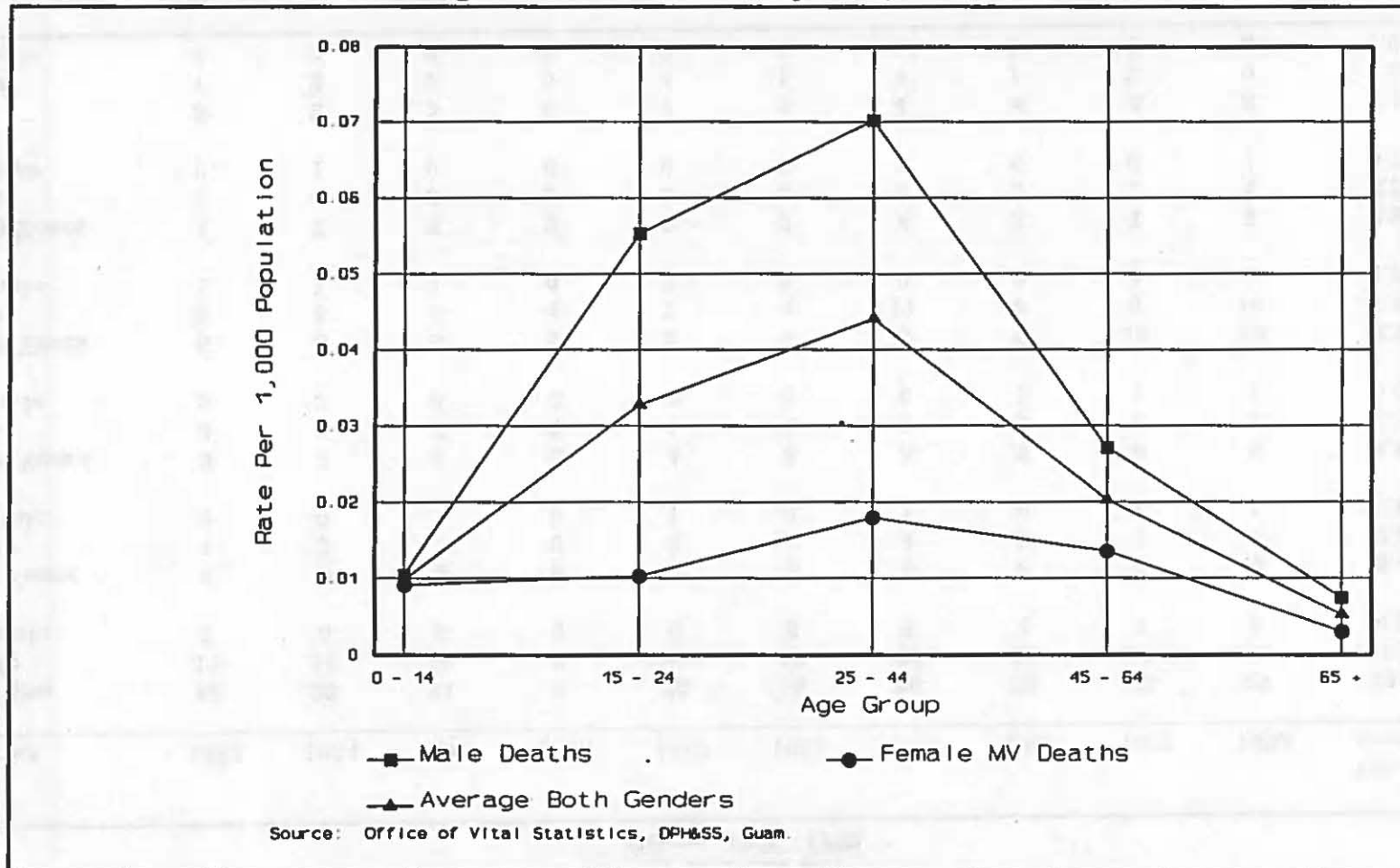


Table 19
Deaths from Accidents and Adverse Effects for Total Population
by Age and Sex
Guam: 1983 - 1992

Deaths	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	Yearly Average
All Ages	18	23	21	6	30	18	38	26	33	29	24.2
Male	11	18	16	0	24	13	36	22	26	21	19.3
Female	7	5	5	0	6	5	2	4	7	8	4.9
0-14 Years	3	3	2	0	7	3	5	3	4	4	3.4
Male	1	3	1	0	6	3	4	3	2	3	2.6
Female	2	0	1	0	1	0	1	0	2	1	0.8
15-24 Years	3	5	7	0	4	2	8	7	8	5	4.9
Male	3	2	7	0	4	2	8	6	7	4	4.3
Female	0	3	0	0	0	0	0	1	1	1	0.6
25-44 Years	6	6	6	4	9	6	17	9	12	12	8.7
Male	5	5	5	4	7	4	17	9	8	10	7.4
Female	1	1	1	0	2	2	0	0	4	2	1.3
45-64 Years	1	7	3	2	3	3	4	3	7	5	3.8
Male	1	6	3	2	3	3	3	3	7	4	3.5
Female	0	1	0	0	0	0	1	0	0	1	0.3
65+	5	2	3	0	7	4	4	4	2	3	3.4
Male	1	2	0	0	4	1	4	1	2	0	1.5
Female	4	0	3	0	3	3	0	3	2	3	1.9

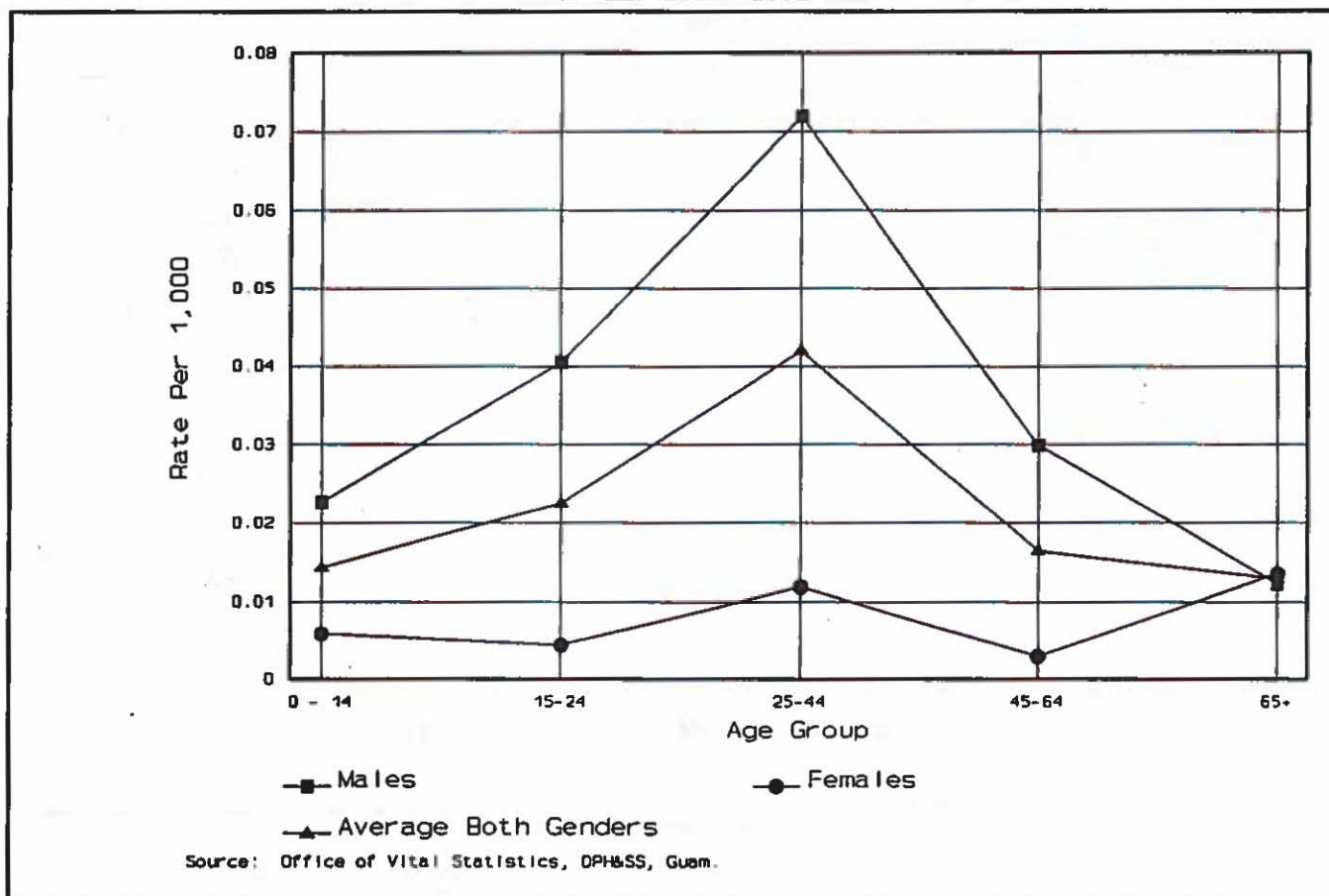
Sources: Office of Vital Statistics, DPH&SS, Guam.

Table 20
Deaths from Other Accidents and Adverse Effects
for Civilian Population
Guam: 1988 - 1992

Cause	1988		1989		1990		1991		1992		Total 5-Year	
	#	%	#	%	#	%	#	%	#	%	#	%
Water Transport	1	5.9	5	13.5	0	0.0	3	9.1	1	3.4	10	7.1
Air and Space	0	0.0	2	5.4	0	0.0	0	0.0	0	0.0	2	1.4
Poisoning	0	0.0	0	0.0	2	7.7	6	18.2	3	10.3	11	7.8
Falls	5	29.4	4	10.8	10	38.5	5	15.2	8	27.6	32	22.5
Fire/Flame	1	5.9	3	8.1	3	11.5	0	0.0	1	3.4	8	5.6
Nature and Environment	0	0.0	3	8.1	0	0.0	2	6.1	0	0.0	5	3.5
Drowning	6	35.3	10	27.0	9	34.6	10	30.3	10	34.5	45	31.7
Suffocation	0	0.0	0	0.0	0	0.0	1	3.0	1	3.4	2	1.4
Food or Object												
Mechanical	1	5.9	0	0.0	1	3.8	0	0.0	1	3.4	3	2.1
Suffocation												
Hit by Object	2	11.8	3	8.1	0	0.0	0	0.0	1	3.4	6	4.2
Firearm	0	0.0	3	8.1	0	0.0	1	3.0	0	0.0	4	2.8
Missiles												
Electric Current	0	0.0	1	2.7	1	3.8	1	3.0	0	0.0	3	2.1
Machinery	0	0.0	2	5.4	0	0.0	1	3.0	1	3.4	4	2.8
All Others	1	5.9	1	2.7	0	0.0	3	9.1	2	6.9	7	5.0
Totals	17	100.0	37	100.0	26	100.0	33	100.0	29	100.0	142	100.0

Source: Office of Vital Statistics, DPH&SS, Guam

Figure 12
5-Year Average of Fatality Rate By Age and Sex
Other Accidents and Adverse Effects
Guam: 1983 - 1992



Morbidity surveillance is important for maintaining a healthy environment. This is a process wherein conditions producing diseases are monitored and when needed, corrective public health interventions are made. It requires close observations of any reported health conditions, particularly communicable diseases, because of the possible rampant outbreak which could threaten the health of the whole community. Morbidity rate data is very useful for monitoring the number of sick people or people having the same long-term conditions (chronic diseases) at the same place and the same period of time as compared to the total population. Morbidity rate data, then, should be used by the health planners and health program administrators to re-prioritized and strategize themselves for controlling the spread of disease before the condition becomes an epidemic (unusual occurrence of a disease) or pandemic (wide-spread).

There are several variables by which morbidity can be measured; severity, prognosis, and duration are some of them. Morbid conditions can have a short, acute phase which is severely disabling; they can be a chronic, long-term disability resulting from an acute illness or injury; or they can start insidiously with several years elapsing before a chronic disease is diagnosed.

Morbid conditions might have their etiology in human biology, environmental conditions, or certain lifestyles. In some diseases, all three factors play a role; often, genetic predisposition is impacted by the environment and an individual's lifestyle. It is therefore difficult to classify diseases according to their origin. This section presents morbidity indicators for diseases related to the environment, communicable and infectious diseases, morbid conditions arising from pregnancy, childbirth and early childhood, chronic diseases, and disabilities which are causing concern to Guam's population and health service providers. Mental health of the island population is also assessed and diseases related to certain lifestyles are also discussed in this section and in the next chapter.

The health priorities have been identified for in-depth analysis and recommendations in Chapter IV by the Governors' Task Forces. Each of the health priorities is discussed separately in the next chapter and incorporates the morbidity indicators mentioned below.

1. Diseases Related to the Environment

Historically, the great gains in human health--increased longevity, the reduction of communicable disease epidemics, and the reduction of deficiency diseases--have come through improvements in the standards of living, particularly from improvements in basic environmental sanitation. However, Guam has still a higher than average rate of intestinal infectious diseases which are related to the environment and which have their origin in adverse sanitary conditions. Salmonellosis and shigellosis are the diseases which claim the highest number of victims.

a. Salmonella

Salmonellosis is an acute gastroenteric infection caused by the salmonella bacteria of which there are over 1,000 types. Symptoms include nausea and vomiting followed by abdominal pains and persistent diarrhea. The infection, however, may also be asymptomatic.

Traditionally it was believed that the disease was mostly acquired through the ingestion of undercooked meats, poultry, or poultry products, since animals are the principal reservoirs of the salmonella bacteria. Once infected by the disease, an individual can spread salmonellosis through contact with others. This type of transmission often occurs in institutional settings

such as hospitals, prisons, and child care centers.

The outcome of the infection is determined by a variety of factors including the type of bacteria, the number of bacteria ingested, and the general health of the bacteria's host. Infants, the elderly, and persons with underlying diseases are most susceptible to salmonella infection. While death from salmonellosis occurs primarily among these groups, it is not a frequent occurrence.

For the past 10 years Guam has had the highest rate of salmonellosis in any U.S. state or territory. As reflected in Table 21, Guam experienced an average incidence rate of salmonella infection, from 1985 to 1994, of 0.99 per 1,000 population, as compared to the 1991 U. S.

Table 21
Incidence of Salmonellosis
Guam: 1985 - 1994

Year	Number	Rate/1,000
1985	212	1.78
1986	213	1.75
1987	135	1.09
1988	129	1.01
1989	139	1.07
1990	105	0.79
1991	87	0.64
1992	64	0.46
1993	119	0.83
1994	76	0.52

Sources: Office of Territorial Epidemiologist, DPH&SS, Guam.

rate of 0.19/1,000. However, the 64 cases reported in 1992 represented a 70 percent decrease in annual incidence from the 1985 rate of 1.78 per 1,000 population to 0.46/1,000. The gradual decrease in incidence, from 1984 to 1992, appeared rather promising but was abruptly broken with a 46 percent increase between 1992 and 1993 to 0.83 per 1,000 population.

Many infants are exposed to the salmonella bacteria and, having the least resistance, are most likely to require medical attention and be recorded as cases. No distinct trends are apparent in the geographic distribution of cases by village of residence.

b. Shigellosis

Shigellosis is an acute gastrointestinal infection caused by the four shigella group bacteria, s. dysenteriae, s. flexneri, s. boydii, and s. sonnei. Symptoms of the disease range from loose stools for several days to the more severe symptoms including cramps and convulsions. The majority of cases on Guam are manifested by the sudden onset of fever,

vomiting, and diarrhea.

Man is the only significant reservoir of the shigella bacteria. The infection is primarily transmitted via the fecal-oral route. Factors contributing to the spread of the disease include crowded living conditions, inadequate sewage facilities, and poor personal hygiene.

Shigellosis is most often seen in children under 10 years of age, possibly due to the lack of knowledge regarding proper hygiene. The severity of infection is determined by the bacterial serotype and relative health of the bacterial host. The malnourished, debilitated, and elderly run the greatest risk of developing severe symptoms; infected healthy adults may remain asymptomatic. Infection with *s. dysenteriae* is more frequently associated with severe illness and fatality rates than is infection with other shigella serotypes.

Table 22 show an erratic incidence of shigellosis over a 10-year period. From 1985 to 1987, the average annual rate was 0.97/1,000. In contrast, the average annual rate from 1988 to 1992 was 0.78/1,000 population. This was more than six times higher than the reported U.S. rate of 0.11/1,000 for 1992. In 1992, 165 cases of shigellosis were reported, which represented a 117 percent increase over the 76 cases recorded in the previous year. There was a remarkable reduction of 79 percent and 80 percent shigellosis cases in 1993 and 1994, respectively, which may be indicative of increase awareness on proper hygiene amongst our children in the community.

Table 22
Incidence of Shigellosis
Guam: 1985 - 1994

Year	Number	Rate/1,000
1985	77	0.65
1986	162	1.33
1987	114	0.92
1988	72	0.57
1989	82	0.63
1990	130	0.98
1991	76	0.56
1992	165	1.18
1993	35	0.25
1994	33	0.23

Source: Office of Territorial Epidemiologist, DPH&SS, Guam.

2. Communicable and Infectious Diseases

Communicable and infectious diseases may be caused by bacteria, viruses, parasites, or other microorganisms, and are transmissible from one person to another. The major categories of such diseases are vaccine preventable communicable diseases, influenza, pneumonia, and

sexually transmitted diseases.

a. Vaccine Preventable Communicable Diseases

The most effective means of preventing disease is by immunization. Over the last 30 years vaccines have been developed for major childhood debilities, and have resulted in a drastic drop in the infant mortality and morbidity.

At present, infants and children on Guam are vaccinated against the following diseases:

Diphtheria	Pertussis (whooping cough)
Tetanus	Polio
Measles	Mumps
Rubella	

This immunization effort has lowered the incidence of these diseases on Guam considerably. There were no cases of Diphtheria, Pertussis, or Polio reported in the last 10 years. The number of cases for Mumps, Measles, and Rubella, also known as German Measles, are listed below in Table 23.

Table 23
Incidence of Immunizable Diseases
Guam: 1984 - 1994

Year	Mumps	Measles	Rubella (German Measles)
1984	13	104	4
1985	7	12	4
1986	9	4	5
1987	6	2	1
1988	4	1	0
1989	6	3	0
1990	7	1	0
1991	7	62	0
1992	33	4	4
1993	13	25	0
1994	7	228	1

Source: Communicable Disease Control Unit, DPH&SS, Guam.

As can be seen from the figures, the incidence of measles and mumps, were high in 1984 but were well controlled between 1985 through 1991 and 1992, respectively. The year 1992 brought a sharp increase in mumps (from 7 to 33 cases) and measles reached epidemic proportions of 104 cases in 1984, 62 in 1992, and 228 in 1994. Older school children and young adults were the victims of the epidemic. The outbreak of the disease was traced to an imported case at one

of Guam's schools, from which it spread to the community. Vigorous monitoring activities carried on by the Department of Public Health and Social Services and the Department of Education identified those children (many of them immigrants) without immunization for mumps, measles, and German measles, and subsequently vaccinated the children.

For children under the age of six, Guam has reached a very high level of immunity. As a 95 percent immunity level is considered the desired and achievable goal, the figures listed in Table 24 below show that Guam's children are indeed well protected against the vaccine preventable communicable diseases.

The immunization program has been very successful in accomplishing the primary purpose of public health services: that is, the prevention of disease. However, vigilance and diligence is required and a high priority has to be maintained in order to stay at the present high level. As Guam is a crossroad for people from many parts of the world, all children must be protected against childhood diseases which are inadvertently brought to the island.

Table 24
Immunization Compliance Levels for
Pre-Schoolers and School Entrants*
Guam: School Years 1984-85 and 1993-94

Age Level	Percentage of Completion	
	1984-85	1993-94
Day Care	97	94
Head Start	99	99
Kindergarten/1st Grade	98	98

*3 x DTP, 3 x TOPV, MMR

Source: Communicable Disease Control Unit, DPH&SS, Guam.

b. Infectious Diseases

Incidence and prevalence data of infectious diseases are useful measures of health status. Since such diseases have to be reported to the Department of Public Health and Social Services, as required by law, the data is readily available. Whereas some limitations are imposed by incorrect diagnosis or incomplete reporting, particularly from the private sector, such data is nevertheless a good indicator of a community's health.

Tuberculosis, pneumonia, influenza, and hepatitis are examined in this section.

(1) Tuberculosis

Tuberculosis is a chronic, progressively infectious and communicable disease, that is potentially of life-long duration, and is caused primarily by mycobacterium tuberculosis. On Guam,

mycobacterium tuberculosis proliferates, causing pulmonary tuberculosis and, in some cases, extra-pulmonary tuberculosis. In adults, pulmonary tuberculosis is the most common type of the disease and accounts for over 90 percent of the fatalities caused by tuberculosis. In the early stages, tuberculosis might be completely symptomless, but if left untreated the disease will progress towards severe disability and death.

Guam's incidence and prevalence rates of tuberculosis, Table 25, show a steady decline 1984 to 1988. However, the incidence and prevalence rates gradually increased from 1989 to 1993 to the 1984 level. Even with the fluctuating tuberculosis rate over the last 10 years, the rate is still twice that of Hawaii's 1992 rate (0.23/1,000 population) and more than five times the 1992 rate for the U.S. mainland, (0.10/1,000). Incidence and prevalence is highest within the immigrant population, and among males over the age of 55 and in the Filipino ethnic group (Tables 26 and 27). It is not surprising to see a higher TB rate for Filipinos, as this ethnic group makes up nearly 90 percent of the immigrant population arriving on Guam.

Table 25
Incidence and Prevalence of Tuberculosis
for Total Population,
Guam: 1985 - 1994

Year	New Cases	Total Cases	Incidence Per 1,000	Prevalence Per 1,000
1985	37	38	0.31	0.32
1986	43	47	0.36	0.40
1987	33	39	0.27	0.32
1988	36	41	0.29	0.33
1989	52	56	0.41	0.44
1990	55	57	0.43	0.44
1991	60	69	0.46	0.53
1992	72	73	0.51	0.52
1993	70	72	0.49	0.50

Source: Communicable Disease Control Unit, DPH&SS, Guam.

The decreases in the incidence and prevalence of TB among the resident population can be attributed to the Department of Public Health's intensified monitoring activities. The Department has established mechanisms for identifying patients who have failed to keep an appointment, as well as for having patients return to the TB clinic. These direct outreach efforts have been initiated to further reduce indigenous TB incidence and prevalence on the island.

Table 26
TB Cases by Age and Sex of Patient
Guam: 1993

Age Group	Male	Female	Total
0 - 4	0	1	1
5 - 14	0	1	1
15 - 24	1	4	5
25 - 34	4	8	12
35 - 44	10	6	16
45 - 54	2	0	2
55 - 64	18	6	24
65+	7	4	11
Total	42	30	72

Source: Communicable Disease Control Unit, DPH&SS, Guam.

Table 27
TB Cases by Ethnicity of Patient
Guam: 1993

Ethnicity	# of Cases	% Distribution
Chamorro	20	27.7
Filipino	36	50.0
All Other (Asian & Caucasian)	16	22.3
Total	72	100.0

Source: Communicable Disease Control Unit, DPH&SS, Guam.

(2) Influenza

Influenza is an acute, contagious disease that is usually attended by fever and chills, body aches, and nausea. It is caused by virus, and the primary and principal site of infection is the respiratory tract. The symptoms are severe for several days, but the outcome is usually benign.

Influenza, which usually strikes in epidemics or even pandemics, used to be a major killer. Effective vaccination has been developed to protect the very young, the frail, and the old in the face of an oncoming epidemic.

Influenza can have severe complications and lead to death. The death of 12 people was directly attributed to this disease over the last 11 years. However, the major impact on a community

are the active days lost from school or work during an epidemic. The following table gives the frequency and incidence rates of reported influenza for the last 11 years.

The rates show a steady decline of the influenza epidemic from 1987 to 1992. However, comparing the 1992 cases with 1993 and 1994, the number of influenza cases increased drastically by 150 percent and 245 percent, respectively. As Guam is a major stop-over for people traveling from and to Asia and the U.S. mainland, the island population is vulnerable to epidemics or pandemics caused by different strains that are transported to Guam from different places of origin. It is therefore possible to find on Guam one strain of influenza traveling east and another one traveling west, with the population being infected by both strains.

Table 28
Incidence of Influenza
Guam: 1984 - 1994

Year	Number of Cases	Total Population	Rate Per 1,000 Population
1984	1606	116,110	13.83
1985	1267	118,791	10.67
1986	1472	121,534	12.11
1987	1838	124,340	14.78
1988	1751	127,210	13.76
1989	1032	130,147	7.93
1990	1090	133,152	8.19
1991	1194	136,226	8.76
1992	800	139,371	5.74
1993	1199	142,589	8.41
1994	1962	145,881	13.45

Source: Communicable Disease Control Unit, DPH&SS, Guam.

(3) Pneumonia

Pneumonia is an inflammation of the lungs, that may be caused by any one of many infectious agents, including bacteria, viruses, fungi and others. It can also be caused by the inhalation of chemical agents, by allergic reactions, through the exposure to radiation, or by the aspiration of liquid substances. Pneumonia can be present as a primary illness, or as a secondary by-product of another illness, such as with or after influenza. Some of the causative agents of pneumonia are resistant to antibiotics, sulfa drugs, and corticosteroids, so a cure cannot always be effected. In fact, pneumonia has been a leading cause of death in 8 out of the last ten years. An average of 18 persons have died from this condition each year. The figures presented in Table 29 show a sporadic incidence of pneumonia over the last 10 years, first with a decline then followed by an increase.

Meaningful comparisons between U.S. and Guam rates are not possible for the more recent

years, since deaths from pneumonia and influenza on Guam are reported together. Furthermore, pneumonia is often the by-product of another disease, which means that deaths from pneumonia can be both overreported and underreported. Nevertheless, this disease is one of the leading causes of death, and is of concern to the health planners and health services providers.

Table 29
Incidence of Pneumonia
Guam: 1983 - 1993

Year	Number of Cases	Total Population	Rate per 1,000 Population
1983	17	113,490	0.15
1984	7	116,110	0.06
1985	19	118,791	0.16
1986	26	121,534	0.21
1987	21	124,340	0.17
1988	19	127,210	0.15
1989	24	130,147	0.18
1990	14	133,152	0.11
1991	17	136,226	0.12
1992	16	139,371	0.11
1993	16	142,589	0.11

Source: Office of Vital Statistics, DPH&SS, Guam.

(4) Hepatitis

Hepatitis is an acute inflammatory disease of the liver caused by a viral agent. There are at least four types of viral hepatitis: Type A (infectious) hepatitis, type B (serum) hepatitis, delta hepatitis, and a fourth form referred to as non-A, non-B (NANB) hepatitis. While the viruses of types A and B have been well characterized, the delta virus has only recently been identified and no reliable assays exist to identify NANB antigens or antibodies.

Symptoms of hepatitis infection include abdominal discomfort, fever, nausea, fatigue, and jaundice. Children and young adults are more frequently affected and may be asymptomatic. Individuals with relative immunity from a previous infection may also be asymptomatic.

Hepatitis Type A

Hepatitis Type A is spread predominantly by the fecal-oral route, usually through the ingestion of contaminated food and water. Spread of the disease is associated with overcrowding, poor hygiene, or breakdown in normal sanitary conditions. Groups at high risk of developing the disease include institutionalized persons, children in day care centers, male homosexuals, drug addicts, and travelers to areas of the world where the disease is endemic. Outbreaks of the

type A on Guam have been traced to such sources as raw shellfish and infected food handlers.

Despite the increase in the incidence of Hepatitis A, Table 30, during 1985, Guam has seen an overall reduction in the infectious type of hepatitis. The average incidence rate of Hepatitis A on Guam from 1984 to 1988 was 0.12 per 1,000 population. In comparison, the 4-year average rate from 1989 to 1993 was 0.06 per 1,000 population. At first glance, this general decrease in the disease could be attributed to recent improvements in sanitation facilities and services throughout the island. However, a sharp increase from 0.02/1,000 (3 cases) in 1993 to 0.16/1,000 (23 cases) in 1994 requires re-evaluation of such improvements. Efforts must continue to maintain a lower incidence to the U.S. rate of 0.10/1,000.

Table 30
Incidence of Hepatitis A
Guam: 1984 - 1994

Year	Number of Cases	Rate/1,000
1984	16	0.14
1985	33	0.28
1986	20	0.16
1987	6	0.05
1988	8	0.06
1989	8	0.06
1990	13	0.10
1991	6	0.04
1992	8	0.06
1993	3	0.02
1994	23	0.16
10-year average rate per 1,000, 1975 - 1984:		0.37
10-year average rate per 1,000, 1984 - 1993:		0.09

Source: DPH&SS, Guam; GHP&DA.

Hepatitis Type B

Type B hepatitis has previously been associated with the transfusion of blood or contaminated blood products, needlestick accidents, and with the use of contaminated needles or syringes. Multiply-transfused persons, drug addicts, medical personnel, and dialysis patients compose the high risk groups for this disease. However, non-parenteral transmission of tube B hepatitis involving close personal or intimate sexual contact with an infectious individual have been reported and may become increasingly common.

Analysis of morbidity data for Hepatitis Type B shows the incidence rate on Guam is similar to the U.S. 1991 average of 0.05 cases per 1,000 population. As reflected in Table 31, the 10-year

average incidence rate from 1984 to 1993 is 0.07 cases per 1,000 population. This represents a significant decrease from the 1975 to 1984 average incidence rate of 0.12 cases per 1,000 population.

Although encouraging from an epidemiological standpoint, the morbidity data should be viewed with caution. A recent study by the Communicable Disease Control Unit of the Department of Public Health and Social Services suggests that a significant number of cases remains unreported. Analysis of cross section of the Department's clients showed that more than half (51.5%) had a history of Hepatitis B virus infection and that 5.5 percent were chronic carriers of the disease. In addition, the increased rise of cirrhosis and liver cancer has been associated with this persistent carrying of the disease and is of concern to health officials.

Table 31
Incidence of Hepatitis B
Guam: 1984 - 1994

Year	Number of Cases	Rate/1,000
1984	10	0.09
1985	11	0.08
1986	12	0.10
1987	8	0.06
1988	16	0.13
1989	4	0.03
1990	6	0.05
1991	3	0.02
1992	8	0.06
1993	6	0.04
1994	5	0.03
10-year average rate per 1,000, 1975 - 1984:		0.12
10-year average rate per 1,000, 1984 - 1993:		0.07

Source: DPH&SS, Guam; GHP&DA.

c. Sexually Transmitted Diseases (STD)

These are several diseases which are transmitted chiefly by sexual contact with an infected person. In addition to the two most common STDs, gonorrhea and syphilis, there are a number of other diseases in this group which include, but are not limited to the following:

Non-Gonococcal Urethritis (NGU)
Candida, Monilia (genital yeast infections)
Genital Warts
Chancroid

Trichomonas
Pubic Lice (crabs)
Genital Herpes (Herpes II)
Gardnerella

Chlamydia**AIDS**

Sexually transmitted diseases occur primarily among young people 15-30 years of age, but they can be contracted at any age. The risk for contracting STDs is greater for individuals with various sexual partners. More cases of STD tend to be detected in males, but this is due to the fact that women are often asymptomatic.

To date there is no vaccine which gives immunity from STDs and previous treatment for STDs does not create immunity from reinfection. Once someone has contracted a STD, proper diagnosis and treatment, including follow-up, is imperative if physical, and possibly, psychological damage is to be minimized. Since it is possible to have more than one STD at a time, the timeliness of treatment is also of great importance.

As everywhere else, Guam's most prevalent STDs are gonorrhea and syphilis, with gonorrhea having the highest incidence rate.

(1) Gonorrhea

Gonorrhea is a bacterial infection of the sex organs which also can infect the rectum, throat, eyes, joints, and skin. It is transmitted by various forms of sexual intercourse. Incubation period for males is 3 to 7 days, and variable in women. In a male, symptoms are obvious and provide discomfort, leading him to seek medical attention. Gonorrhea usually remains without symptoms in women unless complications set in.

Gonorrhea may be completely cured, without lasting damage to the body, if diagnosed and treated soon after infection. On Guam a significant problem had arisen when a new strain, penicillin producing neisseria gonorrhea (PPNG), emerged. However, there has been a decline in the number of PPNG diseases among both the military and civilian populations.

Table 32 provides frequency and rates of gonorrhea incidence for the civilian and military populations for the last 5 years. In 1991, the last year for which comparison figures are available, Guam's gonorrhea rates for both the civilian population and total population were lower than the U.S. rate of 1.49 per 1,000, but the military rate was higher than that of the U.S. rate.

As detailed in Table 32, the incidence of gonorrhea increased steadily and peaked in 1991 for the civilian population. The incidence showed a remarkable decrease of 192 percent between 1991 to 1993. As the table also indicates, the military population has a much higher rate than the civilian population, which impacts adversely on the total population rates used for comparison. The incidence reached its high point of 176 cases in 1990 and decrease by 780 percent to 20 cases in 1993.

At present, Guam has a successful 90 percent follow-up rate of all persons treated for gonorrhea. This figure could be improved, if all private clinics and physicians would rigorously report all gonorrhea cases (as mandated by law) to the Communicable Disease Control Unit of the Department of Public Health and Social Services for monitoring, and for tracing possibly infected contacts.

Table 32
Frequency and Incidence of Gonorrhea
Per 1,000 Population
Guam: 1990 - 1994

Year	Civilian Population		Military Population		Total Population	
	# of Cases	Incidence Per 1,000	# of Cases	Incidence Per 1,000	# of Cases	Incidence Per 1,000
1990	219	2.01	176	7.30	395	2.97
1991	239	2.13	84	3.47	323	2.37
1992	110	0.96	40	1.64	150	1.08
1993	82	0.69	20	0.82	102	0.72

Source: Territorial Epidemiologist, DPH&SS, Guam.

Table 33
Frequency and Incidence of Syphilis
Per 1,000 Population
Guam: 1989 - 1993

Year	Infectious (Primary & Secondary)	Congenital	Other	Total	Rate Per 1,000
1989	4	0	2	6	0.05
1990	3	0	5	8	0.06
1991	3	0	5	8	0.06
1992	2	0	1	3	0.02
1993	2	0	2	4	0.03

Source: Territorial Epidemiologist, DPH&SS, Guam.

If untreated, gonorrhea can result in epididymitis in the male as well as in pelvic inflammatory disease, ectopic pregnancy, stillbirth, and sterility in the female. It can also cause infections in the newborn, particularly in the eyes.

(2) Syphilis

Syphilis is caused by the spiral bacteria treponema palladium. It is primarily transmitted through sexual activity, enters the bloodstream and infects the entire body. The incubation period is from 17 to 21 days, but symptoms do not usually occur until 10 to 90 days or so after the infection has begun. The disease then progresses through the four stages of primary, secondary, latent, and tertiary (or late) syphilis.

During the primary stage a blister (chancre) develops and oozes a fluid which is highly contagious. This chancre is often painless and unnoticeable, particularly in women. At the same time lymph nodes may enlarge and be firm.

Secondary syphilis generally appears between 2 weeks and 5 months after infection, and long after the primary symptoms have disappeared. Body rashes characterize this stage of the disease. Other symptoms include headache, loss of appetite, sore throat, fever, joint pain and loss of hair. Mucus patches and highly infectious lesions are also often present.

During latent syphilis no symptoms are visible. Untreated syphilis may be latent for a life time, or progress to tertiary syphilis, which is the destructive stage of the disease. Any body organ may be involved; lesions called "gummas" may grow anywhere in the body and cause local destruction. Often the disease affects the brain and causes widespread damage to the nervous system. The end result of neurosyphilis may be blindness, deafness, insanity, crippling, and death.

Syphilis can be treated at any one of the four stages, and if treatment commences in the first, second, or latent stage (within 3-5 years of infection) the disease can be cured easily and completely. Most of Guam's cases are diagnosed and treated in the latent stage. Incidence is considerably higher for the civilian population as compared to the military population. Cases fluctuate for the civilian population, without showing a considerable improvement, but a downward trend is observed in the military population. Table 33 details numbers and rates for this disease.

A total of 14 primary or secondary cases of syphilis have been diagnosed on Guam during the past 5 years. Syphilis generally goes undiagnosed until it reaches the latent stage. Hence when comparing the 1991 incidence rate of syphilis among Guam's total population, 0.06/1,000, with the 1991 figures from the U.S., 0.51/1,000, it can be seen that Guam has an extremely lower rate of latent syphilis than the United States.

(3) Non-Gonococcal Urethritis (NGU)

This disease refers to an infection of the urethra (the tube that carries urine from the bladder to the outside of the body) which is caused by bacteria or viruses other than gonorrhea. Chlamydia causes 70 percent of NGU. Symptoms are milder than those of gonorrhea; females are frequently asymptomatic, or the symptoms are less specific and cause confusion with other

diseases. Antibiotics are used for treatment. There were 120 cases in 1993, amounting to 47 percent of all treated STDs.

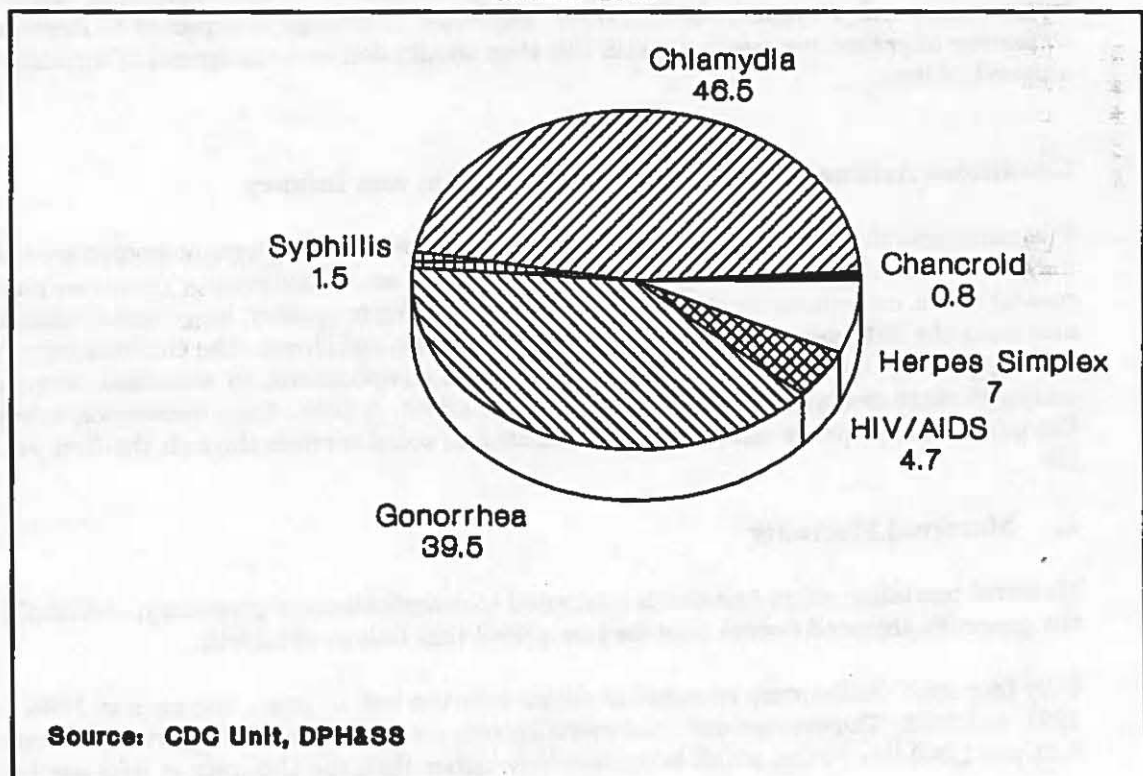
(4) Trichomonas

This is an infection caused by a protozoa. It is often referred to as "Ping Pong VD" because a symptomatic female may give the disease to a partner, get herself treated, but is then reinfected by the partner. If this disease is to be cured, both partners must be cured at the same time. Fifteen such cases were identified in 1984.

(5) Other Sexually Transmitted Diseases

There were two cases of Chancroid and 18 cases of Herpes Simplex Type II reported in 1993. Figure 13 shows a distribution of the total reported cases of sexually transmitted diseases for the year.

Figure 13
Total Reported Cases of Sexually
Transmitted Diseases By Type
Guam: 1993



(6) Human Immuno-deficiency Virus (HIV)/Acquired Immune Deficiency Syndrome (AIDS)

As of August 1994, there were 70 reported cases of AIDS/HIV on Guam. Twelve have died from AIDS. This disease has increased from the two suspected cases in 1985 and has become a matter of great concern to the island's health providers.

AIDS is a serious condition characterized by a specific defect or weakness in natural immunity against diseases. This weakness permits development of rare cancers and infections. At present there is no cure for AIDS. Persons diagnosed with this disease will not recover and may survive less than 3 years.

AIDS is seen primarily in sexually active homosexuals, bisexuals, heterosexuals, intravenous drug users, Haitian immigrants (who are neither homosexual nor drug users), and hemophiliacs. Babies born to women with AIDS are also affected, and many cases have been reported which were caused by "contaminated" blood transfusions. As Guam sees many new arrivals and tourists in any given year, there is a very real risk of AIDS being imported to the island. In the Western Pacific Region, alone, the number of AIDS cases increased 500 percent.

Sexually transmitted diseases have increased nationwide and on Guam, where the military personnel has an extremely high incidence rate of gonorrhea. Public awareness of these diseases must be increased. Many people are not aware of the symptoms, treatment, transmission, and prevention of the STDs. Increased knowledge is expected to increase the utilization of preventive measures, and this then should decrease the spread of infection over a period of time.

3. Conditions Arising from Pregnancy, Childbirth, and Infancy

Pregnancy and childbirth are normal physiological processes. Most pregnant women are healthy individuals for whom birth is a welcome, familiar, and emotional event. However, physical, mental, social, and emotional changes that can occur during pregnancy, labor, and childbirth can also make the difference between life and death, or health and illness. The childbearing process can range from normal and safe deliveries without complications, to abnormal pregnancies ending in death or illness of either the mother, the infant, or both. Once delivery has occurred, the infant then requires comprehensive medical and social services through the first years of life.

a. Maternal Mortality

Maternal mortality refers to a death attributed to complications of pregnancy, childbirth, and the generally accepted 6-week post-partum period that follows childbirth.

Only four such deaths were reported in Guam over the last 10 years, one each in 1983, 1988, 1991, and 1992. The average maternal mortality rate for each of these years was approximately 0.31 per 1,000 live births, which is considerably higher than the U.S. rate of 0.08 per 1,000.

b. Fetal Mortality

Fetal mortality is the term used for the death of the product of human conception that occurs 20 weeks or more after gestation. Such death occurs prior to the complete expulsion or extraction of the fetus from the mother, irrespective of the duration of pregnancy after the initial 20 weeks. A fetal death is pronounced when after expulsion or extraction, the fetus does not breathe or show any other evidence of life, such as the beating of the heart, the pulsation of the umbilical cord, or a definite movement of voluntary muscles.

Any number of complications during pregnancy can cause fetal death, often leading to spontaneous abortions. During the last 5 years, 1988 to 1992, an average of 33 such fetal deaths occurred each year. Therapeutic and voluntary abortions performed after the first trimester of pregnancy can also be causes of fetal death.

c. Infant Mortality

The infant mortality rate is calculated by relating the number of infants who die during their first year of life to the number of live births that occur during a given period. This rate is an often used measurement of health status because of the close relationship between infant mortality and other indicators of the quality of life, such as education and income levels, and the quality and accessibility of medical care.

Rates for infant mortality are presented in Table 11 at the beginning of this chapter and described in detail.

d. Neonatal Mortality

The neonatal mortality rate is derived from the number of infant deaths occurring before the 28th day of life in relation to 1,000 live births registered in a given period. The neonatal mortality rate is a more sensitive measurement of a community's health status than the infant mortality rate since it is often used to determine if infant deaths are related to the management of pregnancy and care during delivery. The neonatal mortality rates are in Table 11 of this Chapter.

e. Causes of Infant Death

In addition to calculating infant mortality rates it is also very important to identify the leading causes of infant death. Table 34 lists these causes. Conditions originating in the perinatal period, such as fetal malnutrition, birth trauma, and isoimmunization, constitute one of the most frequently identified causes of infant death.

f. Premature, Immature, and Low Birthweight Infants

Low birthweight infants are most frequently associated with premature and immature births.

Table 34
Leading Causes of Infant Death
Guam: 1982 - 1992

Rank	Cause	Percent of Deaths	Percent Occurring During Neonatal Period
1	Residual	25.4	43.8
2	Conditions Occurring in the Perinatal Period	23.4	95.1
3	Congenital Anomalies	17.4	78.7
4	Disorders Relating to Short Gestation, Birth Trauma, and Asphyxia	9.7	94.1
5	Sudden Death, Cause Unknown	6.8	8.3
6	Respiratory Distress	4.6	87.5
6	Pneumonia	4.6	18.8
7	Accidents	2.8	20.0
8	Congenital Anomalies of the Heart	1.1	50.0
8	Fetal Hemorrhage	1.1	100.0

Source: Office of Vital Statistics, DPH&SS, Guam.

Since low birthweight is one of the major determinants of infant mortality, its incidence on Guam is of particular concern. Over the last 5 years an average of 7.73 percent of infants born on Guam were low birthweight babies, detailed in Table 35.

Table 35
Proportion of Low Birthweight Infants
Guam: 1988 - 1992

Year	Number of Live Births	Number of Low Birthweight Infants	Percent
1988	2,548	272	7.67
1989	3,565	280	7.85
1990	3,850	280	7.27
1991	3,921	292	7.45
1992	4,214	324	7.69
Average			7.73

Source: Office of Vital Statistics, DPH&SS, Guam.

Guam's 3-year average (1988 to 1990) at 7.60 percent of low birthweight infants is considerably higher than the 6.8 percent of low birthweight infants in the United States. As is the case with infant mortality, certain ethnic groups, Table 36, on Guam experience a higher percentage of low-weight births than others.

Between 1990 and 1992, 7.62 percent of the Micronesian births were low-weight births; during the same period, the proportion of low birthweight infants among Chamorros was 7.84 percent. Both groups had almost twice the proportion of Caucasian low-weight births which, on the average, accounted for only 4 percent of all Caucasian births.

Table 36
Proportion of Low Birthweight Infants by Ethnicity
Guam: 1990 - 1992

Ethnicity	1990 (%)	1991 (%)	1992 (%)	3-Year Average (%)
Chamorro	7.09	8.36	8.06	7.84
Filipino	7.02	7.59	8.60	7.74
Caucasian	5.65	4.70	3.56	4.64
Micronesian	6.78	7.84	8.25	7.62
Other (Mostly Asian)	10.90	6.26	7.87	8.34

Source: Office of Vital Statistics, DPH&SS, Guam.

Low Birthweight infants are born in greater proportion by women below the age of 20 and over 40. Other risk factors which contribute to low birthweight are improper nutrition, cigarette smoking, alcohol and drug abuse, maternal hypertension, kidney disease, or pelvic inflammation. There is also a close correlation between inadequate prenatal care and low birthweight.

g. Congenital Anomalies

Congenital anomalies, or birth defects, are present when a child is born. Though a specific case has not been identified for every defect, it is known that some of them are rooted in either human biology, environment, lifestyle, and/or health care related factors.

Genetic defects, the age of the mother, and the parity of births all contribute to the biological development of a child. Genetic defects are caused by an abnormality of chromosomes, and can result in Down's Syndrome (mongolism). Some of these defects are hereditary and are passed from parent to child. Cystic fibrosis, hemophilia, sickle cell anemia, and tay-sachs disease are some of these hereditary defects. Developmental defects can result in deformities such as cleft palate, spina bifida, or major structural heart defects.

Some defects are induced environmentally, that is by outside (teratogenic) agents. For example, exposure to ionizing radiation and heavy pollution have been found to be responsible for many

cases of birth defects. Likewise, the exposure of a mother to rubella during the first months of pregnancy has also been known to result in defects.

There is growing evidence that maternal lifestyle is related to infant mortality, morbidity, and anomalies. Dietary pattern, the use of alcohol or drugs, and smoking have all been associated with congenital anomalies. Early access to and utilization of adequate health care services from the early months of pregnancy through labor and the postnatal period have been instrumental in the prevention or mitigation of birth defects as well.

The public usually associates congenital anomalies with obvious, even gross physical deformity. However, many metabolic defects, such as phenyl ketonuria, hypothyroidism, or cystic fibrosis are barely or not at all visible at birth. Whether visible or not, congenital anomalies are the leading cause of infant mortality. An average of 16 percent of Guam's infant deaths, from 1983 to 1992, are a consequence of such anomalies. Of the surviving Guam infants, approximately 3 percent have congenital anomalies that require one or more remedial activities to ensure a good quality of life.

4. Health Problems of Children

a. Otitis Media

Otitis media is the medical term for an acute or chronic inflammation, and/or infection of the middle ear. Allergies occasionally contribute to the inflammation and infection of the middle ear. However, middle ear infections are more often associated with upper respiratory infections (colds and flu) and are believed to occur when bacterial or viral agents from the throat enter the middle ear by way of the eustachian tube. When the eustachian tube becomes obstructed because of inflammation or infection, fluid collects in the normally dry middle ear cavity and impairs the conduction of airborne sounds. If the volume of the fluid increases, the built-up pressure leads to a rupture of the tympanic membrane (ear-drum), causing permanent damage.

It is difficult to establish the exact incidence of otitis media and the prevalence of hearing loss in children. Screening to identify hearing difficulties are carried out for specific school-age groups and certain locations, but no island-wide efforts have been made to screen pre-schoolers. Furthermore, diagnosed cases of otitis media are not reported by medical practitioners, and therefore reliable data is not available.

Guam's children under the age 10 have a particularly high incidence of middle ear infections. It is estimated that approximately 30 percent of all pre-schoolers suffer from acute or chronic otitis media, some of them with attendant hearing loss. For school-age children, this incidence lowers to approximately 20 percent.

While the consequences of hearing loss are hard to define or measure, studies have shown a relationship between hearing loss and developmental problems in children. Language skills of children who have hearing loss due to middle ear infection are delayed, and such children perform on average below their actual grade placement level.

The importance of increased screening activities for all children under the age of 12 cannot be emphasized enough. Community education on the signs and consequences of otitis media should

be geared towards high school students, and aimed particularly at new parents.

b. Dental Caries

Children's dental problems are of national concern. This is emphasized by data from the National Center for Disease Control, which shows that 30 percent of all children under 18 have never been to a dentist. By age 10, the average American child has two decayed permanent teeth; by age 17, the average youth has six decayed, missing, or filled teeth.

The high prevalence of dental caries among Guam's children is of particular concern to the island's health providers. Dietary changes over the past decades, and a lack of information about the effects that food and soft drinks with a high sugar content have on one's teeth, are partially to blame for this condition. Insufficient intake of fluoride and inadequate dental hygiene practices are other contributory factors.

A rather unique problem on Guam is the nursing bottle mouth syndrome, which refers to the badly decayed primary teeth in young children caused by the practice of putting the child to sleep with a bottle filled with milk, fruit juice, or soft drinks (e.g., Pepsi, Coca-Cola). Although no island-wide data has been compiled, one of Guam's two pedodontist reports that the majority of his 1-3 year old patients are in the early or advanced stage of the disease. Many parents are unaware that baby teeth must be saved in order to maintain space in the jaw for the permanent teeth which may otherwise grow in crowded or crooked.

While the availability and accessibility of dental manpower and preventive dentistry programs are of utmost importance, dental health providers feel that the uniform fluoridation of the community's water system would have the greatest impact on the dental health of the island's children, and eventually, all the population.

5. Chronic Diseases and Disabilities

Chronic illness is a major health problem in the United States, as well as on Guam. This is a result of lower mortality from infectious and parasitic diseases, acute illness, and injuries; improvements in medical technology and care which prolong life for those with chronic problems; and increased social stress. It can cause death in any age group; however, it is much more frequently the cause of disability and death for those aged 45 and older. Elderly persons often suffer from multiple chronic conditions; circulatory system diseases, diabetes and arthritis are particular problems of the older population.

Chronic conditions generally develop over a period of years, require extensive remedial treatment, and cause recurring episodes of illness. While it is difficult to obtain substantive data on chronic diseases and disabilities, it can be stated that the impact of chronic conditions on the health care needs of a community is greater than that of acute and communicable diseases, and that chronic diseases pose a major, and growing, threat to health status.

Chronic diseases are not required to be reported to the Department of Public Health and Social Services, and as a result, their incidence and prevalence must be determined through surveys

and estimates made from hospital and physician's office data.

Categories of chronic conditions are those of the circulatory system, of the neuromuscular system, of the musculoskeletal system, of the pulmonary system, and of the endocrine/metabolic systems. It is common for an afflicted person to suffer from multiple chronic conditions.

a. Diseases of Circulatory System

The cardiovascular system consists of the heart and all the blood vessels in the body. Heart disease, blood vessel disease, stroke, and related disorders are often interrelated and are usually classified as cardiovascular disease. These diseases, with heart disease as the major one, kill more of the United States population than all other causes of death combined. Cardiovascular disease and its precursor, hypertension, and cerebro-vascular disease have been selected as a Health Status Priority problem and are discussed in Chapter IV.

b. Cancer (Malignant Neoplasms)

Cancer is the disease most feared by Americans; one in four persons can expect to develop the disease during their lifetime. Cancer has been the second most common cause of death in the U.S.A. for the past two decades and has been selected as a Health Status Priority and is discussed in Chapter IV.

c. Neuromuscular Diseases: Lytico (Amyotrophic Lateral Sclerosis) and Bodig (Parkinsonism Dementia)

The main two diseases in this category are Amyotrophic lateral sclerosis (ALS) termed lytico on Guam, and Parkinsonism dementia (PD) known as bodig.

Lytico and bodig are found in such high concentration among the Chamorro population that they have attracted national and international attention. Extensive studies conducted by the National Institute of Neurological and Communicative Disorders and Stroke (NINCDS) over the past 30 years have yet to find the reason for the high incidence or the cause of these devastating diseases of the central nervous system.

(1) General Information

(a) Lytico (Amyotrophic Lateral Sclerosis - ALS)

Amyotrophic lateral sclerosis (ALS) is a disease of the central nervous system which causes the spinal cord to atrophy slowly and progressively over a period of time. At the onset of the disease most individuals develop a weakness or the wasting of hands and legs, and experience difficulty in walking. After a while the muscles in the neck as well as the tongue are affected; speech becomes slurred and eating and weakness are so severe that the patient becomes "skin and bones" with completely useless arms and legs. Although the body wastes away, good mental acuity is usually preserved until death. A healthy mind then is imprisoned in a helpless body devoid of expression and locomotion.

(b) Bodig (Parkinsonism Dementia)

Patients with bodig are afflicted with a progressive muscular rigidity or stiffness and mental deterioration. The first signs are usually tremors of the hands, which progress into shakes and a slowing down of daily activities. A typical patient initially appears aloof, absent-minded, careless, and generally disinterested in his surroundings. He may complain of dizziness, tiredness, or vague anxiety symptoms. He forgets things and frequently sits immobile, staring into space, and sleeps a great deal. The face develops a staring, unlined, mask-like appearance with little or no variation in expression. He walks slowly and unsteadily and is therefore prone to frequent falls. Along with this comes mental deterioration which mimic other senile conditions.

(c) Cross-Over Cases (Guam Parkinsonism Syndrome)

There are several persons on island who exhibit the symptoms of both lytico and bodig at the same time. They were either stricken with both diseases at once, or had one and then developed the other. The outcome is the same, since both diseases are considered catastrophic or terminal.

(2) Mortality and Morbidity

Table 37 show trends of incidence, prevalence, and mortality over the years, as well as an age and ethnic breakdown of the patients.

Table 37
Other Diseases of the Central Nervous Systems
ALS/PD Mortality Rates Per 1,000 Population
Guam: 1983 - 1992

Year	Total Death	# of ALS/PD Deaths	% of Total Deaths	Rate
1983	462	15	3.2	0.13
1984	450	15	3.3	0.13
1985	441	17	3.9	0.14
1986	451	10	2.2	0.08
1987	486	13	2.7	0.10
1988	492	14	2.8	0.11
1989	544	13	2.4	0.10
1990	557	14	2.5	0.11
1991	607	17	2.8	0.13
1992	585	14	2.4	0.10
10-Year Avg.		14	2.8	0.11

Source: Office of Vital Statistics, DPH&SS, Guam.

In order to assure the continuity and quality of care Guam's lytico and bodig patients as received from the NINCDS clinic, it is recommended that this clinic will be continued by the Government of Guam and that sufficient funds for clinic operations will be allocated by the legislature. It is also recommended that the Government of Guam encourages further research efforts into lytico and bodig and investigate alternate funding sources for such research.

d. Musculoskeletal Diseases

Many conditions involving the muscular and skeletal system known as arthritis are also known as rheumatoid disease. Arthritis means inflammation of a joint. Most forms of arthritis are usually chronic and last for years. The more serious forms involve inflammation, swelling, redness, warmth, and pain in the affected joints.

The most common forms of arthritis are rheumatoid arthritis, osteoarthritis, and gout.

- (1) Rheumatoid arthritis is an inflammation of the joint membrane. It varies in severity and can cause severe crippling. It most frequently appears in the joints, fingers, wrists, elbows, hips, knees, and ankles. Any age group can be afflicted by this disease, but it is seen mostly in women over 30 years of age.
- (2) Osteoarthritis, also called degenerative joint disease, generally appears late in life or after a joint injury. Knees, hips, and the spine are usually affected.
- (3) Gout is a painful form of arthritis, linked to heredity and diet. This disease is associated with high uric-acid levels and therefore attacks of gout are related to the intake of certain foods and alcoholic drinks. Gout usually settles in the big toe and the bones of the foot and is extremely painful during an attack.

Arthritis does not kill people. However, it is painful and restricts activities of the people suffering from the disease. It requires close medical attention and expensive medication for pain relief. No reliable data are available for this disease category; however, it is so widespread in the U.S. and throughout the world that it has become a global public health problem.

e. Pulmonary System Diseases

Asthma, bronchitis, emphysema, and chronic obstructive pulmonary disease are classified in this category. While precise prevalence has not been established, it is known that those suffering from these diseases are often debilitated and incapacitated by their condition. Hospital admissions are frequent, and there are several deaths each year caused by one or the other diseases.

A variety of factors can lead to asthma; however, it is most likely to develop in individuals with allergies who are exposed to substances which cause bronchospasms.

The smoking of tobacco in any form is a causative or contributive factor in the chronic diseases of the pulmonary system. Preventive measures must be geared to the control of smoking in order to achieve measurable declines in the morbidity and mortality rates of these conditions.

f. Endocrine and Metabolic Systems Diseases

The major disease of the endocrine and metabolic systems is diabetes, which has been selected as a Health Status Priority problem and is described in Chapter IV. Other diseases of concern in this category are chronic liver disease and cirrhosis of the liver.

Cirrhosis of the Liver.

Cirrhosis is a disease marked by progressive destruction of liver cells. This is accompanied by the regeneration of liver substance and the increase in connective tissue. Upon examination, the liver is sometimes enlarged, but more often is shrunken and hard.

Cirrhosis and chronic liver disease can have many causes. Hepatitis A and B are linked with cirrhosis, but it is most strongly associated with alcohol consumption. Genetic and dietary factors may also be important in the etiology of this disease.

Each year, approximately 1 percent of all deaths are caused by these conditions. In 5 out of the last 10 years, Table 38, they were included in the ten leading causes of death, with an average of 13 deaths per year. The deaths usually occur in the middle and later years, and claim many more males than females.

Prevention of morbidity and mortality of chronic liver disease and cirrhosis must be geared primarily toward the control of alcohol consumption.

Table 38
Deaths Caused by Liver Disease
Guam: 1983 - 1992

Year	Rank	#	% of Total Deaths
1983		10	0.88
1984	9	11	0.95
1985		10	0.84
1986		6	0.49
1987		10	0.80
1988	7	17	1.34
1989	8	19	1.46
1990	9	17	1.28
1991	10	16	1.18
1992		11	0.79
Total		127	

Source: Office of Vital Statistics, DPH&SS, Guam, 1974 - 1983.

g. End Stage Renal Disease (ESRD)

Chronic kidney disease or end stage renal disease (ESRD) is damage to the kidneys and usually occurs over a long period of time. The condition can develop after a kidney is damaged through an accident, after a severe bout of glomerulonephritis, as a consequence of untreated diabetes or hypertension, and in some instances because of hereditary kidney malformation or malfunction.

Kidney disease impairs the kidney's major function of filtering waste products from the body. When the disease progresses to the point where management through diet modification is no longer possible, a diagnosis of end stage renal disease is made. ESRD is fatal if left untreated. Dialysis or kidney transplantation are the accepted treatments to maintain life and conserve health in the patient.

Guam's rate for patients diagnosed with ESRD is considerably higher than that in the United States. In 1992, there were 116 patients enrolled in Guam's hemodialysis program; 10 percent of enrollees die each year. Even though these are not very large numbers, of one considers that the yearly costs per patient for hemodialysis are in the excess of \$60,000, and that a patient spends between 10-15 hours per week on the dialysis apparatus, then the impact of this disease on the patient, the community, and the health care system becomes substantial.

6. Mental Health

There is neither a precise nor a scientific definition of mental health, and the exact incidence of mental illness is unknown. Consequently, mental health is considered to exist when no mental illness is diagnosed.

Traditionally, a diagnosis of mental illness followed the medical model and was classified into organic and functional disorders. At present, this no longer holds true. Most organic dysfunctions are now more appropriately called mental retardation, an area of specialization apart from the mental health system. Other organic disorders due to physical causes, chemical or biological, are more often treated within the traditional medical care systems. The broad class of functional disorders indicative of mental illness include psychosis, neurosis, character and personality disorders, psychosomatic illness, and trait and behavior disorders.

Mental health has been described as the ability to resist stress, to be autonomous (i.e., to make independent decisions), and to adapt satisfactorily to changing life circumstances. Specialists in the field of mental health suggest that indicators of positive mental health should be sought in the attitudes of an individual towards one's own self. Mental health professionals see the essence of mental health in an on-going process variously called self-actualization, self-realization, growth, or becoming self-sufficient. Mastery of the environment is considered yet another criterion of mental health. Such mastery includes efficiency in meeting situational requirements and problem-solving, adequacy inter-personal relationships, and the capacity for adaption and adjustment.

Mental illness is seen as having complex causes. Life stresses, the quality of the total environment, the interactions of family and community, are equally important in understanding and treating mental illness. The increasing evidence correlating socio-economic status to the

incidence and type of mental illness must also be taken into consideration.

A rapidly changing society, as it exists on Guam, is presenting stresses to both individuals and the community for which they are not prepared. It is important that a community's mental health is predicated on the quality of community life and on the interaction of people and social institutions.

If a community appears violent, disharmonious, and non-supportive, then people often adopt deviant means to survive in it. The growing incidence of alcohol and drug abuse, of violent crimes against persons, and suicide must be seen as both manifestations of individual and societal dysfunction and as extreme means of coping with the frustrations produced by this dysfunction.

a. Alcohol and Drug Abuse

Because of the increasing incidence on alcohol and drug-related offenses, alcohol and drug abuse have been selected as a Health Status Priority problem and are discussed in Chapter IV.

b. Violent Crimes Against Persons

Such crimes are most often the ultimate expression of anger and frustration against other human beings. Usually they are performed in a state of rage and/or under the influence of alcohol or drugs.

(1) Homicide

The causes of homicide include various physiological and social conditions, and not all of them can be related to mental health problems. However, homicide was a leading cause of death on Guam in 8 out of the last 10 years, and claimed an average of 14.3 persons each year. It is a serious problem in our community. The victims are usually young males; three times as many males lose their lives to homicide than females, as illustrated in Table 39 and Figure 14.

The 10-year average homicide rate of 0.12 per 1,000 persons for Guam's total population is somewhat higher than the U.S. rate of 0.11 per 1,000 persons for 1990.

The rates for males, 0.08/1,000 population, as well as for females, 0.03/1,000, compares relatively close to the U.S. rates of 0.13 and 0.03, respectively. On Guam, 27.3 percent of the homicide victims were female. This follows closely the national trend.

(2) Other Violent Crimes

Forcible rape, aggravated assault, sex offenses, offenses against family and children, and simple assault are other crime categories by which a community's mental health can be assessed. Whereas one cannot use such rates as a direct measurement of the community's health status, they indicate that social conditions and mental stability are in jeopardy.

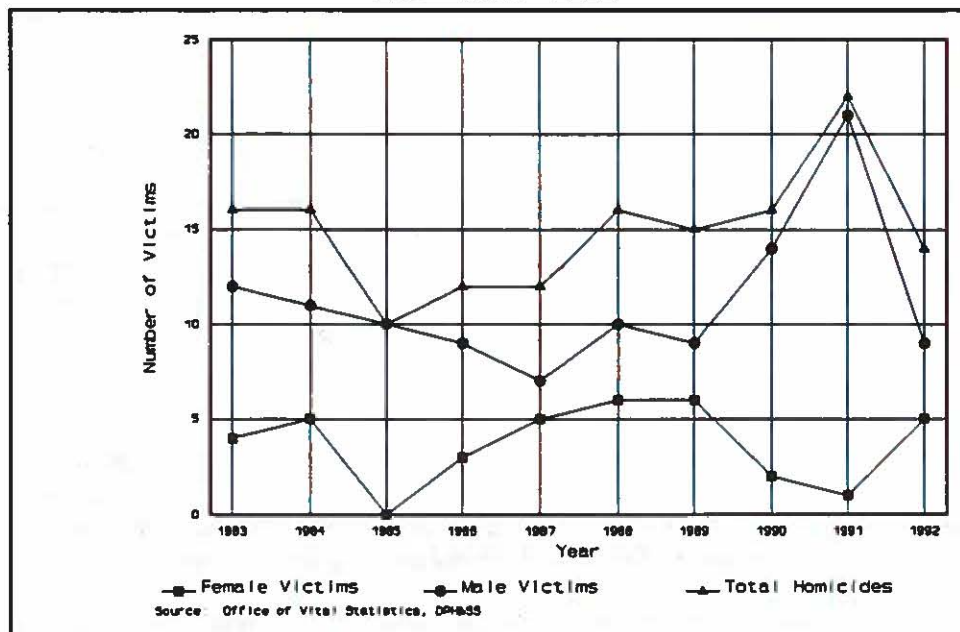
As detailed in Table 40, violent crimes against persons show an upward trend. The number of forcible rapes showed a gradual increase from 1990 to 1992, but then decreased by 58.6 percent between 1992 and 1993. Aggravated assault cases shows a fluctuation which netted a 20

Table 39
Homicide Rates Per 1,000 Population
Guam: 1983 - 1992

Year	Total # of Homicides	Rate	Male	Rate	Female	Rate
1983	16	0.14	12	0.10	4	0.04
1984	16	0.14	11	0.10	5	0.04
1985	10	0.08	10	0.08	0	0.00
1986	12	0.10	9	0.07	3	0.03
1987	12	0.10	7	0.06	5	0.04
1988	16	0.13	10	0.08	6	0.05
1989	15	0.12	9	0.07	6	0.05
1990	16	0.12	14	0.11	2	0.01
1991	16	0.12	13	0.10	3	0.02
1992	14	0.10	9	0.06	5	0.04
10-year Average	14.3	0.12	10.4	0.08	3.9	0.03

Source: Office of Vital Statistics, DPH&SS, Guam, 1983-1992.

Figure 14
Homicide Count By Sex of Victim,
Guam: 1983 - 1992



percent increase between 1990 and 1992 and decreased by 14 percent in 1993. Simple assault shows the same pattern as aggravated assault, however, an increase of 20 percent can be seen between 1992 and 1993. Offenses against family and children dropped in 1990, increased by 47.4 percent in 1991, and dropped to 35.7 percent in 1993. Sex offenses have drastically declined by 77.8 percent between 1990 to 1992, but emerged alarmingly by 70.7 percent in 1993.

Table 40
Violent Crimes Against Persons
Guam: 1990 - 1993

Crime Category	1990	1991	1992	1993
Forcible Rape	76	96	111	70
Aggravated Assault	151	130	175	153
Sex Offenses	54	36	12	41
Offenses Against Family & Children	10	19	13	14
Simple Assault	422	446	347	415

Source: Guam Police Department.

c. Suicide

Suicide has been a leading cause of death for 8 years during the 10-year period (1983 to 1992) and has claimed an average of 16 lives per year. The male suicide rates are considerably higher than the female rates. An upward trend, particularly for males, can be observed for the last 8 years, as demonstrated by Table 41 and Figure 15.

Mental health experts in the U.S. mainland claim that for each actual suicide, there are 8 unsuccessful attempts. Preliminary data shows that in Guam there were fewer reported attempts. For 1985 to 1991, a ratio of 1 completed suicide to 2.5 attempts has been calculated.

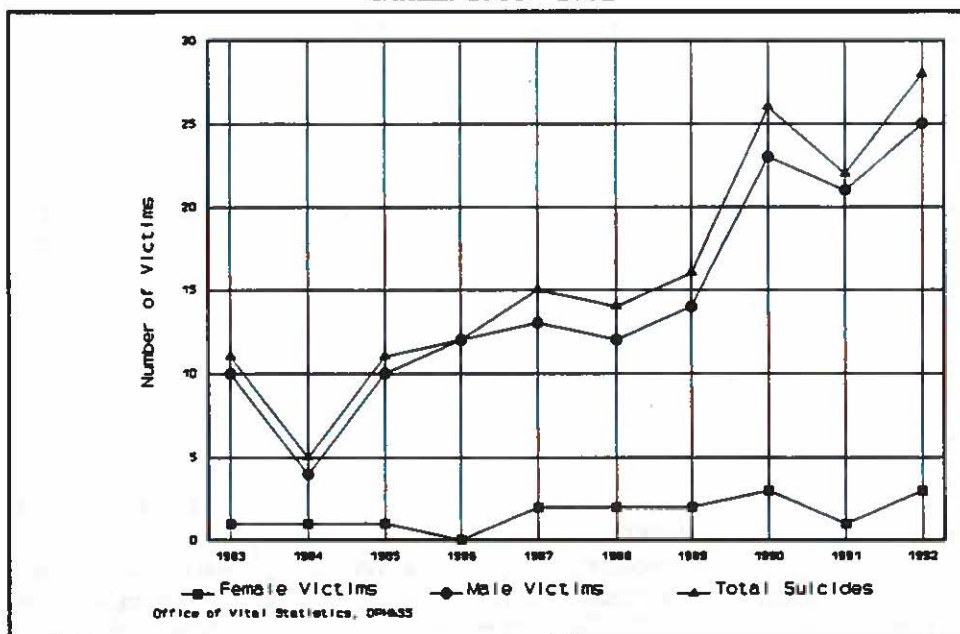
There are many theories as to the causes of suicide; an important one centers on the degree of support which the individual receives from society. Stress is also a major factor in suicide and a close correlation between divorce and suicide has been shown in the U.S. mainland. When there are rapid changes in a person's life, whether cultural, social, or economic, various degrees of intolerance are created. The levels of frustration in individuals tend to increase, and those not equipped with healthy coping mechanisms will act out their frustration against themselves through suicide (or through homicide, wife or child abuse, or other forms of violence).

Table 41
Suicide Rates Per 1,000 Population
Guam: 1983 - 1992

Year	Total # of Suicides	Rate	Male	Rate	Female	Rate
1983	11	0.10	10	0.09	1	0.01
1984	5	0.04	4	0.03	1	0.01
1985	11	0.09	10	0.08	1	0.01
1986	12	0.10	12	0.10	0	0.00
1987	15	0.12	13	0.10	2	0.02
1988	14	0.11	12	0.09	2	0.02
1989	16	0.12	14	0.11	2	0.01
1990	26	0.19	23	0.17	3	0.02
1991	22	0.16	21	0.15	1	0.01
1992	28	0.20	25	0.18	3	0.02
10-year Average	16.0	0.12	14.4	0.11	1.6	0.01

Source: Office of Vital Statistics, DPH&SS, Guam.

Figure 15
Suicide Count by Sex of Victim
Guam: 1983 - 1992



7. Lifestyle-Related Health Problems

Guam, like the continental United States, has experienced significant shifts in mortality patterns since the turn of the century. Acute and infectious diseases have dramatically declined due to the improvement in sanitation, the provision of potable water, introduction of mass immunization, and the advances in pharmacology and medical technology. Chronic diseases have now become the leading causes of death in the U.S. and also on Guam.

A reduction in the mortality rates of chronic diseases can best be effected by preventive measures. These measures must be centered on individual lifestyles or behavior, since behavior has substantial impact on health and well-being. Lifestyle patterns such as smoking, the lack of exercise, poor eating habits, excessive stress, as well as alcohol and drug abuse have proven to be casual factors of chronic disease.

A commitment by individuals to maintain their own health and a willingness to modify personal behavior towards a healthier lifestyle is seen as the ideal in the prevention and management of chronic diseases, particularly hypertension, heart disease, and diabetes. However, changing lifestyles is not an easy task. We live in a consumer-oriented society which glamorizes hazardous behavior such as smoking, drinking, and excessive eating through advertising and mass media campaigns.

Nevertheless, the prospect for good health and the reduction of chronic disease can be achieved through the modification or control of the following:

a. Smoking

Cigarette smoking is the single most preventable cause of illness and premature death. Statistics show that cigarette smokers in the U.S. have a 70 percent higher overall death rate than non-smokers. Smoking is a causal factor in coronary heart disease and diseases of the vascular system. It is the most important cause of chronic obstructive lung disease and has been definitely linked to lung cancer. During pregnancy, cigarette smoking increases the risk of abortion, retarded fetal growth, and even fetal and neonatal death.

The remarkable aspect about the above presented information is that smoking is a voluntary action and theoretically all of the listed damages could therefore be prevented.

b. Lack of Exercise

Although in the past decade a resurgence of interest in physical fitness and exercise has been exhibited, regular exercise programs are still not included in the daily activities of most of Guam's residents. Furthermore, exercise as a therapeutic regimen has been largely ignored by health professionals.

The exact health benefits derived from regular, physical exercise have not been fully defined, but continuing research has suggested that appropriate exercise programs will enhance the treatment and prevention of heart disease, obesity, hypertension, diabetes, musculoskeletal problems, stress, anxiety, and depression. Besides this, people who exercise feel better, are

more productive, and are generally happier than their sedentary peers.

Aerobic exercises such as walking, running, swimming, and bicycling are rhythmic and require a large intake of oxygen, and are therefore the most beneficial for the cardiovascular system and the whole body.

c. Poor Eating Habits

Sensible nutrition is necessary for optimal growth and development, physical activities, reproduction, lactation, recovery from illness and injury, and maintenance of health throughout the life cycle. Nutrition is particularly important for the population at risk, which includes the very young, pregnant and nursing women, the elderly, and people with low incomes.

Guam is fortunate enough to have sufficient food for all its people. The Foodstamp, Women and Infant Care (WIC), and Senior Nutrition Programs are designed to ensure proper nutrition for particular populations. However, while the availability or quantity of food is not a problem on the island, the quality and the composition of the meals are of major concern to the health providers.

Obesity is a widespread problem not only on Guam but also in a large portion of other Pacific Islands, which now seem nutritionally less well off than in the past. Originally, most traditional Pacific Island diets seemed nutritionally sound. However, nutritional practices have generally deteriorated in recent times as a result of cultural and economic changes. The traditional natural foods of an agrarian society have, to a great extent, been displaced with imported, processed "western" foods that are high in refined sugars, salt, saturated animal fats, food preservatives, and additives, but low in fiber, minerals and vitamins. Meals high in carbohydrates and fats, and therefore high in calories, have contributed to a population which is largely overweight, if not obese.

Another factor has to be mentioned here. Many aspects of Guam's culture are closely linked to communal food preparation and consumption. All personal and family events, such as births, baptisms, graduations, job promotions, marriage, and even death are commemorated with a "fiesta," a large feast featuring tables laden with many kinds of food from which family members, relatives, neighbors, villagers, and even passers-by partake to the fullest. Food always was, and still is, prepared in large enough quantities to be eaten whenever anyone is hungry and to be shared with any visitor, no matter what time of the day or night. In the pre-war days, large food intake was balanced by strenuous fishing and farming activities and housework requiring many calories. Over the past decades these activities have been replaced by a much more sedentary way of life, but the old eating patterns were carried on, resulting in an increase of obesity among the island population.

Obesity has been recognized as a causative factor, if not a precursor, of hypertension, cardiovascular disease, diabetes, gout and hyperuricemia, bowel and intestinal cancer, tooth decay, and some of the musculoskeletal conditions. For persons who weigh more than 15 to 20 percent of their recommended body weight, treatment is indicated to avoid the above mentioned diseases.

d. Hypertension

Hypertension (high blood pressure) is the second largest underlying cause of heart disease and as such is a major health concern and public health problem in the U.S. and on Guam. Blood pressure is defined as the way the blood circulates after the heart pumps it into the arteries. Measurements of blood pressure are derived from the force the blood exerts against the artery walls while the heart is pumping (the systolic or higher number) as well as when it is resting (the diastolic or lower number). When the pressure against the arteries is deemed excessive, we talk of high blood pressure or hypertension.

The point at which someone is considered to have high blood pressure varies from expert to expert and according to the individual patient's circumstances. On Guam, the measurements of 160 systolic pressure over 95 diastolic pressure identify hypertension in a patient. The National Institute of Health's 1984 Joint Committee on High Blood Pressure categorized diastolic blood pressure of 90-104 as mild hypertension. Despite these differences, it is agreed that high blood pressure adds to the workload of the heart and arteries and thereby contributes to the development of other conditions like stroke, heart attack, and kidney failure.

There are two types of hypertension. The first, essential hypertension, is the most common one, seen in 85 to 95 percent of all cases. It has no known causes or cures, but must be controlled through medication and lifestyle modification. The second type, called secondary hypertension, can be linked to some type of organic malfunction, such as tumors of the adrenal glands or kidney disorders. Treatment consists of the correction of the malfunctions.

Because hypertension usually lacks symptoms, there is a large unaware and therefore undetected population afflicted with the condition. These people are at risk of the secondary complication arising from hypertension. The few specific symptoms (persistent headache, dizziness, fatigue, tension, shortness of breath) which indicate hypertension are common symptoms in people suffering from the disease, but they may also result from a variety of other causes.

It is important to note that once hypertension is detected, it can be controlled, and thereby the risk of developing these conditions is reduced. If untreated, the disease will cause stroke, kidney failure, and in most cases, heart attacks and heart failure.

e. Excessive Stress

Stress is a natural and inevitable part of life. Some stress is beneficial and leads to heightened awareness and increased productivity. However, when there is too much stress and when this stress is not properly managed, physical or psychological dysfunctions tend to occur. Cardiovascular and coronary heart disease, gastrointestinal disorders, fatigue, obesity, and depression have all been linked to prolonged high stress, as have such mental health problems as personality disorders, suicide, homicide, and other violent behaviors.

For instance, each year in the U.S., thousands of deaths and millions of injuries to children are inflicted through parental abuses occurring partially as a result of stress. In recent years, considerable public and professional interest has focused on the relationship between stress and physical and mental health. Scientific inquiry has demonstrated various associations between

stress and health and disease. As a consequence, stress management and stress coping programs have evolved and are now considered a necessary part of health promotion and prevention activities.

Health professionals have agreed that the incidence of chronic disease can best be lowered through prevention, and that individuals must assume greater responsibility for their own health. This, however, does not relieve health providers from the responsibility of guiding individuals in their prevention efforts. There is a particular need for increased health promotion activities on Guam. Public health and private medical providers must join in a cohesive and comprehensive effort to reduce lifestyle-related health problems.

F. Summary

The foregoing review of the available health status measures reveals the overall pattern of mortality, morbidity, and disability of the residents of Guam. In summary it can be stated that the island's mortality and morbidity rates are similar to those of the continental United States, reflecting a westernized health care delivery system.

Guam's infant mortality has seen a fluctuating pattern over the last decade and is now higher than that of the U.S. Crude mortality rates for the total population are also higher, but sex- and age-specific mortality rates for males are equal to U.S. rates and about 20 percent higher than the comparable U.S. rates for females. Life-expectancy for males during the 1988-1992 period was calculated as 71.4 years and for females 77.2 years; both are somewhat lower than the life expectancy for mainland residents.

Cardiovascular disease, cancer, and motor vehicle accidents have been Guam's leading causes of death, but rates for these diseases have been lower than in the U.S.

When examining morbidity data, it can easily be seen that Guam has a high incidence of diseases related to the environment, particularly salmonellosis with a rate of 0.85/1,000 for 1993, and shigellosis, for which a rate of 0.26/1,000 population was calculated in the same time period.

Immunization efforts for childhood diseases have been very successful: a higher than 95 percent immunity level has been reached for all children under the age of 6. There is also a steady decline in the incidence and prevalence of tuberculosis. However, the Guam 1992 rate is still twice that of Hawaii, and more than four times the rate for the U.S. mainland. Pneumonia and influenza claim several deaths each year, but Guam mortality rates for these diseases are lower than the U.S. rates. Even though the cases of hepatitis A and B have increased in 1985 and 1988, respectively, the incidence rates show a considerable decline over the last 10 years.

Sexually transmitted diseases (STD) pose a problem to the island population. A marked increase of gonorrhea was observed in 1990; however, 45 percent of the cases (60%) were reported from the military population. There was also a 33.5 percent decrease in syphilis from 1990 to 1993. An increase in non-gonococcal urethritis (NGU) and other diseases such as trichomonas, candida, etc. was also noted.

Guam has a somewhat higher proportion of low birthweight infants than is found in the U.S. Of

particular concern are those infants born to mothers of Micronesian and Chamorro ethnicity who have almost twice the low birthweight incidence than babies of Caucasian heritage. In addition, Guam's health providers are concerned with the high number of congenital anomalies, which cause approximately 16 percent of all infant deaths and afflict 3 percent of the surviving infants.

Two of the health problems particular to children, otitis media, and dental caries, have a considerably higher incidence on Guam than is seen on the mainland.

Of the chronic diseases, cardiovascular disease, cerebrovascular disease, cancer, diabetes, Amyotrophic lateral sclerosis (lytico) and Parkinson's disease (bodig) stood out in determining health status priorities. Guam has also a higher than national average number of persons suffering from chronic end stage renal disease (ESRD).

Major mental health problems are the high numbers of homicide, suicide, and other violent crimes. Alcohol and drug abuse is perceived as a major problem affecting the community.

Lifestyle habits detrimental to a healthy life have been identified as smoking, lack of physical exercise, poor nutritional habits, and excessive stress, and are considered the most important factors in the treatment or prevention of chronic diseases.

Guam's health status appears favorably well when measured against comparable U.S. mortality and morbidity data. Nevertheless, the island's health services providers and health planners aim to reduce the number of deaths and the amount of illness in the community. The following are Guam's general Goals for Health Promotion, Health Protection, Preventive Services, and Surveillance and Data Systems for the Year 2001:

1. Improve quality of care ;
2. Reduce the morbidity and mortality associated with chronic disease;
3. Improve access to comprehensive health care and services;
4. Increase health professional resources on Guam;
5. Prevent and control against the spread of infectious disease;
6. Promote wellness (mind, body and spirit) through health lifestyle practices;
7. Develop and implement a comprehensive health information management system;
8. Protect the community against the effects of hazardous materials;
9. Protect all natural resources;
10. Prevent and reduce use of drugs (including alcohol and tobacco) at all community levels;
11. Promote safety measures to reduce accidents, injuries, and deaths;

12. Increase the proportion of babies born health and maintain wellness in children, and
13. Improve pest control including tree snakes and stray animals.

More particular objectives and recommended actions are stated in the following chapters and are appended to particular health conditions, services, or policies.

IV. HEALTH CARE 2001 AND BEYOND PRIORITIES

Guam Health Plan

IV. Health Care 2001 and Beyond Priorities

The preceding chapter defined Guam's health status and discussed health problems of general concern. The remedy to these problems, and with this the improvement of health status, is the ultimate goal of health planners and the health care delivery system.

Not all health problems can be attended to simultaneously. The quantity and quality of health care services are closely tied to available health resources. Sound health planning processes must therefore allocate the limited health resources to the most urgent problems in the community. To do so, problems must be prioritized. A number of methodologies have been developed nationwide for establishing such priorities, but it must be remembered that most of these methods are influenced to some degree by the subjective perception of consumers and providers as to what constitutes a health problem.

For this health plan, a process as objective as possible was employed. The Agency's Planners, the Governor's Health Care 2000 Task Force, Vision 2001 Task Force on Health Care, and the Guam Health Coordinating Council (GHCC) recommendations were used as sources of input from health consumers and providers on their perception of health problems on Guam.

The refinement of 151 health objectives established at the First Governor's Conference on Health in September 1987 to 13 goals by the committee during the Second Governor's Conference on Health in 1990 paved the way for a more comprehensive health planning tool the island needs for the Year 2000. Further refinement by the Governor's Vision 2001 Health Care goals and objectives solidified the need to focus attention on the health problems of our people and encompassed a universal concept in health planning for the future. The four health care priorities which were established as the core for health planning by Governor Carl Guterrez were **Heart Disease and Diabetes, Availability and Accessibility to Health Services, Manpower Shortage, and accreditation or privatization of the Guam Memorial Hospital Authority**. The first of the four objectives will be discussed in this Chapter. The latter three will be addressed in Chapter V of this Plan.

Additionally, other areas that compliments the four health care priorities and included in this plan are in the areas of **Wellness Promotion, Maternal Child Health, Drugs and Alcohol, Chronic Diseases, Communicable Disease Control, Injury Protection, Hazardous and Toxic Materials, Vector Control and Health Information System**.

A. Year 2001 Health Care Priorities

1. Cardiovascular and Cerebro-Vascular Disease

a. Cardiovascular Disease

Cardiovascular disease is a broad term which covers a number of different problems such as congenital heart defects, acute and chronic rheumatic heart disease, ischemic heart disease, myocardial infarction, congestive heart failure, and hypertensive heart disease. Ischemic heart disease and hypertensive heart disease are the two major health care concerns in this category.

Ischemic heart disease is the condition wherein the blood supply to the body is reduced because

of a constriction or narrowing of the coronary arteries, usually due to fatty deposits on the arterial linings. Ischemic heart disease has three major manifestations: angina pectoris, myocardial infarction, and sudden death.

Hypertensive heart disease is caused by prolonged elevated blood pressure, which causes the heart to deteriorate prematurely, causing heart attacks and heart failure. Many of the cardiac deaths fall into this category.

The major underlying conditions of cardiovascular disease are atherosclerosis and high blood pressure.

(1) Atherosclerosis

Atherosclerosis, more commonly known as hardening of the arteries, is a degenerative disease that can, in time, narrow or block arteries in the heart, brain, and other parts of the body. It may begin early in life. The linings of the arteries become thickened and roughened by deposits of fat, cholesterol, fibrin (a clotting material), cellular debris, and calcium. As this buildup on the inner walls becomes hard and thick, arteries lose their ability to expand and contract. The blood moves with difficulty through the narrowed arterial channels, sometimes forming a clot which blocks the channel and deprives either the heart, brain, or organs of blood. When a complete blockage occurs in a coronary artery, the result may be coronary thrombosis, one form of heart attack.

Atherosclerosis is a complex disease with many causes. A high content of cholesterol and triglycerides, as well as lipoprotein abnormalities, have been identified as causative factors of this disease. Medical researchers established that a diet high in cholesterol and saturated fats may raise cholesterol levels in the blood and contribute to atherosclerosis.

(2) Hypertension

Hypertension (high blood pressure) is the second largest underlying cause of heart disease and as such is a major health concern and public health problem in the U.S. and on Guam. Blood pressure is defined as the way the blood circulates after the heart pumps it into the arteries. Measurements of blood pressure are derived from the force the blood exerts against the artery walls while the heart is pumping (the systolic or higher number) as well as when it is resting (the diastolic or lower number). When the pressure against the arteries is deemed excessive, we talk of high blood pressure or hypertension.

The point at which someone is considered to have high blood pressure varies from expert to expert and according to the individual patient's circumstances. On Guam, the measurements of 160 systolic pressure over 95 diastolic pressure identify hypertension in a patient. The National Institute of Health's 1984 Joint Committee on High Blood Pressure categorized diastolic blood pressure of 90-104 as mild hypertension. Despite these differences, it is agreed that high blood pressure adds to the workload of the heart and arteries and thereby contributes to the development of other conditions like stroke, heart attack, and kidney failure.

There are two types of hypertension. The first, essential hypertension, is the most common one, seen in 85 to 95 percent of all cases. It has no known causes or cures, but must be

controlled through medication and lifestyle modification. The second type, called secondary hypertension, can be linked to some type of organic malfunction, such as tumors of the adrenal glands or kidney disorders. Treatment consists of the correction of the malfunctions.

Because hypertension usually lacks symptoms, there is a large unaware and therefore undetected population afflicted with the condition. These people are at risk of the secondary complication arising from hypertension. The few specific symptoms (persistent headache, dizziness, fatigue, tension, shortness of breath) which indicate hypertension are common symptoms in people suffering from the disease, but they may also result from a variety of other causes.

It is important to note that once hypertension is detected, it can be controlled, and thereby the risk of developing these conditions is reduced. If untreated, the disease will cause stroke, kidney failure, and in most cases, heart attacks and heart failure.

b. Cerebro-Vascular Disease

This condition is caused when the blood and oxygen supply to the brain is severely reduced or totally compromised. This results in a cerebro-vascular accident (CVA) or stroke. Most commonly, strokes are due to thrombosis, embolism, or hemorrhage in the brain from ruptured blood vessels. The process of atherosclerosis, in which critical arteries become narrowed by fatty deposits, underlies the disease. As the arteries narrow, blood pressure increases, with stroke as an eventual consequence.

c. Mortality

(1) Cardiovascular Disease.

Heart or cardiovascular disease was the leading cause of death on Guam for the last 10 years. In addition, a considerable fluctuation in mortality from this disease was experienced in the last decade. There were 137 heart deaths in 1983, which amounted to 29.7 percent of all deaths during the year at a rate of 1.21/1,000. As can be seen from Table 42, in 1992 there were 127 deaths caused by heart disease, corresponding to 21.7 percent of total deaths during this period, at a rate of 0.91 per 1,000 population, and decreasing the mortality rate by 7.8 percent in 10 years.

For the last 10 years (1983-1992) there was an annual average crude mortality rate of 0.98/1,000, accounting for 24.5 percent of all deaths on Guam. The U.S. crude mortality rate for heart disease in 1990 was 2.90/1,000 population. However, if adjusted to age, Guam's rate increased of 1.48/1,000 is 3 percent lower than the U.S. age-adjusted rate of 1.52 cardiac deaths per 1,000 population.

A person can minimize the risks of hypertension, heart disease, or heart attack simply by modifying his lifestyle. There is definite scientific proof that the cessation of smoking, the maintenance of normal weight, a diet low in fat (particularly in animal fat) and salt, regular physical exercise, stress control, and routine medical check-ups in conjunction with the

treatment for existing hypertension or diabetes, will add years to a person's life. Of all the above, breaking the smoking habit has proven to be the single most important factor in avoiding heart disease.

Heart disease as well as its main precursors atherosclerosis and hypertension could to a large degree be avoided if it was more widely known that certain living habits and medical conditions increase the risk of these diseases occurring. Many of these risks can be reduced with practical

Table 42
Frequency and Mortality Rates of Heart Disease
Per 1,000 Population
Guam: 1983 - 1992

Year	# of Cardiac Deaths	% of Total Deaths	Total Population	Rate Per 1,000
1983	137	29.7	113,490	1.21
1984	113	25.1	116,110	0.97
1985	110	24.9	118,791	0.93
1986	140	31.0	121,534	1.15
1987	109	22.4	124,340	0.88
1988	128	26.0	127,210	1.00
1989	123	22.6	130,147	0.95
1990	121	21.7	133,152	0.91
1991	125	20.6	136,226	0.92
1992	127	21.7	139,371	0.91

Source: Office of Vital Statistics, DPH&SS, Guam.

steps. Education and information measures which heighten public and professional awareness of the risk factors for heart disease are considered the first and most important steps in the control of this disease. Preventive measures should include mass screening and follow-up services for high blood pressure and diabetes.

(2) Cerebro-vascular Disease.

Since 1983, cerebro-vascular disease was the third leading cause of death in the mainland. On Guam, cerebro-vascular disease was the third leading cause of death in 6 of the last 10 years. Table 43, in the following page, shows an increase during the period of 1988-1992.

As hypertension and lifestyle are major contributors to vascular disease, prevention efforts have to be directed to those causes in order to effect a measurable impact over the next decade.

Table 43
Deaths Caused by Cerebro-Vascular Disease
Guam: 1983 - 1992

Year	Rank	#	% of Total Deaths
1983	4	22	4.8
1984	4	30	6.7
1985	3	31	7.0
1986	3	31	6.9
1987	3	36	7.4
1988	3	28	5.7
1989	6	30	5.5
1990	4	34	6.1
1991	3	52	8.6
1992	3	42	7.2
Total		336	

Source: Office of Vital Statistics, DPH&SS, Guam, 1974 - 1983.

d. Analysis of the Problem

Heart disease continues to be the leading cause of deaths on Guam, representing 22.6 percent in 1989, 21.7 percent in 1990, and 20.6 percent of all deaths in 1991. It affects an estimated 20,000 Guamanians, causes an average of 119 deaths annually, and costs Guam approximately \$3.6 million per year in direct and indirect costs.

Cerebrovascular disease (CVD) or stroke continues to be one of the top five leading causes of death on Guam, representing 10.1 percent in 1989, 6.1 percent in 1990, 8.6 percent in 1991, and 7.2 in 1992. Stroke was ranked as the third leading cause of death on Guam in 1991 and 1992.

e. Conclusion and Recommendations

Unlike acute illness, chronic illness is often gradual in its onset and of a lifetime duration. In some cases, chronic conditions stabilize over time. In others, the individual's condition deteriorates, sometimes with periods of stabilization or even improvement between period of decline. Receipt of chronic care services for a particular condition does not preclude the need for preventive, acute, or rehabilitative care. A chronic condition may increase an individual's susceptibility to other illnesses and may, therefore, increase the need for and use of other components in the health care system.

Chronic care services are designed to maintain a chronically ill or disabled individual at an optimum level of functioning. Medical care and maintenance services are necessary to control the effects of the disease or disability, prevent deterioration due to chronic conditions, and

enhance an individual's ability to function as independently as possible. Chronic care medical services are provided for Guam's population by all the medical providers.

f. Goal and Objectives

(1) Goal: To reduce morbidity and mortality associated with chronic disease.

(2) Reduction of Heart Disease and Stroke

Objective 1: By the year 2000 reduce coronary heart disease deaths to no more than 200 per 100,000 people.

Baseline Data: Age-adjusted baseline for Guam: 155.2 (revised) per 100,000 in 1989.

Objective 2: By the year 2000 reduce stroke deaths to no more than 20 per 100,000 people.

Baseline Data: Age-adjusted baseline for Guam: 25.4 per 100,000 in 1990.

Objective 3: By the year 2000 reduce the incidence of strokes by 5% (Based on stroke-related hospital admissions).

Baseline Data: None. Baseline data for Guam needs to be established.

(3) Program Objectives.

For Services and Protection

Objective 1: By the year 2000, the community will be served by age and population specific, high-quality, cost-effective screening, and early diagnostic services through a network of worksite and community wellness programs designed to identify persons with risk factors and to interrupt the chronic disease process at the earliest possible stage.

For Community Surveillance

Objective 2: By the year 2000, the community will be served by a surveillance system that can monitor those preventable chronic diseases, conditions, disabilities, and major risk factors that contribute significantly to morbidity and mortality.

Objective 3: By the year 2000, the community will be served by an evaluation system that will permit measurement of the impact of worksite and community interven-

tions.

(4) Risk Reduction Objectives

- Objective 1:** By the year 2000, obtain a 10% reduction in the mean serum cholesterol level among adults who participate in worksite and community wellness programs. (Baseline data to be provided by health screening provided at the beginning of these wellness programs.)
- Objective 2:** By the year 2000, reduce the prevalence of blood cholesterol levels of 240 mg/dL or greater by 20 percent in populations served by worksite or community wellness programs. (Baseline data will be collected by the CDPCP as these programs are initiated.)
- Objective 3:** By the year 2000, increase to at least 40 percent the proportion of adults with high blood cholesterol who are aware of their condition and are taking action to reduce their blood cholesterol to recommended levels. (Baseline: 11 percent of all people aged 18 and older, and thus an estimated 30 percent of people with high blood cholesterol, were aware that their blood cholesterol level was high in 1988 - Health Community 2000 model standards)
- Objective 4:** By 1998, reduce the prevalence of overweight by 10% among people aged 20 and older that are participating in worksite or community wellness programs. (Baseline data will be provided upon the initiation of these programs)
- Objective 5:** By 1998, increase by at least 10% percent the proportion of participants in worksite or community wellness programs who engage regularly in light to moderate physical activity for at least 30 minutes per day. (Baseline data collected at the initiation of wellness programs)
- Objective 6:** By 1998, increase by 20% the proportion of people screened who have a history of high blood pressure, (or have shown elevated blood pressure readings through worksite or community screening) whose blood pressure is under control. (Baseline to be collected during health screening conducted by CDPCP for worksite and community wellness programs)
- Objective 7:** By 1998, reduce the smoking prevalence among participants in community and worksite wellness programs by 5%. (Baseline to be collected during initial health screening for these programs)

g. Action Plans

- Objective 1:** To establish Memorandums of Agreement with a minimum of five agencies within the Government of Guam, and at least one pilot community, to initiate pilot worksite wellness programs by the end of FY 1997.

- Objective 2:** To identify at least one government agency to serve as a control group for the pilot worksite wellness program, and to conduct baseline screening for employees at this agency by the end of December, 1996.
- Objective 3:** To conduct training for worksite wellness coordinators from the pilot agencies and the community on resource identification and implementation of cholesterol reduction, weight loss, fitness programs and hypertension risk reduction programs by the end of August, 1996.
- Objective 4:** To conduct training in the proper methodology and interpretation of Blood Pressure measurements for worksite and community wellness coordinators, and to certify these coordinators so that they can take blood pressure measurements at worksites and in their communities by September, 1996.
- Objective 5:** To collect baseline data by screening employees for cholesterol, blood pressure, body mass index (BMI), percent body fat, and lifestyle factors, between September to December, 1996, for each pilot agency and community identified.
- Objective 6:** To conduct follow-up screening within 12 to 18 months of the beginning of the pilot worksite and community wellness programs to determine their effectiveness in meeting the Risk Reduction Objectives outlined above.
- Objective 7:** To establish a Chronic Disease Registry with Hospital-based data that will supplement data already collected through Vital Statistics and the Behavioral Risk Factor Survey.

2. Diabetes

a. General Information

Diabetes is a metabolic disorder which inhibits the body's production of insulin or proper utilization of the produced insulin. Insulin is a protein hormone manufactured by the Beta cells in the pancreas' Islands of Langerhans, and is needed by the body to metabolize (burn) carbohydrates, fats and proteins. If there is an insufficient amount of insulin present in the blood stream, an excess amount of glucose accumulates, and eventually leads to a number of complications.

There are two major types of diabetes: insulin-dependent or Type I, and non-insulin dependent diabetes or Type II. The former is associated with an absolute deficiency of insulin in the body. Non-insulin dependent diabetes, on the other hand, develops when the production and secretion of insulin into the bloodstream progressively decreases. It usually strikes people over 40; people who are obese; those with a family history of diabetes; and is seen more in women, especially those who have given birth to very large babies.

On Guam, almost all the diabetes diagnosed by physicians is Type II and is seen in people over

the age of 40. Type I is seen only rarely, predominantly in the Caucasian population, and does not represent a health problem of serious magnitude.

b. Mortality

Table 44 shows that in the last 10 years, Guam had a total of 264 persons die of diabetes, with an average mortality rate of 0.20/1,000 per year, or 5.1 percent of all yearly deaths. Diabetes was a leading cause of death in 6 out of the last 10 years.

Table 44
Diabetes Mortality Rates
Guam: 1983 - 1992

Year	Total Deaths	Diabetes Deaths	% of Total Deaths	Rank Among Leading Causes of Death	Rate Per 1,000
1983	482	15	3.2	9th	0.13
1984	450	30	6.7	4th	0.25
1985	441	22	5.0	4th	0.18
1986	451	16	3.5	6th	0.13
1987	486	19	3.9	7th	0.15
1988	492	26	5.3	4th	0.20
1989	544	33	6.1	5th	0.25
1990	557	31	5.6	6th	0.23
1991	607	30	4.9	6th	0.22
1992	585	42	7.2	4th	0.30
10-year average		26	5.1		0.20

Source: Office of Vital Statistics, DPH&SS, Guam.

The crude mortality rates for diabetes appear lower than the U.S. rates. However, when adjusted for age, Guam's rate is considerably higher. The 45-75 age groups have had the greatest frequencies of deaths from diabetes, followed by the 75+ age group and accounted for over 90 percent of all deaths attributed to diabetes in the last 10 years.

c. Analysis of the Problem

- (1) Guam's crude mortality rate for diabetes was lower than the national rate; however, Guam's age-adjusted diabetes rate for the population over the age of 45 is twice as high as the national age-adjusted rate.

- (2) On Guam at least 25 percent of all deaths due to heart disease are associated with diabetes.
- (3) Diabetic gangrene was the underlying reason for lower extremity amputations performed at Guam Memorial Hospital.
- (4) Hypertension, arteriosclerosis, heart disease, and congestive heart failure are observed more frequently in diabetes-associated deaths.
- (5) Diabetes was the most common cause of end stage renal disease (ESRD or chronic kidney failure).

d. Conclusion and Recommendations

Guam has an alarmingly high incidence and prevalence rate of diabetes. This disease was also a leading cause of death in several out of the last 10 years. Survey and screening results demonstrated that being Chamorro, overweight, middle-aged and female makes one most vulnerable to this disease; however, Filipino and male incidence rates are on the increase. Those with a family history of diabetes are especially at risk.

Diabetes, if untreated, can lead to blindness, amputation of extremities, and life-threatening conditions such as stroke and heart attack. It is a disease with an insidious onset. Diagnosis is often made during a routine examination, or while being tested for other medical conditions. A considerable number of Guam residents do not see a physician on a regular basis, which means that diabetes remains undetected and untreated in many cases.

There is at present no known way to prevent diabetes. However, if diagnosed, diabetes can be treated and controlled, allowing an afflicted person to lead a normal life. Weight control and early detection are considered the two most important factors in lowering the incidence and mortality rates of diabetes. Information and education programs geared towards the public as well as the medical profession, and mass blood sugar screening are advocated for Guam's population, particularly for persons at special risk.

e. Goal and Objectives

- (1) **Goal:** To reduce morbidity and mortality associated with chronic disease.
- (2) **Goal:** Reduction of Diabetes Related Health Complications.

Objective 1: By the year 2000, reduce diabetes-related deaths to no more than 40 per 100,000 people. (Baseline for Guam: 47.4 per 100,000 in 1989)

Objective 2: By the year 2000, reduce the most severe complications of diabetes as follows:

Complications Among

People with Diabetes	1988 Baseline	2000 Target
End-stage renal disease	32.7/100,000 Civ. pop. on Guam)	25/100,000
Blindness	2.2/1,000 (U.S. Baseline)	(1.4/1,000) (U.S. Target)
Lower extremity amputation	8.2/1,000 (U.S. Baseline)	(4.9/1,000) (U.S. Target)

Objective 3: By the year 2000, reverse the increase in end-stage renal disease (requiring maintenance dialysis or transplantation) to attain an incidence of no more than 25 per 100,000. (Baseline: 32.7 per 100,000, 3-year average, 1988-90, civilian population on Guam)

(2) Program Objectives

For Services and Protection:

Objective 1: By 1998, increase to at least 50 percent the proportion of known diabetics who receive formal patient education including information about community and self-help resources as an integral part of the management of their condition. (Baseline data to be determined)

(3) Process Objectives:

Objective 1: To establish a diabetes registry with the CDPCP by end of FY 1997, that can serve as a resource for the dissemination of educational materials, and provide data for monitoring and evaluation of the impact of educational programs.

Objective 2: Establish and maintain a quarterly newsletter for Diabetes education which will be distributed to diabetics and their families through the Private Health Maintenance Organizations, Hospital Services, and the Department of Public Health.

Objective 3: Establish a network for the distribution of Diabetes Education Resources through government and non-government agencies which provide diagnostic and/or treatment services for people with diabetes.

Objective 4: Assist with the establishment of diabetes support groups, primarily through the Guam Diabetes Association, and to increase membership in these groups.

Objective 5: To conduct training courses on diabetes patient education for professional

health staff.

3. Malignant Neoplasms

a. General Information

Cancer is a class of diseases which can be typified by an unrestricted growth of abnormal cells. These cells, in many situations, mature into tumors which invade and destroy normal cells. If left unattended, the tumors affect vital body organs, and death usually follows as a consequence.

The most common fatal cancers are: leukemia, kidney, and nervous system malignancies in children; lung, intestine, and breast cancer in adults; and cancer of the intestines, lung, prostate, and uterus in older people. Almost half of all U.S. cancer fatalities are from cancer in three sites: lung, large intestine, and breast.

Cancer strikes people of all ages, but the incidence among children is low when compared with adults. Overall, the elderly are most conspicuously at risk for cancer.

The progress of cancer can be relatively quick, as in some forms of leukemia. But for the most common types, including breast cancer, it is believed that 10, 15, even 25 years may pass before all steps in the biological chain of events leading to cancer are completed. Once they are complete, varying lengths of time may elapse before enough cancerous cells accumulate and can be recognized.

No definite cause of cancer has been identified. However, on the basis of epidemiological studies, it is estimated that 80 percent of human cancers are related to the environment and lifestyle factors. Only a few of the cancers show a tentative link to genetic predisposition.

It is now known that exposure to ionizing radiation, industrial pollution, and asbestos fiber makes people more vulnerable to cancer. A strong correlation exists between smoking and lung cancer, and between excess alcohol consumption and cancer of the liver. Breast cancer seems to occur more frequently in females who have a family history of this disease, as well as in obese females.

b. Mortality

Cancer is the second leading cause of death in the United States, which recorded 505,322 cancer deaths in 1990. On Guam, cancer was the second leading cause of death in the last 10 years. Statistics show that an average of 72 persons die annually of this disease, amounting to an average of 14.1 percent of all deaths for the last 10 years, and a mortality rate of 0.54/1,000 population.

The U.S. crude cancer mortality rate was 2.03 deaths per 1,000 population in 1990, accounting for 24 percent of all deaths. These rates are for the population across all age groups and are higher than the Guam crude rates. However, the U.S. age-adjusted rate in 1990 was only

1.35/1,000 compared to Guam's age-adjusted rate of 1.63/1,000 for the same year, which was 21 percent higher than the U.S. rate.

Table 45
Cancer Mortality Rates Per 1,000 Population
Guam: 1983 - 1992

Year	Total Death	# of Cancer Deaths	% of Total Deaths	Rate
1983	462	60	13.0	0.52
1984	450	60	13.3	0.52
1985	441	66	15.0	0.56
1986	451	57	12.6	0.47
1987	486	66	13.6	0.53
1988	492	91	18.5	0.71
1989	544	66	12.1	0.51
1990	557	83	14.9	0.62
1991	607	75	12.4	0.55
1992	585	93	15.9	0.67
10-Year Avg.		72	14.1	0.54

Source: Office of Vital Statistics, DPH&SS, Guam.

c. Analysis of the Problem

From all the research performed over the years, one fact stands out clearly: there is a strong relationship between cancer and lifestyle. It is estimated that about 80 percent of cancer cases are tied to the way people lead their lives. For example, the foods they eat, the work they do, the way they spend their leisure time, and whether or not they smoke or drink alcohol all affect the likelihood of getting cancer. Consequently, influences or risk factors which have been identified as potential contributors to cancer development are cigarette, cigar and pipe smoking, alcohol consumption, certain dietary patterns, radiation, sun light, occupational hazards, water and air pollutants as well as hereditary and predisposing medical conditions.

Since these risk-factors have been identified, it has been established that cancer and a great number cancer deaths can be prevented through two strategies: limiting exposure to cancer-causing substances, and early detection and treatment before cancer has spread.

Lung and urinary bladder cancers are amenable to the first strategy as more than 80 percent of lung cancer and up to 50 percent of all bladder cancer could be prevented if people stopped smoking. Skin cancer is also largely preventable through avoidance of excessive sun exposure. Modification in occupational exposure and diet may help to prevent other types of cancer.

Once cancer develops, many deaths could be prevented by early detection and screening. For

this, screening procedures must accurately identify people with cancer still in early enough stages to allow effective treatment. Available screening measures, more widely applied, could probably prevent a third or more of the deaths due to breast cancer in women over 50, most deaths from cervical cancer, and many of those due to prostate and rectal cancer.

Risk Factor	Type of Cancer
Cigarette Smoking	Lung (10 times higher than non-smokers), oral cavity, larynx, urinary bladder.
Cigar and Pipe	Mouth, lips, as well as lung.
Alcohol	Liver, larynx, oral cavity, esophagus.
Smoking and Alcohol combined	Intensifies risk particularly for cancer of esophagus.
Diet: High Fat Content/Obesity Pickled and Preserved Food Charcoal Broiling	Breast, ovary. Esophagus, stomach. Intestines, colon, rectum.
Radiation	Leukemia, lymphoma, others.
Sunlight	Skin Cancer (basal, squamous, and malignant melanoma)
Occupational Exposure:	
Asbestos	Lung, Pleura (mesothelioma)
Vinyl Chloride	Liver, lung, brain (angiosarcoma)
Water Pollution	Various sites.
Air Pollution	Lung.
Heredity	Breast (sisters and daughters of women with breast cancer)
Predisposing Medical Conditions	Colon (multiple intestinal polyps), Breast (fibrocystic breast disease).

The American Cancer Society has established a list of seven cancer warning signals. These signals are:

Change in bowel or bladder habits;

**A sore that does not heal;
Unusual bleeding or discharge;
Thickening or lump in the breast and elsewhere;
Indigestion or difficulty in swallowing;
Obvious change in wart or mole;
Nagging cough or hoarseness.**

Knowledge of these warning signals entails a certain responsibility of the individual for his own health. However, health providers must join with the individuals if the incidence and mortality rates of cancer are to be reduced. Medical practitioners must perform cancer-related check-ups at specific intervals, and must encourage their patients to learn self-examination techniques.

In addition to its health promotion and education efforts, the American Cancer Society also provides community support services. The local chapter makes equipment and supplies available for cancer patients, and conducts patient visits either at home or in the institutional setting as means of lending support to those afflicted with cancer.

d. Conclusion and Recommendations

Guam has a higher than average age-adjusted mortality rate for cancer, and many of these cancer deaths could have been prevented. Yet prevention must come through knowledge of risk factors and how to minimize these factors; knowledge of the seven warning signs of cancer; and knowledge of the available screening and detection techniques. In addition, early diagnosis and timely, appropriate treatment will often lead to a cure of cancer. Therefore, maximum emphasis must be placed on coordinated public awareness programs and detection techniques.

e. Goals and Objectives

(1) Goal 1: Reduce the mortality, morbidity, and disability due to cancer among island residents.

Goal 2: Reduce the prevalence of tobacco use on Guam.

(2) Awareness and Education:

Objective 1: Increase public knowledge about cancer through education and information efforts which focus on the risk factors and the seven warning signs of cancer.

Objective 2: Stress importance of self-examination and self-observation in the early detection of cancer.

Objective 3: Provide information about the necessity for and frequency of cancer-related check-ups for the various age groups at risk. Emphasize pap smears and breast examination for women; rectal and prostate examinations for men.

Objective 4: Provide or make available smoking cessation programs.

Objective 5: Encourage smoke-free environment policies and enforce Clean Indoor Air Act of 1992 in government, public, and private sector.

4. Drugs and Alcohol Control

a. General Information

(1) Alcohol and Alcoholism.

Alcohol abuse is a generic term applied to the habitual and indiscriminate use of alcoholic beverages manifesting itself in a loss of impaired social or economic functioning and progressive deterioration of health. Alcohol is the most widely available and most abused drug in the United States. Although the majority of individuals can and do use alcohol responsibly, there is a sizeable portion of the population in the United States who are unable to do so. National estimates identify at least 10.5 million adult problem drinkers, roughly 5 percent of the total population. Additionally, there are an estimated 5.5 million youths who have problems with alcohol.

The economic costs to society that are associated with alcohol abuse and alcoholism are staggering: approximately 50 billion dollars per year. This figure includes the costs for lost productivity, health care, motor vehicle accidents, fire losses, violent crimes, and social programs. However, the other adverse effects of alcoholism, and alcohol abuse are not as easily measured since no dollar amount can be placed on broken homes, battered wives, or disturbed children.

Substantial health costs to society result from alcohol abuse or alcoholism. Alcoholism is the prime cause for cirrhosis of the liver which ranks among the 10 leading causes of death. Cancer of the liver, the pancreas, esophagus, and mouth are all associated with excessive alcohol consumption. There is growing evidence that an excess in alcohol intake contributes to injured fetuses, neonatal deaths, and developmental disabilities in infancy. The misuse of alcohol leads also to increased risks of injury and death to self, family members, and others, particularly through motor vehicle, fire-related, and other accidents.

(2) Drug Abuse

Drug abuse has become a social problem, as well as a health problem, only in recent years. The great concern has been the prevalent use of Crystal Methamphetamine (Ice), heroin and the popularity of the illegal "recreational" drugs, particularly marijuana, cocaine and it's derivative "crack", and resurgence of hallucinogens. The use of these drugs has increased tremendously over the last three decades. The use of "Ice" on the island places second to the use of alcohol.

Currently, drug abuse is defined as "the non-medical use of any drug in a way that adversely affects some aspect of the user's life, e.g., by inducing or contributing to criminal behavior, by leading to poor health, economic dependency, or incompetence in discharging family responsibilities or by creating some other undesirable condition." Another definition states that

drug abuse is the illegal use of a controlled substance, or use of a drug in a manner or to a degree that leads to adverse personal or social consequences.

In making a determination of drug use, or drug abuse, a distinction between experimental use, social or recreational use, circumstantial or situational use, intensified use and compulsive use must be made.

Experimental use of drugs is short term, has no pattern, and is motivated by curiosity, or a dare by peers. Social or recreational use tends to be more patterned than experimental use, and involves family members or friends.

Circumstantial or situational use is promoted by a perceived need or desire to achieve a known effect that is deemed helpful in coping with a specific situation.

Intensified use involves long-term, patterned, low-level use, with drugs becoming a part of life, as with tranquilizers.

Compulsive drug use is frequent and intense. Individuals in this category cannot discontinue use of the drug without experiencing severe physical and psychological discomfort. The user is "hooked" and becomes preoccupied with the task of obtaining the necessary drugs to prevent the withdrawal syndrome. Often the user lives from one "fix" to another, and in so doing represents the highest risk of adverse consequences to himself and society. Such a person is "addicted" to a particular drug, or has become, according to more recent terminology, "drug dependent." A drug dependent person will resort to crime in order to support his "habit."

Drug abuse is universal in today's society, touching all ages and social classes, and making no differentiation between sexes. However, there are generally more male than female users of illegal drugs.

It is difficult to classify the drugs themselves. Marijuana is considered a recreational drug. There are extensive arguments whether cocaine/crack and "Ice" falls into this category, or whether it should be considered a "hard" drug along with heroin and other opiates. Of the hallucinogens, LSD (lysergic acid) and PCP (angel dust) are the most widely known and used. There is such a wide array of amphetamines (uppers) and tranquilizers, barbiturates and sedatives (downers), and the various combinations thereof, that they defy description, especially since new synthetic drugs have joined the illegal drug market.

b. Alcohol and Drug Abuse on Guam

(1) Alcohol Abuse on Guam

On Guam, reliable and realistic prevalence data on alcohol abuse are still not yet available. However, from such data as mortality rates and police accident and arrest records, one can infer that alcoholism is a severe problem on the island, particularly if one considers the impact that an alcoholic person has on their family, place of employment, and the community.

According to the Guam Police Department, in 1998, a total of 211 arrests was made for driving

under the influence of alcohol. Statistics for the same year revealed that 25 (66 percent) out of the 38 traffic fatalities were alcohol-related. A total of 914 traffic related injuries were attributed to alcohol.

(2) Drug Abuse on Guam

Guam's drug problem was originally attributed to the Vietnam War. Soldiers came to the island for rest and recreation, and Guam was also used as a transshipment point to and from Asia. The influx of military personnel, as well as the island's strategic location made it easy to import drugs. In the mid-1970's approximately 2,000 users of "hard" drugs (mostly heroin) lived on the island and often sustained their habit through illegal means. During those years an average of 20 to 30 drug related deaths was common.

By 1980, joint efforts of the local police, the federal Drug Enforcement Administration, and the U.S. Attorney's staff had lowered the number of heroin users to approximately 650. This downward trend has continued, and less than 200 known heroin users are reported to be on island in 1985. No data, or even estimates, of the use of cocaine was available during this period. Marijuana is smoked by a large number of the population, either habitually or on social and recreational occasions.

It is difficult to measure incidence and prevalence of drug use. Data is derived through self-reporting, police records, hospital admission sheets, or confidential informers, and is therefore sporadic.

Table 46 provides a vivid but tractable 5-year view of trends in the Guam Police Department drug arrests. The drug arrests for marijuana show a stable figure averaging 75.2 percent per year. However, the arrest for cocaine shows a remarkable decrease of 91.1 percent from 1989.

Table 46
Percentage of Drug Arrest - 3 Year Trend
Guam: 1989 to 1993

Type of Drug	1989 %	1990 %	1991 %	1992 %	1993 %
Marijuana	79.2	64.4	76.5	81.4	74.6
Cocaine	18.1	16.9	6.2	2.8	1.6
Heroin	2.8	3.4	0.0	0.7	1.6
Ice	0.0	15.3	17.3	15.2	22.2
Other	0.0	0.0	0.0	0.0	0.0

Source: GPD 1991 Uniform Crime Report.

Drug arrest for heroin increased to 3.4 percent in 1990 and was at it's lowest at 0.0 percent in 1991. An emergence of heroin use appears with the increase of arrest between 1991 to 1993 of 1.6 percent. However, and most alarming, is the incidence of drug arrest for crystal

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Source: GPD 1991 Uniform Crime Report.

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methamphetamine (ice) which increased to 22.2 percent between 1989 to 1993.

True incidence and prevalence of alcohol and drug abuse has not been established. However, morbidity and mortality data, as well as accident and crime statistics related to alcohol and drug abuse reveal that such abuse and its economic, health, and social consequences are a serious problem.

c. Analysis of the Problem

Alcohol is readily available and, therefore, the most abused drug in Guam. A large portion of the population that consumes alcohol can not and do not use it responsibly. Most alarming is the high number of island youths who are using alcohol.

The health care and economic cost to our community with alcohol abuse and alcoholism are high. The expenditures that results from alcohol abuse and alcoholism are measurable in terms of lost productivity, motor vehicle accidents, violent crimes, and social programs. In health, the expenditures can be measured in terms of the illnesses derived from alcoholism such as cirrhosis of the liver, cancer of the liver, the pancreas, esophagus and mouth. But the cost, which can not be measured in dollar amounts as a result of abuse of alcohol, is the broken homes, battered spouses, and disturbed children.

The drug problems on Guam were attributed to the U.S. involvement in the Vietnam War, when soldiers from the war zone came to the island for rest and recreation. Drug abuse has now escalated in status as being a social as well as a health problem. There is widespread use of heroin as well as increased popularity of illegal recreational drugs such as marijuana, cocaine, hallucinogens, crack, and ice. There is also the misuse of over-the-counter drugs and prescription drugs such as amphetamines and barbiturates.

d. Conclusion and Recommendations

Substance abuse helps create or intensify the problems of mentally ill adults, emotionally disturbed children, and the homeless. It is, in some cases, an agent of self-destruction, domestic violence, and violent crimes.

Although alcohol use and drug use may not lead to substance abuse, prevention, intervention, and treatment programs must be and continuously available for our island residents. The intertwining functions of the three programs should minimize the economic and health care cost placed in our community.

Prevention, intervention, and treatment programs are the key ingredients in combating the rising numbers of substance abuse. All three programs are inter-related and should be conducted synergistically. Prevention programs directs attention at the entire population aside from only those at risk. Intervention programs, also, aims at those at risk and at those suspected to be chemically dependent. Treatment programs are for those using substances that have begun to affect their life and work.

Policies and programs must be in place to deter the abuse of drugs and alcohol and the community must be involved in implementing and maintaining such policies and programs.

e. Goal and Objectives

(1) **Goal:** Prevent and reduce abuse use of drugs (including alcohol and tobacco) at all community levels.

(2) **Awareness and Education:**

Objective 1: Increase the number of professional drug and alcohol prevention and treatment workers.

Objective 2: Develop credential standards for drug and alcohol counselors and prevention volunteers.

Objective 3: Train volunteer youths and community leaders in drug and alcohol prevention/intervention techniques.

Objective 4: Provide on-going prevention programs, to include stress management, decision-making, and behavior modification, island-wide.

Objective 5: Establish a central management information system (MIS) to manage all data related to drug and alcohol use and abuse on Guam.

Objective 6: Advocate local legislation that will support the reduction of supply and demand for drugs and alcohol.

Objective 7: Provide and make available detoxification services to all drug and alcohol abusers classified as dependent users.

Objective 8: Establish residential treatment facilities for drug and/or alcohol abusers.

V. HEALTH CARE DELIVERY SYSTEM

Guam Health Plan

Third Edition

V. Health Care Delivery System

Overview of Health Care Delivery System

The health care system on Guam has developed rapidly through the years from the initial U.S. Navy-administered hospital and public health programs to a sophisticated network of governmental and private providers. The growth of the system has had beneficially influenced the health status of the island population. The system's focus has changed from diseases caused by environmental conditions to those associated with sedentary lifestyles, improper diet, and smoking.

The health care delivery system includes those services, resources, programs, and financial mechanisms that can be used to positively affect the level of health in the population. Since the promotion of health and the prevention of illnesses often require consideration of lifestyle and environmental factors, the definition of the health care delivery system has been expanded to include components that were normally thought of as outside the medical care model, such as health education services and environmental quality management.

Guam's health care delivery system is pluralistic, distinguished by a public and private sector for the local civilian population, and a military system for the delivery of medical services to approximately 10,000 active-duty military and their dependents, as well as to military retirees and veterans on Guam.

All health services customarily found in a community of similar size in the U.S. mainland are available to the island population. The major health care facilities and health services and programs will be discussed in the succeeding pages. One unique problem setting Guam apart from the mainland communities is that specialized and tertiary medical services are thousands of miles away, necessitating medical referrals to Japan, the Philippines, Hawaii, or the U.S. mainland. Such referrals are often cumbersome, time-consuming, and almost always impact considerably on individual and government financial resources.

The public sector is comprised of Government of Guam facilities and programs which serve the community. The Guam Memorial Hospital is the only civilian inpatient acute care facility on Guam. It provides 159 acute care and 33 long-term care beds in addition to the medical services associated with a general hospital.

Emergency medical and ambulance services throughout the island are rendered by the Guam Fire Department in conjunction with the Guam Memorial Hospital.

Through the Department of Public Health and Social Services, the government provides for preventive medical and dental services, health education, and diagnosis and treatment for communicable diseases, maternal and child health, chronic diseases, and dental problems of children. These programs and services are available in the three Public Health Centers located in the southern, central, and northern parts of the island.

The Department of Mental Health and Substance Abuse administers a 48-bed inpatient facility and provides residential, outpatient, and follow-up programs. In addition, the Department provides drug and alcohol abuse services as well as prevention, education, and consulting programs to all Guam residents.

The Department of Education (DOE) has an integrated, comprehensive health education curriculum for all children, from kindergarten through grade 5 and continuing in grades 6 and 10. DOE surmises that a comprehensive health education will provide students with information that will assist them in examining how their attitudes and behavior may harm health. It also provides students with skills that will help them change these behaviors and adopt new ones that promote a healthier lifestyle.

The University of Guam's College of Nursing and Health Sciences offers programs leading to a Bachelor of Science Degree in Nursing for basic students, graduate nurses and registered nurses. The Guam Community College's curriculum includes a nursing assistants course, a First Responder and EMT-A Course, and classes pertaining to safe drinking water, sewage disposal, and food safety.

The private sector caters more to the individual needs in the community, providing, on a one-to-one basis, outpatient medical and dental care, laboratory, radiological, and optometrical services, as well as pharmaceuticals. There are several multi-specialty medical/dental groups, among which the FHP clinics, The Doctor's Clinic, and the Seventh Day Adventist clinic are the largest. In addition, there are specialty medical group practices and individual (solo practice) physicians and dentists. Auxiliary services are provided by independent laboratories, pharmacies, and optical retailers operating within the community.

Apart from the non-profit Seventh Day Adventist and FHP multi-specialty clinics, all of the above listed health care providers are privately owned and operated for profit.

The military system consists of the U.S. Naval Medical Regional Center (USNMRC) and smaller outpatient clinics or dispensaries at the various military's central facility for general acute care. The hospital also provides outpatient services in the various medical disciplines and maintains a dental clinic. The Navy provides a Naval Hospital for inpatient and outpatient services and a Naval Dental Clinic. The hospital is self-contained and provides all the auxiliary services needed in conjunction with the provision of medical care. It is staffed and equipped to deal primarily with the medical needs of active-duty military personnel on Guam and their dependents as well as health care priorities addressing the needs of military retirees, veterans, and their eligible beneficiaries. The U.S. Naval Medical Regional Center provided services to the neighboring Trust Territories in the early 70's and earlier 80's. The applicability for these provisions is under study and services that were once provided in the hospital are provided at Tripler Army Hospital in Hawaii.

For planning purposes, the U.S. Naval Medical Regional Center is not considered as a component of Guam's civilian health care delivery system. However, there is some mutually beneficial interaction between the two systems. Public Health nurses accept U.S. Naval Hospital referrals to their home health care program. Navy and air/sea rescue units located on Guam serve the community as well as the neighboring islands. Furthermore, the U.S. Naval Hospital serves as a back-up which could be mobilized during a man-made or natural disaster. Non-active-duty military beneficiaries use private civilian medical services through the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS) whenever a medical specialty is not available at the U.S. Naval Hospital.

The following sections provide a more detailed view of Guam's health care delivery system which includes major health care facilities, health promotion and protection, prevention and detection services, diagnosis and treatment services, mental health services, chronic care medical services, habilitation and rehabilitation services, long-term care, alternative health care providers, and mechanisms for financing health care.

A. Major Health Care Facilities.

This section is a general overview of major medical facilities and services available to the civilian community. This overview is limited to the local government facilities of the Guam Memorial Hospital, Department of Mental Health and Substance Abuse, Department of Public Health and Social Services and the Department of Education as well as the major private providers.

1. Guam Memorial Hospital Authority.

The Guam Memorial Hospital's bed capacity is currently 192 beds: 159 acute care beds and 33 long-term care beds in the Skilled Nursing Facility. The number of beds in use, however, varies with patient volume and the availability of specialty staff.

The hospital provides all customary acute services and certain specialty services. These include adult and pediatric medical services; inpatient and ambulatory surgery; intensive care (neonatal, pediatric and adult); skilled nursing care; laboratory and comprehensive blood bank services; radiology, nuclear medicine and CT scan diagnostic services; pharmacy; respiratory care and other diagnostic cardiopulmonary services; renal dialysis; physical, occupational and recreational therapy; and 24-hour emergency services. In addition, public and patient education on a variety of medical topics, social services and pastoral care services are also available.

The Authority's fiscal year 1994 operating budget of \$61.4 million is funded by revenues generated from patient charges and subsidized through legislative appropriations provided to fund operational shortfalls. Figure 16 shows the Operating Revenue and Expense of GMHA and Figure 17 shows the Operating Expenses of GMHA from 1991 to 1994.

The Hospital has an authorized staff level of 970 FTE's (full-time equivalents) that includes medical, nursing, ancillary, maintenance and administrative personnel. The Medical Staff is comprised of 128 physicians with Hospital privileges to practice in a variety of medical specialties. These services are augmented by those of 8 allied health professionals serving as Certified Registered Nurse Anesthetists, Surgical Assistants, Certified Registered Nurse Midwives, and Clinical Psychologists.

Table 47 shows GMHA's health manpower shortage is largely in the nursing profession. Recruitment of nurses from the U.S. and other countries has been a source of discussion and controversy among the island's people, health professionals, and elected leaders. Some emphasize that Guam must recruit its nurses locally. However, some of the nurse specialties needed in the hospital are not available on the island.

The pleas for more nurses in the Hospital and in the Department of Public Health and Social Services to circumvent burnout of nurses currently working in these departments has directed attention to the registered nurses and licensed practical nurses working in the Department of Education. The attention primarily is on the limited duties that these nurses can currently perform due to the lack of a qualified and competent supervisor for these nurses. Whether each school should have a registered and a licensed practical nurse assigned to it or whether these personnel should be redistributed to meet the needs of DPHSS and GMHA is a decision that must be made by island leaders.

Figure 16 GMHA's Operating Revenue and Expense - 1991 to 1994

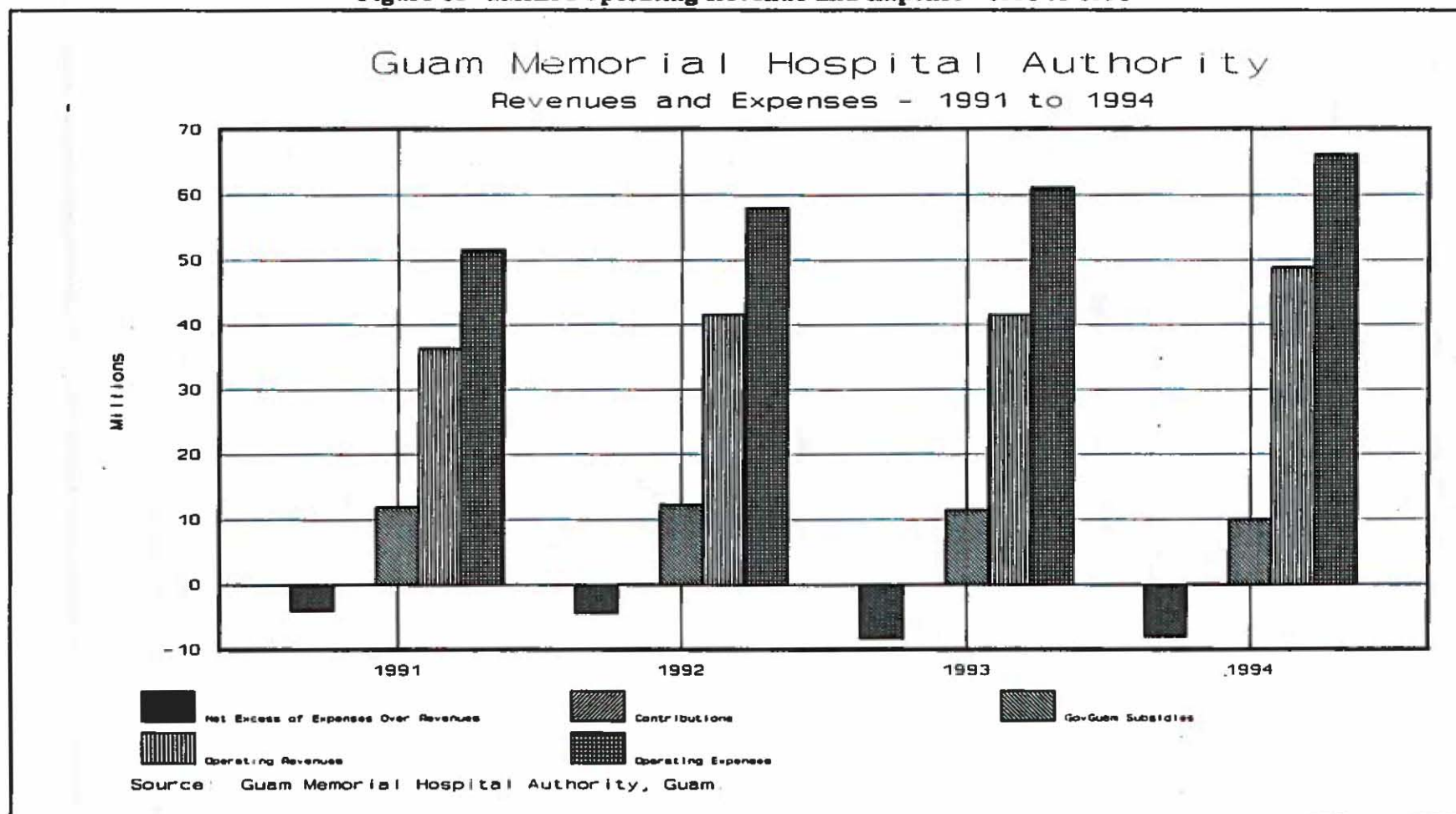
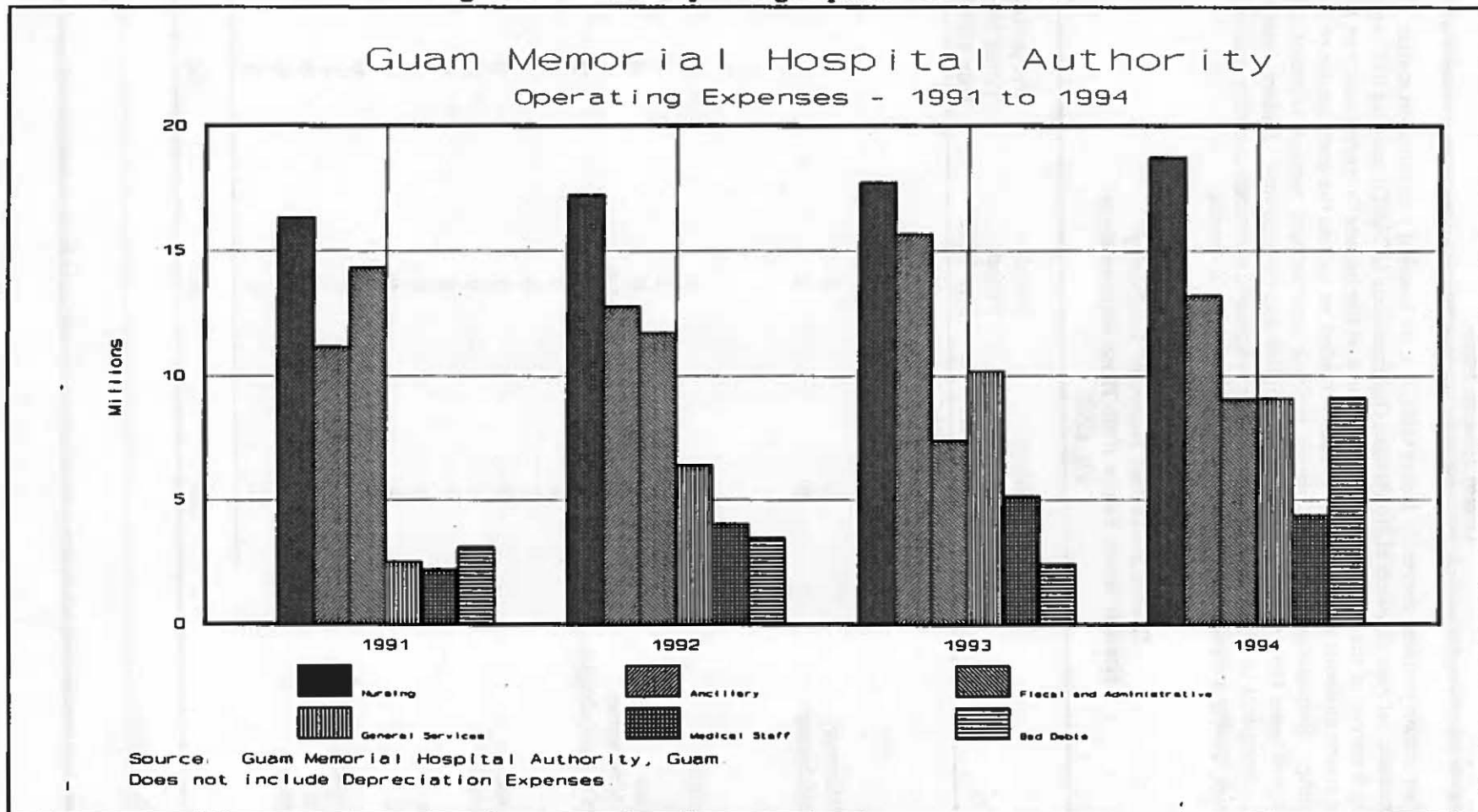


Figure 17: GMHA's Operating Expense - 1991 to 1994



Another major problem currently facing GMHA is its hospital accreditation status. The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) cited 24 deficiencies found during a survey of the facilities in 1982 and revoked the hospital's accreditation in 1983. This raises concerns about the quality of services provided, as well as the continuance of health care financing. Reimbursement from federal funding sources and various research grants are contingent upon the existence of adequate facilities and medical care. Federal health officials have, subsequent to 1983, been prompted to make annual inspections to certify that the hospital provides quality services to Medicare, Medicaid, and MCH clients.

Table 47
Guam Memorial Hospital Authority
Health Work Force Full-Time Equivalency
FY 1995

Major Categories	Number Full-Time Equivalent	Total Filled For 1995	Projected Total Needs For 1996
Physicians:			
Family Practitioner	0	0	2
General Practitioner	0	0	0
Specialist:			
Anesthesiologist	6	6	6
Cardiologist	1	1	1
Dermatologist	0	0	0
Emergency Medicine	14	14	14
Obstetrician/Gynecologist	2	2	2
Internist	0	0	0
Neurologist	0	0	0
Ophthalmologist	0	0	0
Otolaryngologist	0	0	0
Pathologist	2	2	2
Pediatrician	0	0	0
Psychiatrist	0	0	0
Radiologist	0	0	0
General Surgeon	1	1	1
Orthopaedist	0	0	0
Plastic Surgeon	0	0	0
Urologist	0	0	0
Total	26	26	26

Source: GMHA, Guam.

Table 47 (Continued)
Guam Memorial Hospital Authority
Health Work Force Full-Time Equivalency
FY 1995

Major Categories	Number Full-Time Equivalent	Total Filled For 1995	Projected Total Needs For 1996
Dentistry	0	0	0
Nursing:			
Registered Nurses:			
Administrator/Assistant Administrator	2	0	1
Consultant	0	0	0
Supervisor/Assistant Supervisor	12	7	12
Licensing Administrator	0	0	0
Instructor/Professor	1	0	1
Head Nurse/Assistant Head Nurse	14	9	14
Staff/General Duty Nurse Practitioner	185	152	185
Nurse Anesthetist	0	0	0
Nurse Midwife	0	0	0
Clinical Specialist (MS Degree)	0	0	0
Total	214	168	213
Licensed Practical Nurses	48	44	48
Nursing Assistant:			
Nurses Aides	103	99	103
Certified Nurses Aide	15	13	15
Total	166	156	166

Source: GMHA, Guam.

Table 47 (Continued)
Guam Memorial Hospital Authority
Health Work Force Full-Time Equivalency
FY 1995

Major Categories	Number Full-Time Equivalent	Total Filled For 1995	Projected Total Needs For 1996
Allied Health:			
Pharmacist	11	8	11
Pharmacy Assistant/ Technician	11	11	11
Physical Therapist	3	2.5	3
Medical Laboratory:			
Medical Technologist (ASCP)	16	13	17
Lab Technician	23	20	26
Lab Aide	2	2	2
Electrocardiogram:			
Technologist	0	0	0
Nuclear Medicine Technologist	1	1	1
Radiologic Technologist	11	9	9
X-Ray Technician	12	12	12
Recreational Therapy:			
Recreational Therapist	1	1	1
Recreational Technician	2	1	2

Source: GMHA, Guam.

Table 47 (Continued)
Guam Memorial Hospital Authority
Health Work Force Full-Time Equivalency
FY 1995

Major Categories	Number Full-Time Equivalent	Total Filled For 1995	Projected Total Needs For 1996
Respiratory Therapy:			
Registered Respiratory Therapist	8	4	12
Certified Respiratory Therapist	3	3	4
Cardiopulmonary/Neurology/Respiratory Technician	12	12	12
Social Workers:			
Medical	7	7	7
Nutrition:			
Dietician	6	4	6
Nutritionist	0	0	1
Emergency Medical Services:			
Administrator	0	0	1
Emergency Medical Technician	0	0	2
Medical Health Records:			
Medical Health Records Administrator	1	1	1
Medical Health Records Supervisor	1	1	1
Health Administrator	2	2	2
Quality Assurance Coordinator	4	3	4
Utilization Review Coordinator	7	6	7

Source: GMHA, Guam.

GMHA is currently seeking accreditation from the JCAHO. The management and staff have conducted mock accreditation surveys to identify deficiencies that need to be corrected. A \$5.6 million federal grant that was approved in early 1985 was used together with local appropriations to renovate and expand the facility and to correct structural and life safety deficiencies.

Newly constructed facilities include a new wing that houses a maternity unit on the second floor and administrative offices on the first floor. In addition, new facilities were built to house the Medical Records/Medical Library, Rehabilitative Services, Patient Registration and Hemodialysis Unit. All existing inpatient units and diagnostic service areas were also upgraded. An fully equipped kitchen to facilitate inpatient meal preparations was also added. The expansion of the facility brought the Hospital into compliance with existing building and life safety codes and allowed for all Hospital services to be located in one area. By the end of FY 1991, all Hospital services were located on one campus. Prior to the onset of construction, the Hemodialysis Unit was housed at the old GMH facility, and inpatient meals were purchased through contractual arrangements.

Through local appropriation (\$9,360,000), ground breaking for the Long-Term Care facility was conducted on March 4, 1994. The facility was substantially completed at the end of fiscal year 1995 and was to provide 60 long-term care beds and a suite of four beds for hospice care. It would have also freed the 33 long-term care beds at GMHA, allowing for expansion of acute care services. Intermediate and Skilled Nursing care were to be provided at the LTCF, as well as rehabilitative services, dietary services, and other support functions to meet the residential needs of patients. The University of Guam had an informal agreement with GMHA on the use of the Long-Term Care facility. Furnishing and operating costs were to be partially funded through federal grants received by UOG's School of Nursing. UOG's Institute for Aging was also to be housed in the LTC facility to support research addressing community health care issues and the health status of the island. Both entities was to have their own staff for administrative as well as clinical support. In early 1996, however, the Authority issued a request for proposal (RFP) for the privatization of the facility's operations.

Table 48
Guam Memorial Hospital Authority
Accounts Receivable Analysis (in millions)
FY1990 - FY1994

Fiscal Year	Accounts Receivable	Collection	Collection Rate
1990	\$ 39.8	\$ 26.8	67.3%
1991	\$ 44.9	\$ 33.7	75.1%
1992	\$ 46.7	\$ 31.8	68.1%
1993	\$ 51.2	\$ 33.3	65.0%
1994	\$ 42.8	\$ 30.9	72.2%

Source: GMHA, Guam.

GMHA is currently certified by the Health Care Financing Administration and its blood bank is accredited by the American Association of Blood Banks (AABB). The hospital derives the majority of its revenues from Medicare, Medicaid, health maintenance organizations (HMOs), health insurers, and self-payors. Unfortunately, one of the main problems of hospital financing has been the collection of these revenues. Reimbursements have generally been slow and may have lagged several months behind actual service or treatment. However, major strides have been made recently in streamlining the billing process.

A management information system (MIS) is being implemented to assist and improve the Hospital's billing process. The system will allow for Hospital charges to be captured on the floors and the various service areas. With continued improvement in its billing and financial records through the Hospital's new integrated computer system, GMHA officials expect to achieve an 85 percent collection rate.

2. Department of Public Health and Social Services.

The mission of the Department of Public Health and Social Services (DPH&SS) is to assist the people of the Territory of Guam in achieving and maintaining their highest levels of independence and self-sufficiency in health and social welfare. The functions, responsibilities, and authority of the Department are defined by local and federal laws and regulations. Both local and federal monies fund the various diverse programs and services. Except for categorical programs governed by specific eligibility regulations, social and health care services are generally provided to low income individuals and families free of charge.

Services are provided at three regional health centers at Dededo, Mangilao, and Inarajan and a satellite clinic at Santa Rita. The Northern Regional Health Center serves residents of Yigo, Dededo, Harmon, Tamuning, and Tumon. The Central Regional Health Center, in Mangilao, provides services to those residing in Barrigada, Mongmong, Toto, Maite, Asan, Sinajana, Chalan Pago, Ordot, Agana Heights, Agana, and Mangilao. Located in Inarajan, the Southern Region Community Health Center (SRCHC) offers services to residents of Yona, Talofofo, Malojloj, Inarajan, Merizo, Piti, Umatac, Santa Rita, and Agat. A small satellite clinic offering limited services is located in Santa Rita, and serves residents of Agat and Santa Rita. Clients can and do cross over. The SRCHC is funded by a Community Health Center Grant, fees, and local funds, while the other two clinics operate through DPH&SS local and grant monies.

Specific program services provided at each of the three regional health centers are: Maternal and Child Health, Family Planning, Nutrition Health Services/WIC Clinic, Dental Health, and generalized Public Health Nursing. Certain medical support services are available only at the Southern and Central Regional Health Centers. Physician care under the Children with Special Health Needs program and Communicable Disease Control services are available only through the Central Regional Clinic. Home Visiting services are available islandwide.

Program clinics and health services are scheduled at different times between 8 A.M. and 5 P.M., Monday through Friday with the exception of the Santa Rita Clinic, which is open Wednesday and Friday afternoons for clinic services and Mondays for WIC clinic, and the Southern Regional Health Center which is open from Monday through Saturday.

Program clinics and services at each regional health center are listed in Table 3 on the following

Table 49
Health Service Programs and Providers
Department of Public Health and Social Services

Health Services and Programs	Regional Health Centers			Types of Provider
	Northern	Central	Southern	
Women's Health	Yes	Yes	Yes	Physician
Child Health	Yes	Yes	Yes	Physician
Youth	Yes	No	No	Physician
Chronic Disease Prevention	No	Yes ¹	Yes ¹	Physician, Nutritionist, Health Educator
Communicable Disease	No	Yes	Yes	Physician
Immunization	Yes	Yes	Yes	RN, LPN
Children With Special Health Needs	No	Yes	No	Physician
Nutrition Health Services/WIC	Yes	Yes	Yes	Nutritionist
Health Education	No	Yes	No	Health Educator
Pharmacy	Yes	Yes	Yes	Pharmacist
Laboratory	No	Yes	Yes ¹	Lab Technician
X-Ray	No	Yes	No	X-Ray Technician
Dental	Yes	Yes	Yes	Dentist, Dental Health Specialist

Source: Department of Public Health and Social Services, Guam.

¹ Limited Services

Table 50
Patient Encounters by Program
Fiscal Year 1993

Program	Encounter	% of Total
Maternal Child Health	37,088	62.63
Family Planning	6,400	10.81
Generalized Nursing, CDC & Program Support	8,000	13.51
Home Care	3,600	6.08
Chronic/Lytico/Bodig	2,000	3.38
Health Education	1,258	2.12
Health Fair	869	1.47
TOTAL ENCOUNTERS	59,215	100.00

Source: Department of Public Health and Social Services, Guam.

Table 51
DPH&SS Health Professional
and Support Services Personnel

Positions	Allotted and Funded	Filled
Physicians	4	2
Nurses (NP)	3	1
Nurses (RN)	28	18
Nurses (LPN)	10	7
Nurses (Aides)	12	12
Laboratory	18	12
Health Educators	5	4
Pharmacists	3	2
X-Ray	2	2
Dental Specialists	20	19
Dentists	6	4
Speech Pathologists	1	1
Nutritionists	10	7
Nutrition Assistants	11	10
Total	133	98

Source: Department of Public Health and Social Services, Guam

page. Primary care services are offered by physicians and nurse practitioners (NPs) where indicated; other services are provided by various specialized personnel.

Utilization data for the programs at the regional centers were unavailable. However, Table 49 shows the utilization of the various nursing services for Fiscal Year 1993.

The Department in FY95 has 149 locally funded FTEs, 7 unfunded FTEs, 88 federally funded FTEs, and 2 unfunded FTEs for a total of 246 employees in the Division of Public Health. The number and type of personnel within the various health professional and support services are shown in Table 51.

The shortage of physicians, nurse practitioners, registered nurses, licensed practical nurses, and nurse's aides, as shown in Table 51, places significant stress on the Department. The northern and southern regional centers are affected by the shortage and at times clients must bypass the center closest to them to obtain care at the central clinic. Outreach programs and health care program planning are limited in range due to the dual duties and responsibilities of the nurses. The problem is further compounded with the reduction in program funding from the federal and local governments. The demand for health care and services is high but the resources to provide public assistance are at low levels.

Besides the dilemma of decreasing financial resources, funds allotted and approved for personnel

recruitment and for purchase of crucial medical items and equipment are processed sluggishly by the agencies and departments responsible for processing such documents. The requisition priority for medical supplies is the same as the requisition for office supplies and equipment. The recruitment process for health professionals vitally needed by the Department takes anywhere from six months to one year.

Health professionals are exempt from the hiring freeze currently imposed on Government of Guam departments/agencies. However, personnel actions to recruit and hire nurses have been returned to the department without action. Thus, through employment termination or retirement, the shortages continue to occur and take their toll on the morale and welfare of active nurses in the department's work force.

3. Department of Mental Health and Substance Abuse.

The Department of Mental Health and Substance Abuse (DMHSA) is the sole public agency available and authorized to provide inpatient and outpatient mental health services to the people of the Territory of Guam. The Department was created by Public Law 17-21 in October 1983 through a merger of the former Mental Health and Substance Abuse Agency and the Community Mental Health Center.

The Department's philosophy stresses that all provided services must enhance the client's psychological, social, and economic situation as well as improve his physical well-being in order to make him an optimally functioning member of our community.

The Department of Mental Health and Substance Abuse is a Government of Guam line agency, administered by a Director and Deputy Director with the assistance of an appointed Advisory Council. DMHSA is located in a three-story state of the art facility at 790 Governor Carlos G. Camacho Road in Tamuning. It occupies a new, \$12 million-dollar building which replaced the dilapidated facility at the old Guam Memorial Hospital. DMHSA has the capability to operate a 48-inpatient bed capacity comprising of 16 inpatient beds for children, 16-inpatient beds for adults, and 16-inpatient beds for residential treatment of drug and alcohol clients. However, the limited funds and shortage of staff, Table 52, has created problems in the effective operations and quality utilization of the 48-inpatient bed capacity.

Additionally, it hampers the provision of a multitude of services and programs that can be provided through their various administrative and service divisions. The Division of Medical Services is comprised of Child Inpatient Services, Adult Inpatient Services, Medication Clinic, and Emergency Services & Consultation Liaison. The Division of Clinical Services consists of Intake, Counseling Branch, Drug & Alcohol Branch, Case Management Branch, Prevention and Training Branch, and Residential and Day Treatment Branch. Special Programs include Rape Crisis, Therapeutic Foster Care, and New Beginnings.

4. Department of Education.

Children, from the moment of birth, are passive recipients of medical care. However, the child must be allowed to gradually become an active participant and eventually, an aggressive seeker of good health. The schools, as a major social structure, provide an educational setting to foster these goals.

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Table 53
DMH&SA Health Professional
and Support Services Personnel

Positions	Allotted and Funded	Filled
Psychiatrists/Physicians	3	2
Psychiatric Nurses (RN)	16	11
Nurses (LPN)	5	5
Clinical Administrator	1	1
Supervisors/Social Workers/D&A Counselors	44	31
Psychiatric Technicians	57	48
Psychologist	2	0
Admin Support Staff	20	15
Mental Health Administrator	1	0
Personnel Officer	1	1
Quality Assurance Coordinator	1	0
Planners	3	3
Program Coordinator	7	6
Recreational Therapist	2	1
Secretaries	10	7
Total	173	131

Source: Department of Mental Health and Substance Abuse, Guam

No other community setting even approaches the magnitude of the school education enterprise ranging from Kindergarten (K) through grade 12, with its "captive" audience for school health education and the resources available for reaching that audience.

In 1991 the Department of Education (DOE) adopted an integrated, comprehensive health education curriculum for all children, from kindergarten through grade 5 and continuing in grades 6 and 10. DOE believes that a comprehensive health education will provide students with information that will assist them in examining how their attitudes and behavior may harm health. It also provides students with skills that will help them change these behaviors and adopt new ones that promote a healthier lifestyle.

The school health curriculum seeks to provide students with a personal learning and growing experience. It outlines concepts and student-oriented performance objectives in a sequential manner for each grade level. These concepts and objectives have been designed to acquaint students with health information and practices that are both personally relevant and interesting. The curriculum for K-through 5 stresses the following subjects:

- Family Life and Human Sexuality;
- Child Abuse (given at the 5th grade level);
- Environmental Health;

- Personal Safety;
- Physical and Mental Health Development;
- Nutrition;
- Disease Prevention and Control; and
- Substance Use and Abuse to include tobacco, alcohol, and drugs.

The curriculum for the middle and high school grades is organized as above with the exception that the objectives for the subjects, listed, have been expanded to give students a broader view of the subject matter.

DOE guidance on health classes is that at least one health education class be given at the middle school and high school level. Previously, the classes were given to students at the 6th and 10th grade level. Now, participation of students in health classes at a specific grade level varies with each school. Any efforts to have a full-year health course taught to all middle and high school students must have the approval of the Board of Education and the DOE administration. The approval must not only include the added curriculum, but the allocation of funding, manpower, and classroom resources as well.

Currently, health teachers, registered nurses, and licensed practical nurses, are in most of the schools on Guam and are available to provide information and health education instructions. However, health teachers provide majority of the instructions at the middle school and high school level. The registered nurses and licensed practical nurses are situated in a nurse's station to provide health services at the school and, at times, are called upon to conduct health classes. Nurses are relied on by the teachers, staff, and management of the school not only in the conduct of health classes but, also, in tending to emergencies as they arise.

Table 53 shows that 91 percent of the registered nurses positions are filled with 80 percent of the licensed practical nurses filled in DOE. Assuming that the ratio is one registered nurse per 1,000 student population, the 34 positions would allow for one registered nurse per 932.7 student population which accommodates the nurse/student ratio. However, with the current filled positions of 31, the nurse/student ratio is 1/1,023.

5. Private Health Care Facilities and Services.

Private sector facilities consist of 28 private clinics and physicians offices that offer a full range of medical services in an ambulatory setting.

a. Health Maintenance Organizations (HMOs).

Individuals and families can get a variety of medical services for a prepaid annual or monthly membership fee. This is obtained through health maintenance organizations, or HMOs. A primary physician is assigned to the member. In some instances, there are restrictions on the members on the specialist and hospitals they see or patronize.

There are currently two federally qualified HMOs on Guam. One, the Guam Memorial Health Plan (GMHP), provides its services through various clinics, group practices, and private physicians' offices. The other health maintenance organization, FHP, Inc., has its own medical

and health facilities and staff of health providers. The total enrollment for these two HMOs was approximately 55.8 percent of the island's population (approximately 81,000 as of June 1995).

Table 53
Department of Education School Nurses
by School and Student Population
SY 1994-1995

School	Student Enrollment	RNs FTE-Position	LPNs Filled	FTE-Position Filled
Elementary				
Agana Heights	461	1	1	0
Agat	902	1	1	1
Upi	1,097	1	1	1
B.P. Carbullido	532	1	1	0
Ordot/Chalan	539	1	1	0
Pago				
M.A. Ulloa	1,258	1	1	0
F.Q. Sanchez	129	1	1	0
Inarajan	444	1	1	0
Merizo	335	1	0	0
P.C. Lujan	651	1	1	1
H.B. Price	927	1	1	0
J.P. Torres	356	1	1	0
C.L. Taitano	767	1	1	0
Talofofo	388	1	1	0
Tamuning	605	1	1	0
Wettengel	771	1	1	1
H.S. Truman	588	1	1	0
Yigo	982	1	0	1
LBJ	364	1	1	0
Chief Brodie	731	1	1	0
Harmon Loop	811	1	1	0
J.Q. San Miguel	590	1	1	0
Finegayan	1,509	1	1	1
M.U. Lujan	881	1	1	0
Total	16,618	24	22	6

Source: Department of Education

Table 53 (Continued)
Department of Education School Nurses
by School and Student Population
SY 1994-1995

School	Student Enrollment	RNs FTE-Position	LPNs Filled	FTE-Position Filled	Filled
Middle School					
L.P. Untalan	1,231	1	1	1	1
A.I. Johnston	1,336	1	0	1	1
Dededo	1,718	1	1	1	1
Piti	860	1	1	1	1
F.B. Leon Guerrero	1,400	1	1	1	0
Inarajan	559	1	0	0	0
Total	7,104	6	4	5	4
High School					
Oceanview	1,041	1	1	1	1
Inarajan	780	1	1	0	0
George Washington	2,234	1	0	1	1
John F. Kennedy	2,219	1	1	1	0
Simon Sanchez	1,715	1	1	0	0
Total	7,989	5	4	3	2
DOE Division					
Headstart		1	1	1	0
Special Education		3	3	0	0
Pupil Personnel Services		1	1	0	0
Total		5	5	1	0
Overall DOE	31,711	34	31	10	8

Source: Department of Education

Another HMO on island, though not federally qualified, is HML, Inc., a wholly owned subsidiary of FHP, Inc. The avenues used to provide services through this HMO are similar to those of GMHP. HML members have complete access to the auxiliary services offered by the FHP Guam Medical Center. Total enrollment for this HMO was approximately 6,200 as of 1995.

b. Medical Clinics and Physician's Offices.

The Seventh Day Adventist Clinic, the Doctor's Clinic (formerly the Family Medical Clinic), and the Pacificare Medical Center clinics provide a full range of medical specialties and ancillary services. The remainder of the private medical facilities are either solo or group practices. Services offered include family practice, obstetric/gynecological care, pediatrics, internal medicine, otolaryngology, urology, dermatology, orthopedics, general surgery and others.

B. Health Promotion and Protection.

The principal mission of health promotion and protection programs is to encourage individuals to take responsibility for their own health and well-being. With this in mind, the general public is now beginning to associate individual behavior with health status. Communications on health promotion and protection are widespread amid advertising and marketing campaigns that still foster immediate gratification through alcohol consumption, cigarette smoking and "fast food" dining without regard to the consequences for health.

The increase in health care expenditures and improved access to care has had little impact on the island's health status with respect to chronic illness, disability, and premature death and shows the need to improve on individual behavior and lifestyle. Figure 18 shows the principal causes of death for the past three decades for people past their middle years are still heart disease, cancer and stroke, diabetes, and unintentional injuries. The medical care strategies implemented or in the process of being implemented for these conditions have consumed and will consume millions of dollars. When considering that most of the costly chronic and disabling diseases and unintentional injuries are preventable, it becomes apparent that money is wasted when people do not take the proper measures to prevent their occurrence.

Consequently, perspectives on health and well-being which emphasize health promotion and protection have replaced the traditional emphasis on the treatment of illness. This change has been prompted by the acquired knowledge that environment and lifestyles are important determinants of health. Thus, each individual must bear responsibility for his or her well-being.

1. Health Education.

Currently, health education plays a major role in educating the public about health problems such as heart disease, diabetes, hypertension, alcoholism and drug addiction, as well as unintentional injuries, through strategies leading to individual lifestyle modification and community action. Previously, it merely supplemented the medical care system by informing the public about the availability and value of various services, how to recognize symptoms and seek help, or by providing individual instruction in the compliance of treatment regimens.

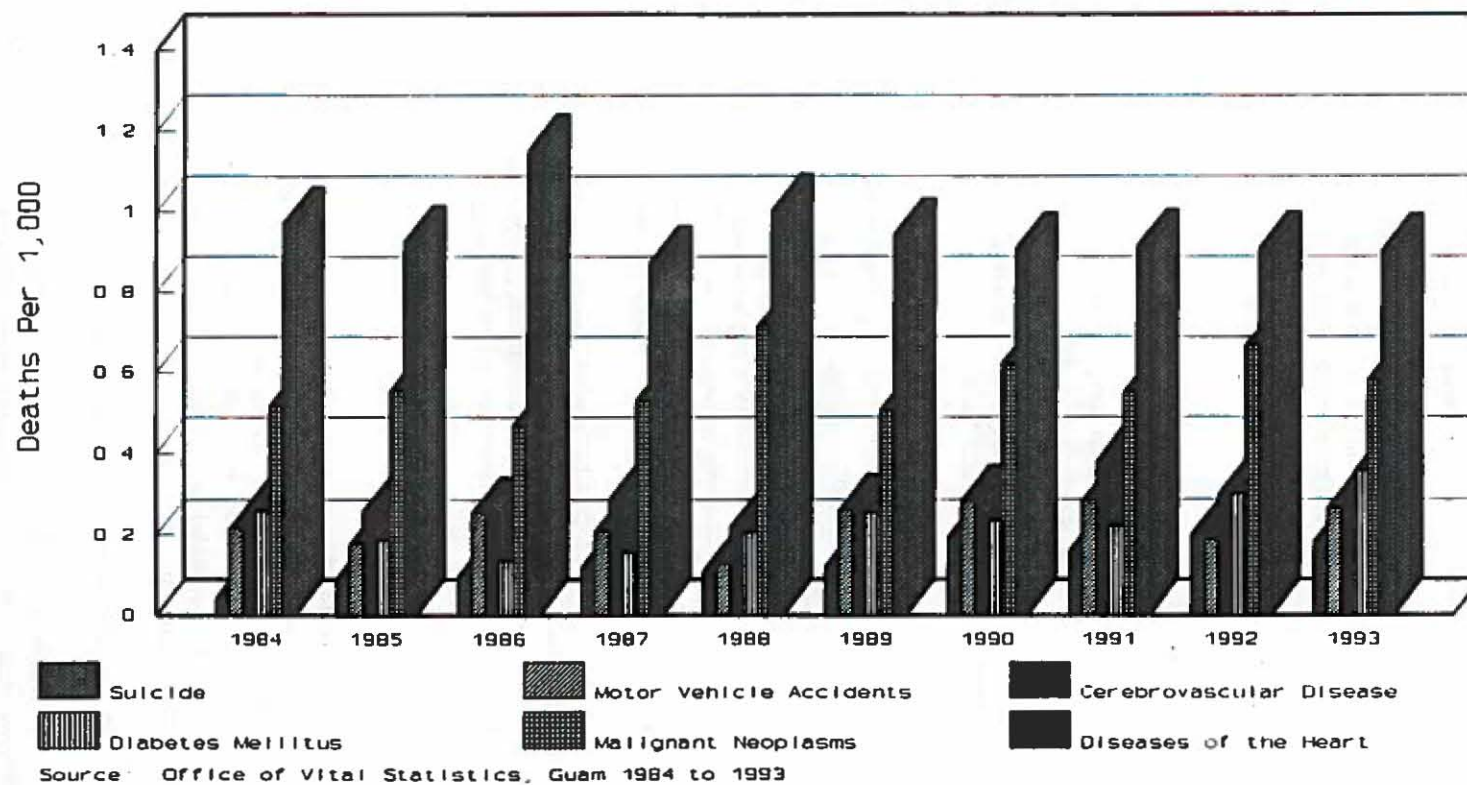
Health education comprises a set of six activities. These activities strive to:

- inform people about health, illness, disability, and ways in which they can improve and protect their own health, including more efficient use of the delivery system;
- motivate people to change to more healthful practices;

Figure 18 Deaths from Specific Causes - 1984 to 1993

Deaths From Specific Causes

Guam: 1984 to 1993



- teach the necessary skills to adopt and maintain healthful practices and lifestyles;
- foster teaching and communication skills in all those engaged in educating consumers about health;
- advocate changes in the environment that will facilitate healthful conditions and healthful behavior; and
- add to knowledge through research and evaluation concerning the most effective ways of achieving these objectives.

Briefly, health education is meant to be a process that informs, motivates, and helps people to adopt and maintain healthy practices and lifestyles. Ideally, it should be a lifelong process that starts in early childhood. It should be provided in school, at the place of work, in every primary health care setting, and on a community-wide basis. Such health education should include information on general health maintenance and illness prevention, as well as disease-specific education for anyone with an identified chronic illness or a propensity to develop such illness. Moreover, health education should also advocate the environmental changes needed to facilitate its program goals, and conduct professional training and research towards the same ends.

On Guam, health education is provided through several mechanisms. These mechanisms are school health education, patient education for persons using a particular health service, community health education for the general public, and education and information provided by Guam's voluntary groups.

a. School Health Education.

The school health education program (See Department of Education) allows children to become proactive for good health. The schools provide information and the setting to encourage children to examine attitudes and behavior that may be detrimental to their health. They stimulate behavior modification in students to adopt healthier lifestyles.

b. Patient Education.

Patient education is the learning process which is generated during preventive, diagnostic, therapeutic, or rehabilitative treatments or services. Any contact with a health professional is a learning experience in itself, but this process does not necessarily lead to the improvement of the patient's health. A large proportion of patient education is done on an informal one-to-one basis by physicians in their own offices, as well as by nurses, therapists, and other health professionals. These providers are usually under severe time constraints and cannot provide either in-depth coverage of the instructional material or follow-up. The quality and content vary widely.

An alternative method of providing patient education is through a formal setting such as organized classes. The primary providers of organized patient education are FHP, a health maintenance organization, the Seventh Day Adventist Clinic (SDA), The Guam Memorial Hospital Authority (GMHA), and the Department of Public Health and Social Services (DPHSS).

Patient education at Guam Memorial Hospital is geared toward compliance and maintenance of treatment regimen, and self-care after discharge from the hospital. Instructions for post-partum and post-surgical care, as well as for acute gastroenteritis, diabetes, and cardiac care are tailored to individual needs.

The Department of Public Health and Social Services provides health care education according to the individual patient's needs. Instructions are provided on home nursing care; tuberculosis, leprosy, and sexually transmitted disease control; immunization; nutrition; family planning; prenatal care, infant care; and dental care. Patient education services are available at the regional public health clinics, or are brought to the homes of patients by public health personnel.

c. Community Health Education.

The objectives of community health education are two-fold. The first objective is to foster individual and community awareness about health risk factors and harmful lifestyles. The second objective is to change lifestyles and to encourage the adoption of behavior patterns that will have beneficial influence on health status. The programs are directed towards prevention and often promote the concept of self-help.

Community health education is comprised of many aspects:

- needs assessment studies,
- community organizations networking,
- problem-solving,
- training,
- health screening,
- educational planning, and
- the dissemination of health information.

These health education programs focus on specific target population groups, usually those at risk, and are reinforced with media presentations.

Guam's major provider of community health education is the Department of Public Health and Social Services. Various divisions offer information and education, and particular emphasis is placed on family planning, sexually transmitted diseases, immunization, dental health, nutrition, maternal and child health, risk reduction, and sanitation.

The DPHSS Health Education Section provides health education services through outreach activities at public health facilities, schools, community centers, and other organizations. The Health Education Section is responsible for the planning, development, coordination, implementation, and evaluation of activities related to injury prevention and control, health and wellness with emphasis on risk factors for cancer and heart disease such as tobacco use prevention and control, and physical fitness. The strategies used by the Health Education Section include advocating and networking for comprehensive school health education, initiating community health promotions and media campaigns, and providing related technical assistance.

The DPHSS Health Education Section is involved in numerous health promotion activities on the island, often working in collaboration with other health organizations. Promotions which

the Health Education Section has been involved include the Great American Smoke-Out, the Clean Indoor Air Act, Restricting Youth Access to Tobacco, Breast Cancer Awareness/Mammography Day, Guam Safe Kids Week, Immunization Promotions, World AIDS Day, Pediculosis Prevention, and the Fun for Fitness Run. The Health Education Section produces Sinangan Lina'la' - Guam's Wellness Promotion Newsletter and the Safety Information Network (SIGN) newsletter.

The Office of Highway Safety (OHS), in an attempt to reduce road fatalities, provides community education on traffic-related risk factors. It sponsors the Motor Vehicle Occupant Protection program which encourages people to use seat-belts and child restraints while driving, and discourages the transportation of people in the bed of pick-up truck. It has also helped in initiating the Student Against Drunk Driving (SADD) campaign within the public high schools. Various educational materials, such as pamphlets, slides, and movies are available to any interested group in the community. OHS works in close conjunction with DPHSS and the Guam Police Department.

Several other government agencies offer health education services. The Department of Administration informs all new employees of safety hazards at the work place through a mandatory workshop combined with a media presentation; the Guam Police Department offers classroom presentations at the request of teachers to raise awareness about issues such as personal safety and traffic accidents among school children and has started the Drug Abuse Resistance Education (DARE) program for upper elementary through high school grade levels; and the Department of Mental Health and Substance Abuse (DMHSA) Prevention Branch presents a workshop, "Drug-Free Workplace Compliance Training," at the request of Government of Guam departments and agencies and also conducts Alcohol Abuse Intervention Training."

Guam's three health maintenance organizations (HMOs), FHP, Inc., Health Maintenance Life Inc., (HML), and Guam Memorial Health Plan (GMHP) are active participants in community health education efforts. They have sponsored and participated in activities which promote good health through physical fitness, anti-smoking campaigns, and health screening events.

d. Community Health Education by Voluntary Groups.

Voluntary civic groups are community resources with an increasing beneficial impact on health awareness and health education. The Guam Chapter of the American Red Cross provides instructions on methods to prevent accidents, promote individual well-being, save human lives, and prevent or reduce human suffering. The Red Cross offers courses in First Aid and Cardio-Pulmonary Resuscitation (CPR), a Healthy Pregnancy/Healthy Baby Prepared Childbirth course, Disaster Response Training, and a Child Care Providers course. Additional classes include water safety (swimming) and boating safety. Courses vary in degree of difficulty so that they are applicable for everyone from homemakers, businessmen, and school children, to specific groups, such as families of cardiac patients, ambulance attendants, and rescue workers. The more popular classes are held on a regular basis while other classes are held as demand necessitates.

The American Cancer Society (Guam Chapter), provides concrete assistance through their service and rehabilitation program, as well as public education to Guam's population.

Literature, films, and speakers are provided free-of-charge for both adult and youth audiences. The focus of these activities is reducing cancer risks and encouraging early detection. A computerized data base filled with the latest information about cancer is made available to those with the disease as well as to the public at large. The American Cancer Society also sponsors life-saving media messages on cancer risks and early detection.

Other civic groups offer community education and services through their respective programs. The Guam Diabetes Association provides counseling and nutrition information to newly diagnosed diabetics and support to patients and their families through monthly meetings. The Guam Ostomy Association supports ostomy patients and teaches them self-care so that they might continue to lead a normal and productive life. The Lytico and Bodig Association provides needed medical equipment and supplies to patients, and informs and educates the patients and their families about the progress of the disease and the care for the patients.

Some of these voluntary groups participate in health fairs held from time to time on the island. Accordingly, the educational efforts of the above voluntary groups have made an invaluable contribution to Guam's health awareness and illness prevention efforts, particularly since they often enhance and complement health education activities of Guam's public and private health care system.

C. Prevention and Detection Services.

Prevention and detection services are intended to promote the optimum physical and mental well-being of the individual and the community. They prevent the development of disease and illness, or identify disease and illness at the pre-symptomatic or early stage when timely intervention is possible. Government and private health organizations provide prevention and detection programs that addresses immunization, communicable disease control, and community screening.

The Communicable Disease Control Unit of the DPHSS provides a wide array of services as part of the detection, diagnosis, treatment, surveillance, follow-up, and outbreak control measures for infectious and communicable diseases. Each of the services augments the Unit's overall effort to limit the incidence and prevent the epidemic spread of disease.

The community screening programs are offered through several different providers and generally for specific target populations. While the Department of Education and the Department of Public Health and Social Services have made great strides in reaching the school-age population, screening efforts aimed at the adult population have not been as successful.

Part of the problem stems from the lack of job-site screening. The Health Education Section of DPH&SS is quite effective in reaching large portions of the adult population. More importantly, work site programs enabled ongoing efforts in health education and allowed for regularly scheduled medical contacts.

Most health screening for adults is done in private clinics as part of routine physical examination. The exams themselves are generally offered through insurance plans that are not equally accessible to the island's population and do not require the insured to get an annual physical. The uninsured and the medically indigent are oftentimes eligible for services at DPHSS but may be unaware of their eligibility and the services that are available.

The overriding concern, however, is the lack of community awareness in the benefits of health screening. In order for health screening, and prevention measures in general, to be effective, the population must be educated as to the availability, accessibility, and necessity of routine screening. Health education and health screening then must be done in conjunction with each other.

The scope of maternal and child health services on Guam adheres to the standards established by Department of Health and Human Services (DHHS). Both medical and non-medical services are readily available and accessible.

Despite this, the utilization of such services on Guam continues to fall below mainland standards. While the overall percentage of mothers who receive prenatal care in the first trimester of pregnancy is lower than that of U.S. mothers, Chamorro and Micronesian mothers show the poorest utilization patterns of all. This in turn corresponds with the higher incidence of low birth weight babies among Chamorro and Micronesian women.

In addition, the teenage births continue to account for a significant proportion of the island's total births. At present there is insufficient data on the access and availability of family planning to teenage women, as well as for the utilization of appropriate obstetric services. Accordingly, data collection and analysis on adolescent pregnancies has become a priority in the maternal and child health programs.

D. Diagnosis and Treatment Services.

Diagnosis and treatment services refer to the evaluation of individual health status, as well as the identification and alleviation of disease and ill health. These services currently consume the largest proportion of health care dollars nationwide and, as a result, have come under close scrutiny. Health officials are working to measure the impact that diagnostic and treatment services have on health status, and are monitoring the efficiency and effectiveness of service utilization.

1. Dental Services.

Guam's dental services are provided through both private dental clinics and the Department of Public Health and Social Services. Most private clinics are located in the Agana, Tamuning, and Harmon areas; public health centers are located in Mangilao, Dededo, and Inarajan. Residents in the southern villages who are not eligible for free public dental care must travel more than 30 minutes to the Agana-Tamuning area for service.

Dental care in the private sector ranges from complete examinations and diagnosis, to routine cleaning and fillings, and on through the more specialized root canal treatments, oral surgery, and orthodontics. Services in the private clinics are available weekdays and on Saturdays, between 7:30 a.m. and 8 p.m.

The dental section at the Department of Public Health and Social Services, on the other hand, provides a limited scope of dental services, which includes examination, x-rays, diagnosis, cleaning, sealing of teeth, fluoride treatment, treatment planning, and the performance of the certain treatment required. Orthodontic treatment, complicated oral surgery, and root canal therapy of multirrooted teeth are not performed, but appropriate referrals are made. This dental care, like other public health services, is generally available Mondays through Fridays

during regular working hours.

2. Emergency Medical Services.

Emergency medical services (EMS) have been defined by federal statute to include "those services required for alleviation of severe pain, or immediate diagnosis and treatment of unforeseen medical conditions, which, if not immediately diagnosed and treated would lead to disability or death." Services are to be delivered through a well-coordinated system that incorporates 15 specific components. These include:

- | | |
|-------------------------------------|---------------------------|
| a. manpower | i. training |
| b. communications | j. transportation |
| c. facilities | k. critical care units |
| d. public safety agencies | l. consumer participation |
| e. accessibility to care | m. transfer of patients |
| f. standard medical record keeping | n. evaluation |
| g. public information and education | o. mutual aid agreements |
| h. disaster linkage | |

The Office of Emergency Medical Services (OEMS) is the organizational unit within the Department of Public Health and Social Services that is responsible for EMS planning and development. Based on the rules and regulations governing emergency medical services on Guam, the OEMS licenses and certifies ambulances and attendants as well. Guam's EMS System has been designed to provide three classes of care.

Incident Care covers the range of operations from receiving an initial call for assistance to the dispatch and completion of the first aid triage, or determination of appropriate and necessary treatment.

Transport Care involves the management and coordination of resources to assure that appropriate medical response and transport decisions are made to provide either basic or advanced life support. Such "field care" is generally provided by Fire Department ambulance personnel.

Definitive Care includes those activities in the hospital setting which range from first aid to referrals for appropriate specialized medical services. These referrals may involve local treatment at either the Guam Memorial Hospital or the U.S. Naval Hospital; they may also involve a request to transport patients off-island for treatment that is unavailable on Guam.

Incident care and transport care are provided by the Guam Fire Department. Firefighters who have Emergency Medical Technician - Basic (EMT-B) training perform land and sea rescues and provide ambulance services.

Definitive care is given by licensed physicians, nurse practitioners, and nurses in the emergency rooms at GMH or Naval Hospital. Those patients who are brought to Naval Hospital, but who would otherwise be ineligible for medical care at a military facility, are stabilized and released or stabilized and transported to the Guam Memorial Hospital for further treatment.

The majority of emergencies fall under two distinct phases, each of which requires specific types of personnel. The "pre-hospital phase" begins with the initial call for aid and ends with the patient's admission to a hospital emergency room. The manpower needed includes dispatchers, Emergency Medical Technician (EMT) first responders and ambulance attendants.

All of the pre-hospital emergency care providers on Guam are Guam Fire Department EMT personnel who are dispatched to the scenes of medical emergencies. Staffing and training personnel has been and continues to be a priority with the Office of Emergency Medical Services and the Guam Fire Department.

The "emergency department phase" consists of evaluation and care given upon admission to the emergency room. Treatment rendered during this phase is provided by licensed physicians and nursing personnel.

Guam Memorial Hospital Authority staffs its emergency department with a physician 24 hours a day. There are, however, private clinics that provide emergency treatment services, but only on a limited basis.

Since its inception in 1973, as a federally funded program under the Office of Highway Safety, Department of Public Works, the Emergency Medical System's progress was sluggish with a lethargic approach by the Agencies responsible for setting it in motion. The first few years were dedicated to training and purchase of training aids, followed by the purchase of five ambulances in 1975 and three more ambulances in 1980. The Department of Public Health and Social Services became involved in the EMS development in 1975. An EMS Coordinator in DPH&SS, whose salary was funded by the OHS, evaluated the EMT-A training programs and was responsible for applying for funds to continue the training programs. Within this same period, the Office of Comprehensive Health Planning received a \$45,000 grant from the Department of Education and Welfare to develop a Comprehensive Emergency Medical Service plan which was completed in 1976. With the plan in place, Legislators introduced Bill 64A which became Public Law 14-11 on April 5, 1977. The legislative intent or purpose of P.L. 14-11 was to,

"...promote the establishment and maintenance of an effective system of emergency medical services, including the necessary equipment, personnel and facilities to insure that emergency patients receive prompt and adequate medical care throughout the range of emergency conditions encountered."

Furthermore, the Department of Public Health and Social Services was given the duty and responsibility to:

"Develop an effective emergency medical services communication system in cooperation with concerned public and private organizations and persons." This includes "plans for the establishment and implementation of the universal emergency telephone number '911' and criteria for the utilization of citizen-operated radios in alerting authorities about emergency situations."

With the enactment of P.L. 14-11, the wheels were set in motion in establishing Guam's Emergency Medical System. However, the wheels whirled in place without forward motion until one year (April 1978) after the enactment of the law when a permanent EMS Administrator

was recruited. Furthermore, the law created the Guam Emergency Medical Services Commission whose purpose was to "...whenever possible, provide technical and advisory support to the Administrator in fulfilling his duties and responsibilities under this Article." It did not empower the Commission to oversee the EMS program and did not allow the Commission to plan, develop, and implement programs to ensure an efficient and effective EMS program. Thus, the system went through a slow process of implementation. The law transferred all existing grants for planning and implementation of the EMSS and all equipment and staff funded by the grant to the EMS Administrator's office. But even with staff, equipment, and funding transfer, the EMSS planning and implementation process was still slow.

The appointment of a full-time administrator for the Office of Emergency Medical Services and the introduction Bill 303 which became Public Law 17-78 on December 12, 1985 show significant strides in the implementation of the EMS. P.L. 17-78 established the Guam Fire Department as an agency independent of the Guam Police Department within the Executive Branch. It gave the power and responsibility to the Fire Department of maintaining an emergency medical and rescue services system. The maintenance and operation of equipment needed to convey and provide services to the acutely ill, injured, incapacitated or helpless and requires emergency care was tasked to the Guam Fire Department. However, plan development and implementation for the EMS was still neglected.

The Guam Health Plan - 1985 to 1990, developed by the Guam Health Planning and Development Agency and the Guam Health Coordinating Council, discussed the Guam's EMS capabilities and limitations for providing emergency medical care. The Plan mentioned "both the OEMS and Fire Department personnel are working together to develop a staffing pattern that separates EMT-As from firemen, and to allow for specialization in emergency medical training. Additionally, the Plan mentioned that the goals and objectives of the OEMS included the communication and transportation networks. However, the implementation portion of the plan by the Agency was not monitored due to its dissolution in 1987.

Since 1985, the Governor of Guam was involved with the island's emergency communications problems between emergency and rescue departments and the coordinated efforts between these departments and a private organization (Motorola) tasked to set up communications systems.

In November, 1991, Bill 603 which became Public Law 21-61, appropriated \$1,343,160.00 from the General Fund to the Department of Public Works for the lease/purchase and installation of automatic multiple site selection trunked radio transmitters/repeaters at Mounts Sasalaguan, Alutom, Barrigada and Cabras Island and for the procurement of an emergency 911 communications system for all public safety and emergency response agencies. It further mandated that the Department of Public Works coordinate the construction and implementation of the 911 system with the Guam Police Department, Guam Fire Department, Civil Defense, and Guam Telephone Authority. On December 26, 1991, the Department of Public Works issued purchase order in the amount of \$1,343,160.00 to Motorola to cover the lease purchase of AMSS radio communications equipment was part of the SMARTNET 800 MHz Radio System. However, this purchase order was questioned and on February 6, 1992, the Attorney General advises DPW to cancel and renegotiate with Motorola. The controversy for an emergency 911 system between the Government and Motorola continued through to the latter part of 1993. From this controversy, the 911 Task Force, organized on May 12, 1992, was

formed to oversee the 911 system throughout its installation, implementation and training of 911 call takers. The Task Force recommended to the Governor that Civil Defense would be the overseer of an enhanced 911 system. But the drafted plan to budget, set procedures and training for 911 personnel was never finalized for implementation.

Bill 459 was enacted into law on December 2, 1992 and became P.L. 22-52. This law was introduced due to the legislative findings that the Guam Fire Department's mission was hindered by the lack of proper vehicles, equipment and supplies. Therefore, through this law the Guam Fire Department's Capital Outlay Revolving Fund was created to "purchase essential emergency rescue and firefighting vehicles, and emergency life support and medical equipment." Regressing to the period 1975 to 1980, a total of eight (8) ambulances were purchase to service the community. As an observation at this point, the Guam Fire Department has a total of 12 ambulances of which only seven (7) are operational. There are proposals to purchase three (3) ambulances. However, the total number of ambulances needed to service the current island population and their strategic location around the island must be carefully considered.

As mentioned at the very beginning there is a need for an efficient and effective system to handle emergency medical and rescue situations as they occur. History shows complacency to Bill introductions, enactments of Bills into law, studies, and researches on Guam's emergency medical System.

EMT training for qualification and certification at Guam Community College must be planned, coordinated, implemented, and progress from First Responder and EMT-A to EMT-D, EMT-I, and EMT-P. Along with EMT training, call-takers/dispatchers for the 911 system must be trained, have the primary responsibility to receive and transmit calls and most importantly, must have the ability to prioritize the dispatching of emergency medical and rescue units. But this doesn't end with training for all the training given can not be effectively practiced or exercised without the right equipment and supplies. This is especially true when we view the communications link between the field operators, the dispatcher and the hospital as well as the rescue units. The efforts of the Guam Fire Department, Guam Police Department, and the Hospital must be coordinated and linked together.

The Guam Emergency Medical Services Commission should be empowered, via amendment to P.L. 14-11, to oversee the planning and implementation of the Emergency Medical Service Systems instead of its mandated role as a technical and advisory body. If it becomes a hindrance to the Administrator, then Section 49252.2 (b) must be applied. This Section allows the Administrator to,

"Coordinate with the Guam Health Planning and Development Agency and the Guam Health Coordinating Council on the development and implementation of a Territorial Program for the provision of emergency medical services."

Conducting research and studies and planning are not too difficult to accomplish.

Implementing corrective actions to resolve the deficiencies found during the research, studies, and plans are difficult but presents a challenge that must be met head on with a proactive approach.

The program has made considerable strides in the administration and provision of emergency medical services. However, a more concerted effort must be exercised to improve upon the EMS system.

The ability to communicate is the vital link that ties together the patient, the manpower, the transportation, and the hospital. The development of a communications network has several objectives. Among the most important ones are: easy public access to the EMS system; effective control and coordination between and among EMS resources; and effective patient management and medical supervision during the pre-hospital and, to a somewhat lesser extent, the hospital stage (especially during inter-institutional transfer).

Guam's telephone system is an integral part of the EMS system. With improvements in the capabilities of the island's telephone exchanges, the opportunity is available to implement the widely accepted emergency phone number 911. While this ability to use 911 on Guam certainly indicates progress, the need to upgrade two-way radio communication remains. Two-way radios are used primarily to allow EMS personnel and transportation resources to be dispatched to the scene of the accident/incident, to allow communications with medical personnel at EMS facilities (either while in transit to a facility or while in transit between facilities, as is the case in an inter-institutional transfer), and to allow EMS transportation resources to report their state of readiness after a run has been completed. Pre-hospital manpower training on Guam cannot be fully utilized if the ambulance and hospital emergency department cannot communicate.

The existing radio system allows for dispatch-to-ambulance and ambulance-to-ambulance communication. The OEMS is concerned with the use of VHF frequencies which are used elsewhere in police operations. OEMS officials are trying to change over to the UHF frequencies which are generally reserved for medical communications.

3. Medical and Surgical Services.

This category includes the diagnosis and treatment of disease or ill-health conditions through medical procedures or operative techniques. The level of sophistication in the delivery of these services comprises the whole range of primary, secondary, and tertiary care.

The simpler and more common diagnostic and treatment procedures for general medical conditions or minor surgery are usually delivered in an ambulatory setting. Those services requiring a greater degree of care are usually delivered in the short-stay, inpatient setting. This section briefly discusses the medical services available on an outpatient basis, and focuses on surgical services offered in both the ambulatory and inpatient settings. All services discussed below exclude those provided by the military.

a. Medical and Surgical Services.

Outpatient medical care services are provided at numerous clinics around the island, 28 of which are in the private sector and 4 of which are government-operated. The services include periodic health assessments as well as the diagnosis and treatment of minor illness and injury, and are offered by licensed physician-specialists and nurse practitioners.

Private clinic hours vary, but medical services are available weekdays and Saturdays as early

as 7:30 a.m. and as late as 11:00 p.m. Services are available to both self-paying and insured patients; referrals from the Department of Public Health and Social Services are accepted as well.

The medical care provided at DPHSS clinics is primarily offered through the Women's Health Clinics, the Youth Clinics, and the Family Health Clinics. Each of these is part of the maternal and Child Health Care Program. Accordingly, each clinic is intended to serve women, children and young adults who cannot afford private health care or insurance. The adult male population that would be otherwise eligible for government health care is referred to clinics in the private sector; diagnosis and treatment services received are subsequently paid for by the DPHSS Medically Indigent Program.

Outpatient medical care is also available at the Guam Memorial Hospital. However, the services are generally limited to emergencies, inhalation therapy, physical therapy, and hemodialysis.

b. Inpatient Surgical Services.

The Guam Memorial Hospital offers a wide range of inpatient surgical services to the island's population. The hospital maintains approximately 100 beds in its medical, surgical, and special care units. This comprises about two-thirds of the total acute care beds.

c. Ambulatory Surgical Services.

In addition to the surgical procedures that require inpatient stays, there has been a growing proportion of surgeries performed on an outpatient basis. Those outpatient surgeries requiring general anesthesia are performed either in the hospital or in one of the surgi-centers. Some of the simpler procedures (e.g., skin grafting, biopsies, setting fractures, dilatation and curettage) can and often are performed in a physician's office.

Some argue that the costs associated with these office procedures are much less than those incurred by operations conducted in the hospital or surgi-centers, and that the risks involved in the two types of surgeries are relatively the same. At this time, however, there are no established guidelines as to which surgical procedures may be safely conducted within a physician's office, not whether or not emergency back-up facilities are and should be required. Likewise, reimbursement policies and patient-doctor perceptions on these office procedures are unclear.

Nevertheless, the number of surgeries conducted within a physician's office will affect the demand for outpatient surgeries done in the hospital as well as in the surgi-centers. Just as hospitals and ambulatory surgery centers are required to meet certain standards, so too must doctors who perform operations within their own offices. The costs saved in office procedures cannot substitute for the need to ensure quality.

Approximately 40 percent of the operating room cases done at the Guam Memorial Hospital is on an outpatient basis. At least two ambulatory surgical centers provide such services as well. The ambulatory surgical centers, on the other hand, schedule procedures according to facility capabilities and doctor-patient preferences. The FHP Surgi-Center uses the hours between 8 a.m. and 1 p.m. for its surgical procedures. The remainder of the regular working day is

reserved for recovery from general anesthesia. The Dededo Medical Center schedules surgeries at the convenience of the patients and the surgeons. The operations are most frequently scheduled for early mornings and early evenings, but generally do not fill a 40-hour week.

The need for additional freestanding surgical suites on Guam will largely depend upon the number of hours of operation in the existing facilities, and whether or not procedures performed in physicians' offices will be regulated and subsequently conducted in surgical suites. If the hospital and the surgi-centers increase their hours of operation to accommodate a rising demand for ambulatory surgeries, then additional surgical facilities may be unnecessary. A decrease or retention of current working hours may, on the other hand, necessitate the development of additional ambulatory surgical rooms. If such a development occurs, then a critical review of reimbursement policies of third-party payors and the management practices of surgical facilities may be warranted.

4. Diagnostic Radiology Services.

Diagnostic radiology services are aimed at detecting physical disease and other ill-health conditions through the use of radiant energy. All diagnostic radiology techniques are intended to provide essential information regarding the structure of internal body systems and are applied to a broad range of conditions. As is elsewhere, Guam's diagnostic radiology services fall into five categories.

General Radiology refers to the basic x-ray examination of the body. The images produced from the conventional x-ray devices are limited to the dense structures of the body, particularly the bones.

Contrast Radiology refers to the consumption or injection of radio-opaque substances in conjunction with either plain film or fluoroscopic x-rays. By inserting or injecting the appropriate fluid mixtures, the functional characteristics of certain organs and the distribution of blood in these organs can be explored. Among these are intestinal structures, the kidney and liver, the uterus, as well as the skeletal structures.

Diagnostic Ultrasound is a non-invasive method of imaging the body's internal structures by using high frequency sound waves instead of radiation (x-rays). Currently, the major application of ultrasound technology is concentrated upon studies of abdominal structures since the soft tissues are easily penetrated by sound. Ultrasounds can also produce transverse images of the brain and eyes, but thus far the use of ultrasounds for such purposes has been limited.

Computerized Tomography Scanners (CT Scanners) emit a thin sheet-like beam of x-rays that penetrate the body and are detected by ionization chambers. The detectors feed the data into a computer which constructs a 2-dimensional image of the plane's cross-section. Each cross-sectional image is collected, stored by a computer, and then reconstructed into a number of "slices" to provide a complete picture. Problems with overlapping shadows have been virtually eliminated.

Magnetic Resonance Imaging (MRI), sometimes called nuclear magnetic resonance (nmr), is one of the most powerful imaging techniques currently available. It involves the use of a large cylindrical magnet and radio signals to generate thin cross-sectional images of the body that can

show details that are unobtainable by any other means.

Nuclear Medicine involves the use of radioisotopes and gamma cameras. Injected intravenously, certain isotopes accumulate selectively in specific organs as an indicator of function. Gamma cameras, or isotope sensors, can produce images that illustrate a body pathway, indicate the rate of an organ's function, measure the size of a body compartment, or depict focal areas of disease within an organ.

The availability of diagnostic radiology on Guam is contingent upon manpower and resources. The discussion below focuses on the capabilities and limitations of diagnostic radiology locally given the current availability of qualified manpower and equipment.

a. Service Capabilities.

The Guam Memorial Hospital is the primary provider of diagnostic radiology on the island, and the only provider of CT Scan services. There are, however, private clinics that do basic x-rays, as well as one HMO that performs conventional x-ray examinations and certain contrast studies.

Radiological service capabilities on Guam have expanded over the years. Through an agreement with the Hospital, a private company was recently allowed to utilize a portion of Hospital property for placement of a mobile magnetic resonance imaging (MRI). Although situated on Hospital grounds, the MRI is privately maintained and operated.

5. Medical Support Services.

There are several health care services which do not involve direct medical care, but which facilitate the provision of personal health care services. These medical support services enhance the provision of direct services at any point along the health care continuum. They include pharmacy services, laboratory tests, vision care, blood banking, facility maintenance and housekeeping, as well as administrative and medical records services.

a. Laboratory Services.

Clinical laboratories perform various tests which aid the physician in the diagnosis and treatment of patients, and the screening of disease as well. The tests are performed in either an inpatient or outpatient setting, and are available at both public and private health care facilities.

Most of the customary laboratory services are available in all the laboratories on the island. These services include clinical chemistry, hematology, cytology, urinalysis, immunology, blood typing (ABO and Rh), and other miscellaneous tests. Blood banking is done primarily at Guam Memorial Hospital, although the FHP Clinic and the Department of Public Health and Social Services do so on a smaller scale. Microbiology is performed primarily in the hospital or DPHSS clinics, although routine studies such as throat, blood, urine, and stool cultures are done in the private laboratories. Anatomic pathology is available solely at GMH. Specimens and cultures for unusual and seldom performed tests are sent to reference labs in Hawaii and California.

However, the DPHSS laboratory serves as a reference lab for the Territory's epidemiologic investigations.

Lab services are concentrated in the Tamuning area, with DPHSS as the only exception. The private laboratories, Physician Diagnostic Laboratory (PDL) and Biopathology medical Laboratory, as well as the public health facilities accept the privately insured, the self-paying patients, and those on public assistance. The health maintenance organization, FHP, services its enrollees primarily but does accept referrals.

The clinical laboratories are staffed by lab technologists and technicians. Neither the personnel nor the facilities are regulated or licensed by law on Guam. However, the laboratory personnel is generally certified by the American Society of Clinical Pathologists (ASCP) or other professional organizations. The lab facilities at the hospital are evaluated by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), or by representatives from the Health Care Financing Administration (HCFA) in the event that accreditation is pending. Private laboratories who participate in Medicare are evaluated and certified on a regular basis by HCFA's Division of Health Standards and Quality.

In addition, the island's laboratories participate in quarterly or monthly proficiency testing. Each respective lab subscribes to an independent laboratory which then sends samples to the local lab facilities for testing. The results are returned to the proficiency testing organization and examined for precision and accuracy in test results. In return, the island's clinical labs are graded and evaluated for performance.

b. Pharmacy Services.

Pharmacy services on Guam are available in various settings: the local drug stores, the hospital and clinics, and in freestanding pharmacies. Regardless of the setting, the pharmacies are staffed by licensed pharmacies and pharmacy aides.

Pharmacists are highly-trained professionals whose role traditionally has been one of health care support. In recent years, pharmacies in the U.S. have become increasingly oriented toward patient care services and this trend has led to the expansion of the pharmacist's involvement in the health care system. Pharmacists have skills and knowledge which they should be encouraged to share with patients and other members of the health care team. The pharmacist is trained to consult with the physician on the effects of given drugs on various diseases, as well as the possible side effects or reactions which may occur with certain drug therapies. Such training can be used effectively with patients as well.

The pharmacist's role on Guam has been limited to the preparation and distribution of medicinal and therapeutic products. The pharmacist is often reluctant to practice patient-oriented services, and the patient is unlikely to expect such care. However, as the role of the pharmacist in the U.S. continues to develop, the expectations in pharmacy services on Guam will change accordingly.

The island's pharmacy services can be expanded to include additional patient-pharmacist consultations at the time of dispensing drugs, monitoring of patient compliance with their drug regimen, and increased communication between the physician and pharmacist. The medical

profession as a whole has moved towards diligent patient education and participation in individual health care treatment. It is essential that the pharmacist is included in such efforts.

c. Vision Care.

Proper eye care involves screening, diagnosis, and treatment for ocular disease and systemic disease that affect the visual system; it also includes the measurement and enhancement of the visual system's functional capabilities and efficiency as well.

As elsewhere, cataracts rank as the leading cause of blindness on Guam. Yet while primary glaucoma is the second leading cause of blindness in the United States, diabetic retinopathy ranks second on Guam due to the higher incidence of diabetes mellitus experienced on the island. Other leading causes of blindness include ocular injury and congenital abnormalities (ranked third), as well as macular degeneration (ranked fifth).

Ophthalmologic treatment includes all generally recognized medical, surgical, optical, and orthoptic means. The treatment providers, or ophthalmologists, are physicians who have specialized training to ocular disease in addition to the usual skills in defining refractive errors and ocular muscle imbalance.

Optometrists, on the other hand, specialize in the evaluation of the functional ability of the visual system, and in the diagnosis and treatment of refractive error with corrective lenses. Often the optometrist is the initial contact for the consumer seeking eye care, and therefore it is the optometrist who most often provides the preliminary diagnosis of ocular disease or ocular manifestations of systemic disease.

In addition to the ophthalmologists and optometrists on Guam, there are several opticians who are usually trained in vocational school programs to grind lenses and fit them into frames. Dispensing opticians, similarly trained, sell and adjust frames to the wearer. Opticians frequently work independently or for ophthalmologists and optical dispensing firms, but not generally for ophthalmologists and optometrists are licensed on Guam; there are no licensure requirements for opticians.

6. Other Health Professionals.

The delivery of health care services has traditionally been associated with physicians and nurses. In recent years, the health industry has seen the rise of two new health professions: nurse practitioners (NPs) and physician assistants (PAs). These new health professions developed as result of physician shortages, and enabled the limited medical manpower to provide an extensive range of services. As public and government officials began to acknowledge the existence of neglected areas in health care, the roles of NPs and PAs became instrumental in addressing problems of availability, accessibility, and costs of primary care. In addition, the new health professionals have demonstrated competence in providing chronic care, in prevention, patient education, and health maintenance. More and more, NPs and PAs raise the possibility of medical practice that is increasingly independent of physicians.

The discussion below identifies the roles of nurse practitioners and physician assistants on

Guam. As health professionals and government officials explore the possibilities for the cost-effective delivery of quality care to the island's population, a closer look at these new health professionals is essential.

a. Nurse Practitioners.

Nurse practitioners are registered nurses who have elected to obtain additional training in a specialty area. The training usually involves between 9 to 18 months of classroom instruction and clinical work.

The nurse practitioners work in both private and public health facilities under the supervision--direct or indirect--of a physician. The services performed generally include the diagnosis and management of common acute illness and chronic disease. Emphasis is placed on health maintenance, health education, and counseling.

b. Physician Assistants.

Physician assistants are trained to be interdependent practitioners under physician supervision. The training generally involves a 2- to 3-year graduate program that is offered in either a medical school or an allied professional school. The first year is primarily didactic, while the remainder of the program requires its participants to rotate through the various medical practices. Upon graduation, each PA sits for a 2-day examination. (Each certified PA is then required to fulfill continuing education requirements, as well as to sit for exams every 6 years.)

As a rule, the PA takes a patient's history and, unless in doubt, makes the appropriate diagnosis and treatment. In the event that a patient requires specialized care an appropriate referral to a physician is made.

E. Mental Health Services.

A community's mental health services system should encompass a continuum from the most restrictive (inpatient) setting to independent living, with therapy and all necessary support services available to those in need. The necessary manpower includes psychiatrists, psychologists, nurses, social workers, psychiatric aides, and community workers.

On Guam, there are several practicing psychiatrists and psychologists in the private sector. In addition, professionals trained in the various fields of psychology or social work also provide therapy and counseling to Guam's civilian population. While most mental health needs of the active-duty military personnel are met through the military's medical care system (at the Navy Regional Medical Center or the Anderson Air Force Base Family Clinic), the military, including the local U.S. Veteran's Affairs Administration, contracts with local providers through the CHAMPUS reimbursement plan and also refers dependents to the Department of Mental Health and Substance Abuse for psychiatric evaluation and treatment.

The Department of Mental Health and Substance Abuse (DMHSA) is the sole public agency available and authorized to provide inpatient and outpatient mental health services to the people of the Territory of Guam.

DMHSA provides a multitude of services and programs through their various administrative and service divisions, each of which is discussed below.

The DMHSA Adult Inpatient Unit is a short-term care facility that provides treatment for persons with mental health problems that cannot be resolved in open society. Treatment modalities include, but are not limited to: medication, milieu therapy, music therapy, art therapy, recreational therapy, behavior modification, and psychotherapy. The Adult Inpatient Unit is a sixteen bed facility.

Like the Adult Inpatient Unit mentioned above, the Children's Inpatient unit provides the safety and security of a twenty-four hours per day locked unit for the psychiatrically ill. Children and adolescents who are seriously emotionally disturbed, acutely suicidal, psychotic, and/or those with alcohol and other substance abuse problems are given acute or intermediate care as necessary in this sixteen bed facility.

Long-term after-care services for the chronically mentally ill are provided by the Department's Medication Clinic. This group of clients need periodic evaluations and assessments which require the combined efforts of doctors, nurses and social workers. Five hours a week are specifically set aside for the screening, assessment and evaluation of children. The clinic also has allocated one day each week to screen, assess, and process persons with out-of-control substance abuse problems.

DMHSA is mandated to provide 24-hour emergency care, including weekends and holidays. Clinical staff (psychiatrists, psychologist, and a psychiatric nurse) are available on the premises and are on call at all times for the Department and the Guam Memorial Hospital Emergency Room. Services consist of immediate screening, evaluation, and intervention or treatment for patients who either call or walk into the Department, or who are referred from GMH or other entities.

The Counseling Services Branch provides direct clinical services to individual adults and children as well as to families, couples and groups of people with problems in living which may or may not occur because of substance abuse or mental illness. This branch serves clients whose cognitions are unimpaired and for whom the primary treatment modality recommended is psychotherapy.

The Case Management Branch assists in facilitating the reintegration of mentally ill persons into the community by providing individual and family supportive counseling; periodic home visits for assessment, intervention, and follow-up supportive care; managed care activities such as client assessment and outreach, service planning, linkage with requisite services, monitoring of service delivery and client advocacy.

The Drug and Alcohol Treatment Service branch provides assessment, education, individual and group counseling/therapy and aftercare to adults and adolescents who are suffering and recovering from the effects of substance abuse. Referrals are made on a case-by-case basis for other supporting services for the client.

New Beginnings is a 16-bed drug and alcohol residential rehabilitation treatment program for men and women dependent on alcohol or other drugs. Its purpose is to help these people identify, understand and change the destructive patterns of chemical addiction. In a drug-free community where people share the everyday responsibilities of making a household work, people live for up to six weeks receiving individual, group, and family counseling. Individual assessment and treatment plans are provided by a substance abuse counselor. Information and referrals for detoxification are necessary. Family and couple counseling, weekly medical assessment by a physician, and six-week aftercare programs for clients and

family members are part of the program.

Adult day treatment services are provided for acute and chronically mentally ill persons. The services offered are primarily in group settings; however, individual and family therapy sessions are also offered. This branch operates the Guma Ifil Program.

The Guma Ifil Program is a fourteen-bed residential program that provides 24-hour supervision and a supportive living situation for seriously mentally ill persons as they make their transition to independent living in the community. All of the residents receive case management, day treatment and/or medication supervision if needed, therapeutic counseling for individuals, groups and families (as indicated) and life skills education. This is a large step in moving the seriously mentally ill clients toward greater independence and self-sufficiency in the community.

The Prevention and Training Branch provides opportunities for various target groups (i.e., parents, youths, school personnel, etc.) to engage in activities which focus on reducing the incidence and prevalence of alcohol and other drug-related problems, and to promote overall health and wellness. Additionally, the branch has adopted the national public health model which recognizes that prevention is an ongoing, lifelong process and attempts to reduce both the supply of and the demand for alcohol and other drugs.

Four Special Programs report directly to the Department's director:

1. Guma Manhoben Program.

This program provides focused intermediate to long-term treatment services which include a low security but structured residential care environment for children (9-16 years of age) having established histories of emotional/behavioral problems. Clients are those who have been deemed by professional mental health assessment as having serious deficits or maladjustments and therefore are in substantial need of the program. A range of services are offered including milieu therapy, individual therapy, individual and family therapy, group activities, recreational therapy, social casework, and other remedial opportunities and interventions to assist the client in developing social, behavioral and insight competencies to function effectively in his/her natural environment.

2. Therapeutic Foster Care Program.

This program provides treatment for emotionally disturbed children within the private homes of trained families. It provides a home-like environment supported by intensive behavior management, crisis intervention and specialized treatment interventions, thereby creating a therapeutic environment in the context of a nurturant family home. Therapeutic Foster Care is considered the least restrictive of all services for seriously emotionally disturbed children and adolescents.

3. Healing Hearts Center.

The Healing Hearts Center provides survivors of sexual assault with a supportive and nurturing atmosphere to help begin healing. It is open on a 24-hour basis, seven days a week. Assisting the regular staff are volunteers who have completed an intensive eighty (80) hours worth of training. Healing Hearts offers support, information, and referrals for all survivors of

sexual assault. A specially trained doctor or nurse examiner who can perform the medical legal examination on site, in a safe and warm environment, is available if the survivor wishes to pursue reporting the assault to police. Survivors who do not wish to make a report are offered a medical examination for their own health.

4. Regulatory Affairs and Quality Assurance.

Quality assurance activities in a health or mental health care institution ensure that services are delivered in an appropriate facility of high quality and administered by qualified staff in a cost-effective manner. This program is designed to assure the quality of program services offered and to make recommendations for improvements to the director.

The Research, Planning and Development branch of Support Services is responsible for the writing and preparation of grant applications and grant reports; development and implementation of the State Comprehensive Mental Health Plan; capital improvement projects; coordination and implementation of in-house and DOA training programs; and the planning and implementation of new employee orientation sessions.

The need to provide for accurate detailed information for effective treatment and organizational management has led to the employment of a management specialist since May 1993. The Department has received a stage I, Mental Health Statistical Improvement Project Grant of \$348,000.00 for a three-year project to establish a data collection and decision support system. This grant has been awarded by the Center for Mental Health Services. Twenty-two new computers and ten existing computers will be connected via a Local Area Network.

In addition to the regular services provided by DMHSA, each branch also offers a variety of services to the community. Some examples are listed below.

The Department continued its second year of involvement in the Multi-Agency Sexual Abuse Treatment Program (M.A.S.T.). The program entailed an agreement between counselors from DMHSA, the Superior Court, and the Navy Family Services Center. It provides a systematic, structured group treatment approach for incest victims, their mothers, and the perpetrators. The long-term treatment is held on Monday evenings and there are about 50 individuals that have been accepted into the program. The program's goal is to cease the re-occurrence of sexual abuse.

A group treatment program for adolescent males with behavioral problems, Family Ties is a new program developed and implemented by DMHSA. One of its goals is to alleviate behavioral problems and promote understanding between family participants. The Family Ties Program developed from an earlier pilot treatment group for adolescent boys with conduct disorders.

The Na Para Program was developed and implemented by DMHSA for couples in violent relationships. In the Chamorro language "na para" means "to stop". The program includes a memorandum of understanding between the Department and the Attorney General's Office to facilitate referrals and compliance to treatment.

The Drug & Alcohol Adolescent Group is a ten-week educational/therapy group designed for adolescents age 12 to 18. The educational portion uses a variety of different media, i.e., videos,

homework, self-tests, etc., while the group portion is a self-help support-type group with one and a half hour per week sessions.

F. Chronic Care Medical Services.

Chronic illness and long-term physical impairments are major health problems in the United States, as well as on Guam. This is a result of lower mortality from infectious and parasitic diseases, acute illness, and injuries; improvements in medical technology and care which prolong life for those with chronic problems; and increased social stress.

Chronic diseases can cause death in any age group; however, they are much more frequently the cause of disability and death for those aged 45 and older. Elderly persons often suffer from multiple chronic conditions; circulatory system diseases, diabetes and arthritis are particular problems of the older population.

Unlike acute illness, chronic illness is often gradual in its onset and of a lifetime duration. In some cases, chronic conditions stabilize over time. In others, the individual's condition deteriorates, sometimes with periods of stabilization or even improvement between periods of decline. Receipt of chronic care services for a particular condition does not preclude the need for preventive, acute, or rehabilitative care. A chronic condition may increase an individual's susceptibility to other illnesses and may, therefore, increase the need for and use of other components in the health care system.

Chronic care services are designed to maintain a chronically ill or disabled individual at an optimum level of functioning. Medical care and maintenance services (as described in Section I of this chapter) are necessary to control the effects of the disease or disability, prevent deterioration due to chronic conditions, and enhance an individual's ability to function as independently as possible. Chronic care medical services are provided for Guam's population by all the medical providers. In addition there are several specific programs for persons suffering from hypertension, diabetes, arthritis, end stage renal disease (ESRD), as well as lytico and bodig (ALS and PD).

1. End Stage Renal Disease (ESRD) and Chronic Renal Dialysis Services.

End stage renal disease (ESRD) refers to the state of advanced renal impairment which is irreversible and can lead to death if untreated. Once diagnosed, ESRD patients generally undergo renal dialysis for the remainder of their lives.

Renal dialysis is a process used to remove harmful waste products from the blood of persons whose kidney function is impaired or has stopped. The renal dialysis process performs the kidney's purification function. The most common form of dialysis treatment is hemodialysis which entails circulating the patient's blood through an artificial kidney machine to remove impurities caused by the body's metabolic processes.

Peritoneal dialysis is another method of purifying the blood. This process introduces a chemical solution into the abdominal cavity of the patient to remove waste products from the peritoneal membranes and flush them out of the body.

Dialysis treatments can be received at home, in the hospital, or at a center. Many patients,

when properly instructed, can receive their dialysis at home. This requires the necessary equipment a trained partner, and the availability of purified water and a back-up electrical system. Home dialysis is preferred by many patients because of the increased freedom and flexibility. It has also proven to be more cost-effective. Home dialysis is not successful when initiated at the onset of treatment, as persons who have settled into the routine of dialysis at a center become dependent on the center and its staff, and are therefore reluctant to switch to home dialysis.

Dialysis at a facility or center can either be self-administered (peritoneal dialysis) or staff-assisted (hemodialysis). Peritoneal dialysis patients have been trained to dialyze themselves with minimal assistance under appropriate professional supervision. Hemodialysis patients are those who are unable to perform any of the dialysis tasks for themselves. Hemodialysis is more expensive than peritoneal dialysis because it requires a greater amount of staff time and supervision.

An ESRD patient usually requires three treatments per week in order to make dialysis effective and to prolong the life of the patient. Treatments normally last from 3 to 4 hours, and in some instances even longer. An ESRD patient must receive dialysis treatments for the rest of his or her life unless he or she has a successful kidney transplant. Dependency on the kidney machine becomes a fact of life and must be accepted as such.

A number of non-medical problems face the dialysis patients. They are of an economic, social, and emotional nature brought on by the changes in employment status and interpersonal relationship with family members and friends. Furthermore, there is the immense stress of coping with a life-threatening disease.

The ESRD facility must therefore be more than just a treatment center for the disease; it must also consider the emotional, financial, vocational, and rehabilitative needs of the patients. Patient care plans at the hemodialysis facility must reflect the psycho-social and functional needs of the patient. The extent to which these needs are addressed by a facility are major determinants of the acceptability of the care and the patient's active participation in treatment.

Guam Memorial Hospital provides hemodialysis for ESRD patients. Hemodialysis care is provided by an internist/nephrologist, who supervises a staff of 9 nurses and 6 hemodialysis technicians. All personnel have received specialized training in dialysis. There is an initial training and orientation program for new staff members, and continuing specialized in-service training for all staff members in the unit.

In July 1995, the unit provided 308 hemodialysis treatments per week to 102 patients. Peritoneal dialysis is done for emergency cases only at GMH and is done within the hospital but not in the dialysis treatment room. For renal dialysis to be effective, 3 treatments per week for each patient are required. However, due to scheduling difficulties, adverse medical conditions of the patient, or unavailability of a dialysis station, a patient sometimes receive only two treatments per week. Currently, 99 patients receive treatment three times per week; 2 receive treatment five time per week; and, 1 receives treatment twice a week.

Complimenting the hemodialysis treatments at the hospital is peritoneal dialysis, a service available at the Pacific Dialysis Clinic. The clinic has a total of 41 patients receiving peritoneal

dialysis treatments. Each patient undergo a 15 day training period on self-administration of treatments. Patient cost per day during the 15 day training period is \$258.40 for Medically Indigent Program clients and \$300.00 for insured clients. Upon completion of the training, patients administer treatment to themselves at home and are charged a daily rate of \$105.60 for MIP clients and \$200.00 for insured clients. The monthly follow-up visits to the Pacific Dialysis Clinic are included in the daily rate. Fifty percent of the peritoneal dialysis patients are covered by the Medically Indigent Program. The number of patients seen at the clinic per day varies from 4 to 13.

Table 54 shows the annual cost an ESRD patient incurs for treatment under the various funding source based on three visits per week.

A kidney transplant is the preferred alternative to hemodialysis. Transplantation is a surgical procedure that involves the removal of a kidney from a donor, preferably a patient's relative, or a cadaver, and the substitution of the donor kidney for an individual's nonfunctioning one. The major impediment to a successful transplantation is the transplant patient's rejection of the new kidney. When this occurs, the patient has to return to hemodialysis or wait to receive another donor kidney.

Table 54
Hemodialysis and Peritoneal Dialysis
Treatment Yearly Cost - July 1995

Funding Source	Hemodialysis Treatment Annual Cost Per Patient	Peritoneal Treatment Annual Cost Per Patient
Medicare	\$ 16,892.00	\$ 16,892.00
MIP	20,904.00	16,473.60
Private Insurer	31,200.00	31,200.00

Source: Guam Memorial Hospital Authority, Department of Public Health and Social Services, Pacific Dialysis, Guam

The chances for long-term kidney survival are 70 to 90 percent when the donor kidney comes from a sibling or parent and is well-matched. Chances for kidney survival when organs are taken from cadavers drop to 40 to 60 percent, since there is a higher risk of rejection. The ages of both the donor and the receiver of the kidney are determining factors in a successful transplantation. Additionally, such operations tend to be more successful when performed during the first year of dialysis.

A successful kidney transplant offers several advantages over life-long hemodialysis, mainly an improved quality of life due to greater energy and vitality, a less restricted diet, and freedom from the twice-weekly dialysis treatment. Kidney transplantation, if successful, is also the less costly method of treatment for ESRD patients. The one-time cost for surgery, approximately \$30,000 is about the same as the cost for 1 year of staff-assisted hemodialysis. Maintenance

care, and immuno-suppressive drug therapy after surgery costs about \$5,000 per year, which is considerably lower than the costs of dialysis for the same period.

Federal policy stipulates that every person diagnosed with ESRD is to receive appropriate care regardless of his or her ability to pay. Public Law 92-603, Section 2991 was enacted in 1973, and mandates that quality medical care must be accessible to all ESRD patients, and must be provided in an efficient and cost-effective manner.

The Medicare program was charged with the responsibility of providing coverage to eligible ESRD patients under both parts A and B, subject to the standard deductibles and coinsurance conditions. Part A covers hemodialysis services in all settings (inpatient, outpatient, free-standing and home), as well as the hospital and surgical costs involved in a kidney transplant. Part B pays for services provided to patients hospitalized for routine maintenance dialysis, as well as for outpatient dialysis services provided in any dialysis facility. Part B also reimburses for the rental or purchase of equipment and necessary supplies for both transplant and dialysis patients.

On Guam, ESRD patients under Medicare pay 80 percent of the charges for dialysis. This does not include physician charges for services rendered during the dialysis sessions. Most of the Guam ESRD patients (about 70 percent) are covered under Medicare; the others are covered by Medicaid and private insurers. For those ineligible for any of these program, the Medically Indigent Program pays for the required dialysis services and physician costs.

2. Chronic Care for Lytico (ALS) and Bodig (PD) Patients.

At present, there are 140 confirmed cases of lytico/bodig in Guam. The number of people diagnosed with the disease is decreasing as patients are passing. They receive chronic medical care on a regular basis at the clinics. Services consist of laboratory tests and physician visits to monitor the progression of the disease. CT scans, EEGs, and EMGs are administered as necessary.

Some of the patients are admitted to St. Dominic's for custodial care at a rate of \$90.00 per day. The Medically Indigent Program was charged with the responsibility of paying the expenses for all care related to these conditions during the 1980's into the mid-1990's based on two reasons:

- Care must be given on a continuous basis to the lytico and bodig patients, and
- none of the major health insurers provide coverage for these diseases.

However, due to the Government's financial situation and the debate posed on funds to provide free care, patients with these diseases and the three other diseases (ESRD, diabetes -insulin, tuberculosis) under the free care program must undergo a means test, P. L. 23-35 to qualify for government assistance. Patients not meeting the eligibility standards and the means test must pay out-of-pocket or through a health insurance plan that covers these diseases.

G. Habilitation and Rehabilitation Services.

Habilitation and rehabilitation services are intended to assist the developmentally disabled individual in achieving or restoring his or her fullest physical, mental, social, vocational, and economic capabilities. This definition addresses a wide range of patients and services. The deaf, blind, mentally ill, mentally retarded, physically handicapped, and socially and culturally disadvantaged are all included in the rehabilitation target population. Services available include physical, occupational, speech, language, and recreational therapy, medical restoration, education, emotional and vocational counseling, as well as job training and placement. Not all of the patients require or receive the same services, but the same steps are included in every person's habilitation/rehabilitation process.

- Step 1: Evaluation of the patient's condition and prognosis.
- Step 2: Treatment and/or training.
- Step 3: Referral or placement.
- Step 4: Follow-up to guarantee continuation of any services needed.

Many states have combined all physical restoration services into Comprehensive Physical Rehabilitation Facilities. As yet there is no such facility on Guam. Instead, services are provided in various settings by a multitude of care givers.

1. Guam Memorial Hospital.

The rehabilitation services available at the Guam Memorial Hospital include medical restoration, as well as physical, occupational, and recreational therapy. In addition, the hospital regularly conducts patient status evaluations for referrals to the Department of Vocational Rehabilitation (DVR), and can perform evaluations for placement testing as needed. Inpatient as well as outpatient services are offered Monday through Friday between 8 a.m. and 4:30 p.m.; all services are on a "first come first served basis.

The habilitation and rehabilitation staff at the hospital consists of one physical therapist, three physical therapy technicians, one occupational therapy technician, one recreation supervisor, and two recreational therapy technicians. The hospital operates under a fee schedule; charges depend on the treatment ordered and the time spent.

The hospital's service capabilities are limited by a lack of resources. There are several unfilled positions for physical, occupational, and speech therapists; and certain conditions, such as closed head injuries, cannot be treated because of a shortage of qualified staff and proper equipment. Moreover, no psychological counseling for the disabled is offered. As a result it is unlikely that Guam Memorial Hospital can function as the island's Comprehensive Physical Rehabilitation Facility at this time.

2. Department of Education.

The Department of Education, through its Division of Special Education, offers habilitation and rehabilitation services to children from pre-school through the age of 21. These services range from identification and screening, through education and therapy, to job placement.

Though the Division of Special Education offers the widest ranging continuing habilitation and

rehabilitation services 5 days a week during the 9-month school year, it is not without its problems. Staffing shortages pose the greatest concern. There is a need for psychologists, vocational instructors, elementary and secondary special education teachers, as well as physical, occupational, language, and recreation therapists.

Addressing other additional needs, more vocational program for secondary students and residential treatment centers for emotionally impaired children, is also dependent upon funding.

3. Department of Vocational Rehabilitation.

The Department of Vocational Rehabilitation (DVR) offers an array of services for the physically and mentally impaired with the goal of preparing these individuals for gainful employment. These services include but are not limited to: diagnosis and evaluation (medical, vocational, and psycho-social); counseling; medical restoration (corrective surgery and therapeutic treatment); hospitalization; prosthetic and orthotic devices; eyeglasses and visual services; all aspects of vocational training (training and training materials, job placement, tools, initial stocks and supplies, and management services for small businesses); interpreter services, daily living skills instruction, and rehabilitation teacher services for the blind; transportation; advocacy and support services for persons with disabilities and their families; and any other goods and services necessary to render a handicapped individual employable. Other than counseling and placement, most of these services are purchased from private practitioners and facilities.

In addition, DVR administers the Developmental Disabilities Program; and the Disability Determination Service Program; DVR also oversees the Guam Rehabilitation and Workshop Center, Inc. The Developmental Disabilities Program identifies gaps in the service network for developmentally impaired individuals who are ineligible for services by any agencies or organizations due to severe disabilities. The program is 90 percent federally funded.

The Guam Rehabilitation and Workshop Center, Inc. provides vocational and work evaluation, personal and work-adjustment, and job placement to DVR clients and sheltered workers who are unable to enter the competitive labor market.

All services to clients are free of charge, including the cost of orthotic and prosthetic devices and other special appliances. DVR pays the private practitioners and facilities who render services. Counseling and placement services are available at DVR from 8 a.m. to 5 p.m. weekdays; all other services are available at the discretion of those offering them.

4. Department of Labor - Guam Employment Service.

The Guam Employment Service (GES) of the Guam Department of Labor acts as a job market for all those seeking jobs, including persons with disabilities. It has no organized program for servicing persons with disabilities, but offers job counseling to prepare them for entering or re-entering employment. Counseling is offered 5 days a week, from 8 a.m. to 5 p.m.

As a pre-requisite for many federal grants, the Guam Employment Service is required to have at least one person equipped to handle the needs of persons with disabilities applicants.

For employment service purposes, the GES utilizes a long list of handicapping conditions which

range from missing digits and limbs, blindness, and respiratory impairments, to being a law offender, alcoholic or drug addict.

Two main barriers to effective utilization of persons with disabilities remain: fear and money. Potential employers are hesitant to hire disabled workers because of their perceived limitations and misunderstanding of the prospective employee's disabilities. Some disabled employees have lost self-esteem, little self-confidence, and often refuse positions or fail to show up for interviews. These are areas in which counseling may help. Budget constraints limit the GES to only one person who can concentrate on job placement for the handicapped, and limits the available jobs. No expansion of the counseling program is expected in the near future.

FHP offers physical therapy treatments on an outpatient basis, between the hours of 8 a.m. and 5 p.m. Monday through Thursday and from 8 a.m. to 12 p.m. on Saturday.

A standard visit may include whirlpool treatment, hot or cold packs, wound care, electrical muscle stimulation, therapeutic exercise, ultrasound gait training (in which a patient is instructed on how to improve walking after having suffered a stroke or the amputation of a leg), or any combination thereof. Although the FHP Guam Medical Center's Physical Therapy Department does not supply or fit special appliances such as orthotic-prosthetic devices or hearing aids, they do order appliances for patients from a Hawaii supplier who visits Guam every three months. In addition, the physical therapists will train the recipient in the use of the assistive device and offer counseling to the recipient's family.

H. Long-Term Care.

Long-term care refers to a continuum of interrelated health and social services. This encompasses both institutional and non-institutional services and requires coordination of public policies, funding, and case management to provide appropriate options for services to individuals whose needs inevitably change over time. Long-term care is intended to provide the individual users with choices among a variety of services, used singly or in combination, that will minimize the disabilities of chronic disease or debility, support as independent a lifestyle as is practical, and prevent further complication of chronic health conditions.

Long-term care and services can be provided in a facility, in a community setting, or brought into the homes. Sometimes services move from one setting to another, or overlap. Medical chronic care and rehabilitation services have been discussed in previous sections of this chapter; institutional, community, and home services are detailed below.

Currently, long-term institutional care is provided by the Guam Memorial Hospital Authority and the Saint Dominic's Nursing Home. There are 33 beds for skilled nursing level care at the Hospital. Intermediate and custodial care is available through the St. Dominic's Senior Care Home located in Barrigada Heights.

St. Dominic's Senior Care home accommodates the frail and disabled persons in true need of institutional care, either at the intermediate or the supervised residential care level. However, institutionalization should take place only as a last resort. Every effort should be made to retain a person at home in his familiar surroundings as long as possible.

Home health care is provided by nurses (RNs, LPNs, nurses' aides) from the DPHSS Bureau of Community Health and Nursing Services, who visit bedridden patients at home and tend to their medical needs. The nursing services are augmented by home visits from the Catholic Social Services Homemakers/Health Aides who perform light housekeeping, meal preparation, and personal care services. Medicare, Medicaid, and private insurance companies reimburse for services rendered by the Bureau; and the Homemaker/Health Aide Services are funded under Title III of the Older Americans Act.

FHP, Inc. and Health Maintenance Life (HML), both HMOs, offer home nursing services as well. These services are available to FHP and HML subscribers in need of home health care.

The Interfaith Volunteer Caregivers program was recently established to provide friendly visits and escort services to the frail and disabled. This pilot program is funded by the Robert Wood-Johnson Foundation and relies on volunteers from various religious denominations in the community. The program intends to promote the social and emotional well-being of shut-in and isolated persons through regular visits, or to provide a few hours of respite for the regular care giver.

Most of the public services available to the elderly are provided through the federal Older Americans Act, Titles III and IV, which are administered by the DPHSS Division of Senior Services (DDS). The Division provides all administrative functions for the services as well as the Information and Referral Program for Seniors. The other services are contracted to providers in the community. These services generally favor the more able-bodied and ambulatory seniors on Guam.

The Guam Association of Retired Persons (GARP), for example, operates the 16 Senior Centers around the island. Its subsidiary, SPIMA (Servicio Para I Manamko), provides transportation services for Guam's elderly and handicapped persons in mini-vans designed to accommodate wheelchairs. General Enterprises is contracted by DPHSS to prepare meals for those at the Senior Centers and for the homebound clients as well.

Housing assistance for needy seniors and disabled persons is provided by the Guam Housing and Urban Renewal Authority (GHURA) through its Section 8 program. GHURA developed Guma Trankilidad, a housing project specially designed and built for able bodied seniors, and has plans for similar housing developments.

Legal aid for the elderly and disabled are available through Guam Legal Services, and job training and placement for seniors are offered through the federally funded Senior Community Services Employment Program (SCSEP). Those needy elderly or disabled persons who are unable to work are assisted through the Food Stamp Program, cash payments under Old Age Assistance or Aid to the Permanently and Totally Disabled, and the Medicare of Medically Indigent Program.

In addition, case management is available for persons who can no longer take care of their own affairs and who need assistance in obtaining social or medical benefits. Catholic Social Services is contracted by the Division of Senior Citizens to provide case management to Guam's seniors, which includes referrals to appropriate agencies or programs, and follow-ups on such referrals.

The previous sections examine long-term care services provided to Guam's frail elderly and handicapped persons. Institutional long-term care at the intermediate and custodial level is inadequate in terms of setting as well as availability.

Changes in Guam's society have limited the possibility of keeping the elderly and disabled at home. The traditionally close-knit extended family unit has been replaced by nuclear ones. Most of the seniors with families on Guam have adult children who work full-time and cannot afford to forego employment and income in order to stay at home with the ageing or disabled parent(s). The elderly without families have no choice but to live on their own. As a result the able-bodied elders are left to care for themselves at home; those who need constant care and supervision but are not qualified for skilled nursing level of care are placed on the waiting list for admittance to the St. Dominic's Senior Care Home.

The choice between caring for oneself at home or being admitted for institutionalized care need not be the only choice. Other communities, faced with similar problems, have ameliorated them by implementing services that are designed to help a family with the care of a frail or feeble relative, while allowing family members to work, or to provide a family for a single, older person.

Senior or Adult Day Care, Foster Care, Respite Care, and Hospice Care have become successful alternatives to institutionalization. Additionally, in-home services have been increased and cash incentives have been offered to provide support to families willing to care for their elders at home. Each of these programs has been developed to prevent early and inappropriate institutionalization, as well as to provide a less costly alternative to institutional care.

Senior day care centers have been in the mainland United States and the European countries for many years, and enjoy great success. These centers provide a level of care for senior citizens who are no longer capable of remaining in their home environment unattended, but do not need 24-hour institutionalization. A day care center offers a person a therapeutically structured day while allowing him or her to remain within the community for as long as possible. Responsibility for the elderly in the evenings and on weekends remains with the family, thus preserving close family ties and preventing institutionalization.

Senior day care has been contemplated by Guam's care providers for many years. Several studies have shown that such care is needed, is appropriate, and would be acceptable to the island residents. The lack of a suitable facility and funding for the day care center operations have, however, prevented senior day care from becoming a reality.

Family foster care provides frail elderly and handicapped individuals an alternative to ICF or nursing home care by placing individuals in family settings. Usually, appropriate social and medical support services are provided as a component of the program.

Foster families are recruited from the community and are screened extensively for suitability. All families found acceptable must successfully complete the family care training. The training covers practical aspects of caring for a handicapped or elderly person at home, including personal hygiene, bladder training and incontinence care, skin care, exercise, special diets, nutrition, and medication. The Comprehensive Family Care Manual is provided during training and can be used for further reference.

The Cash Incentive program functions similarly to the Foster Care Program, but the caregivers of the frail or disabled persons would be relatives who have elected to quit work or stay unemployed in order to take care of the relative at home. Training and supervision would be the same as in the Foster Care Program; and the families would receive cash support for the provision of full-time care at home.

Respite care offers short-time relief from patient care, ranging from a few hours to several days, to families and caregivers. This relief time is intended to avoid or delay institutionalization, by lending

professional support to the caregivers and ameliorating the problems that result from the constant strain of caring for a sick or disabled person. Respite care can either be provided in the home by a person temporarily moving in, or in a facility which is organized to provide such services. On Guam, such services will be particularly helpful to those people who need to travel off-island for medical or family reasons, and who have no one to look after the patient during their absence.

The concept of hospice care for the terminally ill is relatively new, but has found great acceptance in a short time both in Europe and the United States. Hospice involves the skilled and compassionate care for the dying and their families. Hospice is a program rather than a facility. It can function as a home care program or as a department in a hospital. The program is designed to give a patient a choice as to his place of dying. If he or she wants to die at home, then the support services of a multi-disciplinary team of physician, nurses, social workers, and hospice volunteers will help the patient and family to do so. Should the care at home become too difficult, then the patient can be moved to the hospital, with the same multi-disciplinary team following him.

Guamanian families draw together and support each other when one of their members dies. Rituals have been established over the centuries that are comforting to the bereaved and ease their mourning. However, there are now many non-Guamanians residing on island, many of them without family support. For these persons, a hospice program becomes a necessity, as well as a less costly alternative to hospitalization. As Medicare now pays for hospice services, Guam's health care providers are exploring the feasibility of adding hospice care to the island's long-term care continuum.

Long-term care is costly care. High costs are incurred by a population with proportionally small incomes. A crisis in the financing of long-term care has developed in the United States due to an increase in the number of aged and an increase in longevity. People live longer, have more chronic diseases, and need more costly care.

In the mainland, institutional long-term care is primarily financed by Medicare, SSI (Supplemental Security Income) and Medicaid. Very few health insurance companies cover expenses for long-term care in institutions. On Guam, long-term care services are financed through various programs.

Long-term services provided in the home are reimbursable through Medicare and Medicaid, as well as by most HMOs and third-party insurers. In-home services, such as the Homemaker/Health Aide programs, are financed by Title XX funds and Title III, Sections B and C of the Older Americans Act. Each of the homecare services has proven to be considerably more cost-effective than institutional care.

Senior day care is an optional service provided under Medicaid and reimbursed under SSI Title XIX of the senior day care center follows a medical model. For a social model of day care, Title XX monies are used. In addition, Title III-B monies for nutrition can be combined with the above funds.

Foster care for seniors is usually funded by the Titles XIX and XX monies with local supplements. Community-based long-term care activities are mostly provided through the title III monies, augmented by local funds, or are financed through philanthropic grants. Hospice care is reimbursed under a special provision of Medicare, and some HMOs and third-party payers have added such care to their benefits package.

Lack of financial resources is not an access barrier to in-home services for any Guam senior; however, the current programs are understaffed and cannot meet the existing demand for home care nursing and

in-home support services. The financing of institutional long-term care, on the other hand, presents a major problem for individuals, families, and the community at large. No federal support monies are available for any care below the SNF level. Medicaid under Title XIX and Supplemental Security Income funds are used in the U.S. mainland to provide supervised residential care and intermediate nursing care for the physically and mentally disabled and frail. Guam receives neither Medicaid nor SSI monies for these purposes.

I. Alternative Health Care Providers.

Due to Guam's location as well as its historic background and ethnic composition, health services are provided in various ways. On the whole the western model of medical care has prevailed, and in the last few years this model has been slowly expanding to incorporate the emerging health professions. Among these growing professions are the doctors of chiropractic whose services are now being used on Guam either as a supplement to medical care or as an alternative.

In addition, the older Chamorros and people from the Asian countries feel in many instances more comfortable with "native" or traditional health providers. These include the Chamorro suruhanas, surahanos, and kakahnas, the Filipino hilots, and the more widely known acupuncturists from the east Asian countries.

1. Suruhanas or Suruhanos.

These are native healers who use natural herbs in combination with massage to cure a variety of ailments. The name is believed to come from the Spanish word "cirujano," for the ship doctors who came to Guam with the Spanish galleons.

Suruhanas and suruhanos are considered to be "good" people who have received their powers from God. In addition, it is also believed that the powers are inherited, and that they usually stay in the family. However, if there is no family member who can continue with the healing, then a suitable apprentice is trained. A working knowledge of curative herbs, where and when they grow, how they are converted to medicine, as well as anatomy of the human body is taught over the course of several years. Being a suruhana or a suruhano relies heavily on former experience and successes with a particular treatment. Some suruhanas and suruhanos specialize in particular fields such as problems of pregnancy and childbearing, others will treat matters related to the skeletal or muscular system.

A combination of massage and appropriate herbs, mixed and usually brewed into a liquid or tea, is said to cure the following ailments:

- Shortness of breath/asthma
- Problems with sleeping
- Loss of appetite
- Pain of any kind
- Problems with the eyes or ears
- High blood pressure
- Control of fevers and chills
- Paralysis and shaking

Mental illness
Skin disorders, boils, and sores
Stomach ailments, diarrhea
Diabetes
Female problems, infertility
Problems of pregnancy, breach positions
Impotence.

Many people swear by the suruhanas and suruhanos, claiming that they have been helped by the traditional healers after western medicine failed to do so. Success in the control of high blood pressure and diabetes through the regular intake of herbal infusions has been documented.

A suruhana or suruhano does not charge a fee. It is believed that by taking money for the healing, the power to heal would be lost. Therefore, compensation is usually in kind, and left to the individual. Fresh fish, produce from the garden or farm, or groceries are an accepted mode of payment. Suruhanas and suruhanos also refuse to advertise for business. Either one knows one of the healers, or is referred to one by an intermediary. No licensing requirements have been established for suruhanas or suruhanos.

2. Hilots.

Hilots are traditional Filipino healers, who function much the same way suruhanas and suruhanos do. Naturally, the hilot's services are used more frequently by those of Filipino descent than any other ethnic group.

3. Kakahnas.

This particular group of healers is no longer as prevalent now as it was in the years before the second World War. Kakahnas healed through supernatural powers and were also considered to be sorcerers who could be hired to put spells on people and make them ill. Folklore holds that kakahnas could invoke the souls of the dead, the "anite", and could communicate with the Taotaomonas, or "Old People," who are believed to be the spirits of the ancient Chamorros that have returned to the island to watch over the right and wrong doings of the island's inhabitants. Taotaomonas are supposed to guide the suruhanas/suruhanos or kakahnas to the proper medicinal plants in the jungle.

Kakahnas are feared and avoided by the island people when not needed. They have largely disappeared on Guam, but are still found and feared in the neighboring islands of the Northern Marianas.

4. Acupuncturists.

The healing method of acupuncture came to Guam from the East, mostly mainland China, Taiwan, and Korea. The practice refers to the stimulation of a certain point or points on or near the surface of the body by the insertion of needles. Acupuncture is intended to prevent or modify the perception of pain, or to normalize physiological functions. Acupuncture effects pain control, treats certain diseases or dysfunctions of the body, and generates a feeling of

general well-being.

Acupuncture has been employed in China for several thousand years and is still practiced throughout China as the major form of medical treatment. It has found great acceptance in the Western World, particularly in Europe and the United States. It is non-invasive, non-toxic, and does not produce harmful after-effects. At times acupuncture is enhanced by the application of electrical currents, the use of oriental massage, such as acupressure, breathing techniques, exercise, nutritional advice, and the prescription of drugless substances and herbs as dietary supplement to promote better health.

Usually 3 to 5 treatments are needed to give a person relief from his pain or illness. Chronic illness requires more treatments than acute cases. Cost of acupuncture is currently in the range of \$50.00 to \$100.00 per visit. Herbal prescription or dietary supplement are sometimes included in these prices.

The fact that the major health insurance companies have included the costs for acupuncture treatments in their benefit packages is evidence that this method of health care is becoming more and more acceptable. In many states of the U.S., Medicare also reimburses for acupuncture.

On Guam, various insurers, as well as Workman's Compensation pay in part or in full for acupuncture treatments. Medicaid at this time is not able to pay for acupuncture due to lack of funds, and our major insurers, FHP, Staywell, GMHP, Health Shield, and Multicover are currently not reimbursing for such care.

5. Chiropractors.

Chiropractic is the science and art of examination, diagnosis, and treatment of the body by manipulations of the spine and other articulations of the body to cure illness and alleviate pain. Treatment can be in conjunction with the application of heat or cold, light, electricity, and mechanical and nutritional modalities. Treatment can improve and properly maintain collateral and reciprocal innervation, which in turn will stimulate the neuromuscular functions of the afferent, autonomic, cerebro-spinal, extory, inhibitory, motor, parasympathetic, and efferent nervous systems. Chiropractic healing is based on the principle that a misaligned spine will put pressure on the various nervous systems thereby causing illness and disease. Consequently, treatments to align the spine properly will alleviate pain and cure illness and disease. Chiropractic services are now being used in Guam as primary care providers or as a supplement to medical care.

Chiropractic is performed by a Doctor of Chiropractic, who has trained and received a D.C. (Doctor of Chiropractic) degree from an institution accredited by the Council of Chiropractic Education (CCE). Licensing requirements stipulate that an applicant must have graduated from an accredited school of chiropractic; must have satisfactorily completed one year of internship training; must be at least 21 years or older; must be a U.S. citizen or a permanent resident of the United States; and must be a person of good moral character.

At present, several private insurance companies, as well as workman's compensation, provide coverage for chiropractic treatment; Medicaid is unable to do so due to the unavailability of

funds. According to the Guam Chiropractic Association, the majority of patients seeking chiropractic care are between 20 and 49 years of age, and nearly half are employed in the private sector.

J. Mechanisms for Financing Health Care.

No Guam resident is denied access to medical care because of an inability to pay. This policy is specifically stated in Title XLVII of the Government Code of Guam (P.L. 7-101) Section 49008, which reads:

"...It is the policy of the Government of Guam that no person shall be denied complete medical care and services by reason of his partial or complete inability to pay therefore. All persons, however, shall be required to pay for such care and services in accordance with their means..."

A major portion of Guam's population is covered by various private health insurance plans, Medicaid or Medicare, and those without insurance receive locally funded medical assistance, either through the mandated "free" health services for special conditions or the Medically Indigent Program (MIP). The figures detailed in the succeeding pages are approximate but still allow for a more or less accurate picture of health care financing for Guam's civilian population.

1. Health Maintenance Organizations.

This form of prepaid health care coverage has been readily accepted by Guam's inhabitants and is the most preferred way to safeguard the health of individuals and their families. Almost half of the population, 55 percent, is covered by either FHP or GMHP.

a. FHP, Inc.

This federally qualified, California-based HMO is built upon the foundation of a medical group consisting of approximately 40 health professionals in various specialties who are practicing at the FHP Clinic in Tamuning. The clinic is essentially self-contained, since it operates its own dental clinic, X-ray department, clinical laboratories, pharmacy, physical and occupational therapy unit, as well as home care services. Persons covered under FHP also have the option of utilizing the Seventh Day Adventist Clinic which offers total patient care services similar to those provided at the FHP clinic. Approximately 25 health professionals representing the various medical specialties are employed at SDA, providing a wide spectrum of preventive, diagnostic, primary, and specialized services.

Government of Guam and federal government employees make up the bulk of FHP enrollees. Those covered under the plan pay only minimal co-payments for physician care and drug prescriptions. However the amount of the co-payment varies with the benefit package negotiated by different employer groups.

b. Guam Memorial Health Plan.

GMHP originated as a division of the Guam Memorial Hospital Authority and was sponsored by the Government of Guam to provide low-cost health care coverage to the citizens of Guam.

GMHP has since severed its ties with the government and is now a private, non-profit and federally qualified health maintenance organization, which offers its services to government employees as well as any other interested individuals in the community. The HMO is organized along the lines of an independent practice association (IPA) by which the services of the Guam Memorial Hospital, approximately 75 physicians providing primary and specialized care, 9 dental clinics, 18 pharmacies, 9 optometrists, and 3 clinical laboratories are contracted for the subscribers of GMHP.

GMHP is one of the major insurers of Government of Guam employees; 45 percent of these employees opting for health insurance have purchased such insurance from this health plan. Only minimal co-payments are required for physician visits and pharmaceuticals. For off-island referrals GMHP covers 80 percent of the first \$5,000 and 100 percent of all charges incurred thereafter, up to a maximum of \$100,000.

2. Group and Other Indemnity Plans.

The second most popular mode of health insurance for Guamanians is the purchase of or participation in group health plans. Approximately 25 percent of Guam's population are covered under these insurance programs.

HML, Staywell, Health Shield, Multicover, and about 20 other group plans available on Guam are indemnity insurance programs. Because of the customary deductible and co-insurance features that are standard among such plans, the group plans have been subscribed to at a far lesser degree than either FHP or GMHP, which offer lower out-of-pocket expenses at the point of service at a somewhat higher premium cost. The lower market penetration of these group and other indemnity plans on Guam is in direct contrast to their predominance in other places, and stands as clear testimony to the local preference for the more organized health maintenance forms of programs. This probably, in the case of Guam, stems from the earlier days when virtually all medical care was provided in highly organized, governmental clinic settings as opposed to the more traditional solo physician office setting in the U.S. mainland.

Figures 19 and 20 provide enrollment data of Government of Guam Employees enrolled in group health plans.

3. Federally Supported Health Insurance.

In addition to federal programs and grants-in-aid which support largely special health programs and services, Guam is also eligible for the Medicaid and Medicare programs. Services for Veterans or retired military personnel are provided by the U.S. Naval Hospital or through the CHAMPUS program.

a. Medicaid.

The Medicaid Assistance Program is a federal-state matching program under Title XIX of the Social Security Act to provide medical care for persons receiving welfare benefits and those who are medically indigent. For all the states of the union, the Federal share is determined by a

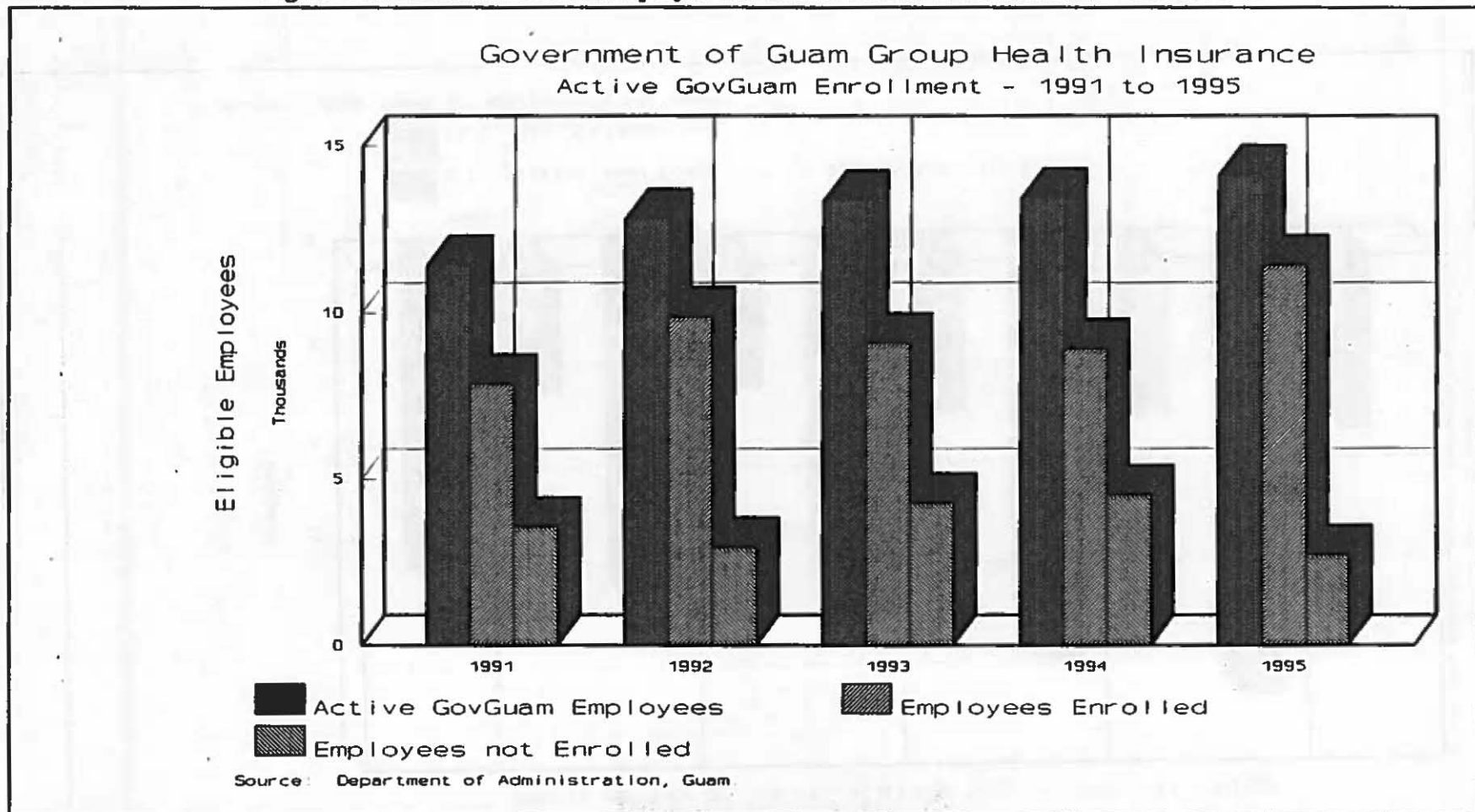
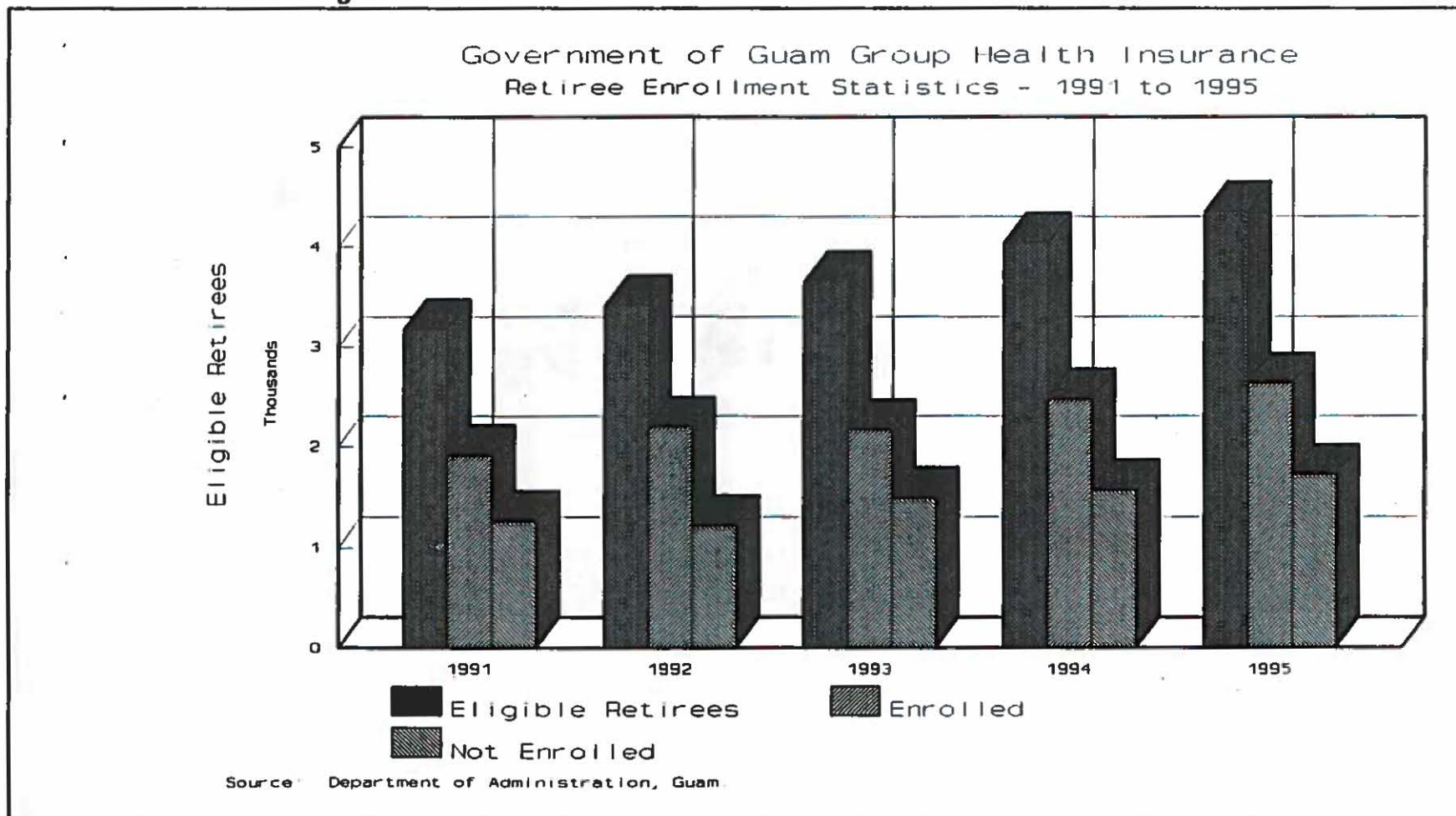
Figure 19: GovGuam Active Employee Health Insurance Enrollment - 1991 to 1995

Figure 20: GovGuam Retiree Health Insurance Enrollment - 1991 to 1995

statutory formula based on per capita income.

$$\text{State Share} = \frac{(\text{National per capita income})}{(\text{State income})} \times 45\%$$

$$\text{Federal Share} = 100\% \text{ minus the State share}$$

By design, the formula provides a higher percentage of federal matching funds to states with low per capita incomes (up to a statutory maximum of 83%); and a lower percentage of federal matching funds to states with high per capita incomes (down to a minimum of 50 percent). All states have an open-ended allotment ceiling, which means that the federal government will match (depending on what the required state match is) the state share with no funding ceiling identified as a limiting factor on the total expenditure of the program.

The Government of Guam has taken several measure to ensure the program's integrity and the provision of health care to all needy persons. The scope of services covered has been kept to a minimum, and excludes ICF prosthetics, adult dental care, as well as eyeglasses for adults.

As a result of the limitations on services that are available under Medicaid, the Government of Guam has been compelled to a 100 percent locally funded program to address the needs of the medically indigent population. Guam's Medically Indigent Program is for those people who do not qualify for Medicaid because of the stringent eligibility requirements and yet cannot afford to pay for their medical bills.

b. Medicare.

Medicare was established in 1965 under Title XVIII of the Social Security Act. Its intent was to ease access to quality health care for the elderly population aged 65 and older. Medicare provides hospitalization and medical insurance for those who are eligible for Social Security or Railroad Retirement benefits.

Medicare embodies two insurance formats. Part A is the hospital insurance program and offers a variety of hospital and institutional services. Benefits are subject to specific deductible and coinsurance requirements.

Part B is a supplemental insurance to Part A. It is a voluntary program which provides for physician services and outpatient hospital services. Monthly premiums are paid in part by the federal government and the beneficiary.

On Guam there are only about 2,000 persons enrolled in the Medicare Program, since many of the island's seniors have not accrued the necessary Social Security benefits to make them eligible for this program.

4. Self-Payers and Uninsured Persons.

Approximately 16 to 20 percent of Guam's population or 23,000 to 29,000 persons (based on 1994 population of 145,881), are not covered under any insurance program. It is assumed that

about 5 percent of the population (7,000 persons) can and will pay for their own medical expenses. This leaves approximately 16,000 to 22,000 persons in our community, vulnerable to illness or accidents, with no identifiable means of paying for medical care.

Some of these persons receive health care services from categorically funded special health programs such as the Maternal Child Health services provided by the Department of Public Health and Social Services. Others are cared for through the locally mandated "free" services for special diseases. Those not eligible for any of these programs will be cared for by the Medically Indigent Program (MIP). In addition there are those persons who have exceeded the maximum coverage of their health plan and need help with the additional medical bills.

The financing of health care for the uninsured, underinsured, and the indigent is a major issue which is currently under investigation by Guam's policy-makers and health care providers.

K. Conclusions and Recommendations.

1. Major Health Care Facilities.

The first of several priorities in the health care delivery system is the reaccreditation of the Guam Memorial Hospital. This accord is foremost among Guam's leaders, government officials, hospital authorities, and health professionals. Since 1986, the hospital has begun to address the structural deficiencies, the need for additional improvements in its facilities and provision of services, and the maintenance of such services. Reaccreditation plans are in place with the management and staff performing daily assignments and responsibilities at JCAHO standards, conducting mock surveys, obtaining continuous public input, and conducting positive advertisement via the media and hospital staff. Additionally, allowing GMHA to set their fee schedule without legislative impediment and the installation of a management information system to improve billing procedures will impact positively towards accreditation.

Optimum utilization of the regional centers of the Department of Public Health and Social Services must be encouraged to improve the effectiveness of health care accessibility. Improved utilization and accessibility of the regional health centers by DPHSS clients would deal with excessive waiting periods at the central facility. Recruitment and hiring processes as well as requisition and purchase of medical items and equipment must be given a higher priority. Increased turn-around time from requisition to receiving medical items and equipment may be achieved by giving these essentials higher priority or by the designation of a medical supply section within the procurement system. Shorter recruitment and hiring time may be accomplished via immediate action of the processing agencies.

The shortage of health professionals in DPHSS and GMHA must be rectified immediately in order to provide the necessary numbers of health professionals authorized for the organizations to ensure the timely delivery of quality health care and services. Additionally, health departments within the Government of Guam that are authorized full-time equivalent health professionals must conduct needs assessments and coordinate their efforts in meeting their needs with the Governor and the Management Team. There should be an established operating policy and protocols that will enable school health nurses to fully use their nursing skills and thereby make health services more readily available to students.

The problem of shortages might also be approached by conducting a study to determine the number of licensed nurses living on the island who are not employed in this profession, and why this is so. A 1993 study by Dr. Maureen Fochtman and Kenneth White, Supply and Demand for Nurses on Guam: United States Territory of Guam: Toward Year 1996, states:

"Since the Guam Board of Nurse Examiners' list totals 498 and the number of employed nurses is 297, the remaining 201 (40 percent) who possess a license to practice nursing in Guam are either unemployed, or employed outside of nursing, or they no longer reside in Guam."

As of July 1995, there were 614 licensed nurses on the Guam Board of Nurse Examiners' listing. Maximum utilization of these resources must be made on island.

The multitude of services and programs provided by the Department of Mental Health and Substance Abuse through various administrative and service divisions must be weaned from federal and local government funding source dependency so DMHSA can become a revenue producing organization. Done properly, this weaning from government funding will save local money while allowing for the funding needed to maintain the programs currently in place until they gain greater self-sufficiency.

The government encourages group practices in clinical settings which lessens the cost of medical services on our island. The consolidation of sites for the delivery of health care also lessens the operating costs of health providers which means savings for consumers and increased ease of access to providers.

2. Health Promotion and Protection.

It is clear that a major reorientation effort towards promoting health and preventing disease is needed on Guam, and that health education is the vehicle by which such reorientation will most likely be accomplished. Unfortunately, Guam's health education efforts and resources are fragmented and sporadic, and need to be coordinated in order to achieve the desired impact.

Health education is provided by diverse organizations, that have similar purposes and target groups, but lack mutual goals and coordination. Furthermore, health education efforts have not received a sufficiently high priority for funding allocation. If health education is to succeed, then both the coordination of health education activities and the funding for such activities must be well established within the organizations.

3. Diagnosis and Treatment Services.

Nearly all of the available public dental services have been used by the island's children below the age of 17. Most of the services were originally restorative in nature, however, the emphasis has recently been transferred to prevention and promotion programs. Nevertheless, the public health dental program has continued to focus on the school age population, almost to the exclusion of all other eligible clients.

With the development of dental insurance plans that cover dental care for children, the policy of free care for all children should be reevaluated. The public dental program could be better

used to provide direct care to the medically indigent and senior citizens, as well as to continue its prevention and promotion efforts.

The emergency medical system continues to suffer from the lack of coordination in the program administration and operations. Both the OEMS and Fire Department personnel are working to develop a staffing pattern that separates EMT-As from firemen, and to allow for specialization in emergency medical training. Such training is to include work in the emergency medical training. Such training is to include work in the emergency room at GMH. In addition, upgrading and maintaining the communication and transportation network has been identified in the OEMS goals and objectives.

As the EMS program continues to develop, it is essential that the basic components, manpower, training, transportation, communication, and facilities are firmly established. This requires above all a well-coordinated effort among EMS administrators, providers, and educators.

In recent years, ambulatory surgery has received much attention among health care providers. The island currently has two freestanding surgi-centers in addition to GMH, that do some of their surgeries on an outpatient basis as well. Nonetheless, other health care providers are considering the possibilities of establishing additional surgi-centers. It is essential that the Guam Health Planning and Development Agency continue to monitor the trends in outpatient surgeries, since these trends will ultimately affect the need for more ambulatory surgical facilities.

The radiological diagnostic capabilities on Guam have expanded over the years. Great strides have been made by the Hospital in upgrading its facilities and equipment. The private sector has also contributed to the availability of radiology services to the public.

The customary medical support services on Guam are both available and accessible to those in need of such services. The personnel that provides medical support is generally well-trained, however, it is difficult to monitor and maintain the quality of care without appropriate licensure and certification requirements. As is the case with all the licensure programs, comprehensive rules and regulations for program administration must be developed and implemented.

As the roles and responsibilities of nurse practitioners and physician assistants continue to evolve, the public and private health sectors must continue to monitor the effectiveness, safety, and efficiency of using new health professionals. Legislation that addresses these concerns needs to be enacted. The legislation must be comprehensive, it must reflect the roles of NPs and PAs on Guam, and it must be strictly enforced.

4. Chronic Care Medical Services.

Increased public awareness through health promotion and education efforts is seen as the most important activity to lower the incidence of hypertension and diabetes, and to prevent the complications of these disease if they remain untreated.

Chronic or end stage renal disease is devastating to the patient and his family. The disease is costly and drastically infringes on a person's emotional and socio-economic well-being.

Federal legislation has done much to assure sound medical care, either through dialysis or kidney transplants, for ESRD sufferers. Guam's special legislation provides financial assistance to needy ESRD patients for the purchase of equipment, supplies, medicine, an high protein food or to pay for transportation. With this, all access barriers to appropriate ESRD care have been removed.

Currently, GMH provides hemodialysis and, on an emergency basis only, peritoneal dialysis. Pacific Dialysis Clinic in Dededo compliments the needs of the island's ESRD patients by providing peritoneal dialysis. Every effort must be made to trained ESRD patients in self-administration which cost less per treatment and can be done at home. This frees the units at GMH for the more severe cases requiring staff-assisted treatments. If the increasing ESRD patient trend continues (increase over 67 percent within the last decade), then additional stations will be needed to provide three treatments per week to each client enrolled in the program.

Kidney transplants are under-utilized by Guam's ESRD patients. This is believed to be due to an unavailability of donor kidneys and the great distance between Guam and the Regional Transplant Center in Hawaii, at the St. Francis Hospital.

The feasibility of performing kidney transplants on Guam, and "harvesting" and preserving donor kidneys locally should be further investigated by GHPDA, DPH&SS, GMHA, and the island's health care providers.

5. Habilitation and Rehabilitation Services.

Habilitation and rehabilitation services available on Guam can and do serve all sections of the population. They can begin before a disabled child enters school, and can last all the way through his adult life. The services can help provide the disabled person equal education under the law, assist him in acquiring job skills and finding a job, and can help him to overcome the psychological and social barriers present in everyday life. Habilitation and rehabilitation providers offer medical care and counseling to those newly disabled, those disabled from birth, as well as to family members. The services are offered in both the private and public sectors, and while some are based on the person's ability to pay, no services are refused to those who need them and are unable to provide financial compensation.

The major shortcomings of all services presented here are financial in nature. The extent of services is constricted by budgetary restraints, and no expansion of any services is planned in the future.

In addition to the funding problems, is the fragmented network of services. While the Department of Education, Public Health, and Vocational Rehabilitation, as well as the Guam Memorial Hospital all share a referral system, the duplication of their efforts in screening for disabilities and the absence of a central location for the screening process, as well as rehabilitation, counseling, and training causes some disabled persons to fall through the cracks of the rehabilitation net. Some persons are forced to travel from place to place for the different steps of the evaluation and training cycle, and as many disabled do not drive, they must rely on a caretaker to transport them. This in itself has a discouraging effect on the disabled person's sense of independence. A central facility for the medical, physical, emotional, and vocational

habilitation and rehabilitation of the disabled may be a goal to strive for in the future.

A problem encountered on the island is the lack of training facilities and programs in the rehabilitation field. Any training necessary must be done off-island. Because there is no pool of trained personnel locally, oftentimes positions remain vacant for years until off-island personnel can be recruited for jobs.

6. Long-Term Care.

Providing and financing long-term care have become major issues both nationally and on Guam. Greater longevity, change in family composition, increased rates of inflation, high costs of living, and the increasing number of working women have all contributed to the growing problems of long-term care.

Among these problems is the increased need for institutional care. For some persons, institutionalization is necessary. However, for the majority of disabled and frail elderly, long-term services need to be planned and provided in such a manner that the individuals will receive coordinated, comprehensive quality services. The services should include:

- Adequate, supervised, residential care for those who lack families but want to live in their communities.
- Special services for those who live at home but need help from outside; for example, transportation or shopping assistance, or help with meals and personal care.
- A range of alternatives between the hospital and the nursing home, including a system of home health care, senior day care, or foster care.
- Innovative and compassionate ways of caring for the terminally ill outside the traditional hospital or nursing home.

Guam has already established a wide array of long-term services. There are some gaps, however, in the continuum of care, which should provide services for all levels of need, from those of the minimally dependent to those needing total care. In-home services, such as home care nursing and homemaker/health aide services, must be increased in order to make a noticeable impact on the length of stay in hospitals and long-term or lifetime institutionalization. Those in need of institutional long-term care must be placed in appropriate facilities.

GMHA's sixty-bed Long-Term Care Facility at Barrigada Heights was substantially completed in the latter part of fiscal year 1995. St. Dominic's Senior Care Home accepts patients and clients for intermediate or supervised residential care according to their needs.

With appropriate facilities established, steps towards financing long-term care must be taken. Major efforts must be made to secure an increase of Guam's Medicaid allocation to allow for the payment of intermediate nursing care; and less costly alternatives to institutionalization, such as Senior Day Care, Foster Care, and Incentive Pay for Relatives, must be provided. In addition, financial responsibility for long-term care must be delineated by determining whether or not adult offsprings are liable for the cost of care for their parents.

Local and federal resources allocated for health care are no longer sufficient to meet the rising demands of a grown population. Only where able individuals assume greater responsibility for their well-being and the cost of health care, will a community be able to provide appropriate health care services to all its members in an equitable fashion.

7. Alternative Health Care Providers.

Guam is located on the crossroads between East and West. The island population is a conglomerate of ethnically and culturally different people with distinct characteristics. Some of these characteristics pertain to concepts of health and wellness.

It is an established fact that the degree of a person's belief in the effectiveness of a particular medical procedure or practice is closely related to the success of the treatment. One can therefore reason that a person should avail himself of those medical care services in which he has the most faith.

The most prevailing form of medical care provided to the island population follows the western model, originally brought to the island by the U.S. Navy government. The traditional or "native" healers, the suruhanas or suruhanos, were slowly replaced by the more scientific western medical care, but are still considered useful and sought after, especially by the older populations. The Filipino immigrants brought their own healers, the hilots, with them. Acupuncture began to flourish on Guam with an increased influx of Asian people to Guam. Chiropractic care has only been established on Guam in the last two decades, but is becoming popular with Guam's population.

Many of the U.S. health insurance companies provide coverage for acupuncture and chiropractic treatments, as do Medicaid and Workman's Compensation in the majority of states. This coverage attests to a growing popularity and acceptance of these services in the spectrum of health care services on the mainland; similar trends are now developing on Guam.

VI. HEALTH CARE POLICY ISSUES

Gusm Health Plan

VI. Health Care Policy Issues

Policy is the definite course of action, selected from various alternatives in view of given conditions, to guide and determine present and future decisions. Health policies are formulated at a number of different levels on Guam, taking into account prevailing unique conditions, federal funding and regulations pertaining to the funding, local revenues, and general trends in the health care delivery system. Sound health care policy concentrates health resources and allocates them to islandwide health needs and priorities, assuring an equitable distribution of the available health care services to the people of Guam.

Guam's health care policies are analyzed by using the six general criteria of **Availability, Accessibility, Cost, Quality, Continuity, and Acceptability**. Analysis of this nature will provide the health care providers, as well as the legislators and decision makers within the Government of Guam, with recommendations for the revision of current policies and suggestions for shaping future policies.

A. Availability.

Availability is a measure of the island's supply and makeup of health services and manpower, both professional and ancillary, as well as the capacity of these resources for providing care. The services and manpower requirements are classed into four categories: Preventive, Acute/Specialized, Chronic, and Long-Term Care.

1. Preventive.

Preventive services encompass health promotion and protection as well as Disease prevention and detection. The services include health and nutrition education, immunization, communicable disease control, and screening programs. Health education and promotion programs are available to Guam's population from both public and private providers, but there is a lack of coordination among the delivery entities. Prevention services and health education are not fully available in the schools. This is due to the fact that school nurses are not given the responsibility for providing health services and education. Insurance plans do not cover health education services and sometimes discourage use of primary care providers for health screenings and physical examinations. The Department of Public Health and Social Services Health Education section must continue to play a much stronger role in bringing cohesive education to the people.

Local and federal budget cuts will have an adverse impact on the availability of health services. Base on historical experience, in times of austerity, the Public Health preventive service budget allocations are reduced to offset other health care cost, i.e., inpatient care, welfare benefits, etc.

Manpower shortages that affect service availability are in the allied health and health education area. This particular field has also failed to receive a high priority in the past. A solution would be to encourage undergraduate and graduate students to concentrate on health education and hire them to fill the presently empty positions.

The heads of the Department of Public Health and Social Services, Guam Memorial Hospital Authority, and the Department of Mental Health and Substance Abuse do not meet to discuss and resolve health care issues (i.e., continuity of patient care, cross-utilization of certain

services/resources, etc.). There is no existing structure that "forces" the government health agencies to meet on a regular basis to discuss health issues.

2. Acute/Specialized.

Diagnosis, treatment, and mental health services are part of the Acute/Specialized services available on Guam. They cover maternal and child health, dental health, emergency, medical, and surgical services, diagnostic radiology, as well as inpatient and maintenance mental health services and community programs. All services are presently available to the population.

Shortcomings in the Acute/Specialized area of services include the lack of a complete neonatal unit at the hospital; limited free dental care to the medically indigent and elderly; and the need for newer diagnostics radiology equipment at the hospital, which would expand the amount of services offered. Manpower needs include a neonatologist, a second radiologist, cardiological support personnel, an emergency medicine specialist. The training and staffing of ambulance personnel needs to be upgraded, with more specialized emergency training courses added, and the two-way communications between ambulance and personnel need to be improved.

Mental health services are available to those in need of them; however, there is, at present, a glaring gap in the service continuum caused by the shortage of a psychiatrist and a clinical psychologist. Vacancies in the mental health administration and the Divisions of Community Support Services and Research and Development need to be addressed so that present and future mental health service needs can be accommodated.

3. Chronic Care.

Chronic care services for those with hypertension, diabetes, and arthritis are available through private providers for those with insurance. For indigent persons with an established economic and social need, the Chronic Disease Prevention and Control program provides care; but lack of funding limits the scope of services and the number of people in the program. Medical care for those persons suffering from end stage renal disease (ESRD) and lytico and bodig (ALS/PD) is available to all those identified with the diseases. However, the government funding source is being depleted and new sources of funding to care for these diseases is under investigation. The ESRD section at the hospital has adequate trained manpower, and inservice training programs for upgrading skills. With the two new private facilities for dialysis treatment, patients are receiving the most effective number of hemodialysis treatments. ALS/PD services were being provided by the clinic run by the National Institute of Neurological and Communicable Disorders and Stroke (NINCDC), but these services have been phased out and transferred to the Medically Indigent Program for payment and to private practitioners for treatment. However, with the repeal of the "free care" legislation, patients in need of assistance from MIP must undergo a means test to qualify for enrollment in the program. If the patient fails the means test, then the patient must either pay via health insurance plan or self-pay. Health insurance providers are providing coverage for these diseases along with tuberculosis and insulin diabetes.

4. Long-Term Care.

Habilitation, rehabilitation, and long-term care are available to all who require such care. At

present, habilitation and rehabilitation services are adequate, but delivered in a fragmented manner. The services could be much improved and expanded with the addition of qualified trained manpower, especially speech, physical, and occupational therapists.

Long-term care is adequate in the area of community facilities and programs, but under-staffed at present in the area of in-home services. Institutional long-term care is inadequate at the intermediate and custodial levels. After its completion in 1986, St. Dominic's Senior Care Home accommodated those in need of intermediate care, relieving the GMH skilled Nursing Facility of the responsibility for providing care to patients inappropriately placed there. The 60 bed Long-Term Care Facility and the University of Guam's Institute for Aging that was constructed in 1994 and completed in late 1995 was to provide space in GMHA for the delivery of Rehabilitative Services, Dietary Services and other support functions to meet the residential needs of patients. However, the LTC facility at Barrigada Heights stands vacant due to lack of human and material resources.

B. Accessibility.

The Government of Guam assured accessibility to all its constituents by including, in the Guam Code, a stipulation (P.L. 7-101, Section 49002) that medical care and services are to be provided to all persons regardless of the inability to pay. Other access factors, which were not addressed in this Public Law, are discussed below.

Accessibility is defined as the measure of the degree to which a system inhibits or facilitates the ability of an individual or group to gain entry to and receive appropriate services. Considerations, besides the ability to pay, include temporal, geographical, and socio-demographic accessibility.

1. Temporal Access.

Temporal access refers to the ability of patients to receive services at the time when either they need them or can make use of them. Because of transportation problems, and more importantly, the fact that work hours often coincide with the hours during which medical services are usually provided, many persons have difficulty in obtaining medical services. Some patients "walk-in" for health care and do not follow the appointment system.

In Guam's health care system, most private providers have office hours that begin before and extend after normal working hours to allow those who are employed access to services. Those services offered by the government, however, are limited to 40-hours per week operations. The hours of operation have a direct effect on waiting time, both between and before visits. Patients of private providers have complaints about the length of time they have to wait between requesting an appointment and receiving services, or the time spent in a doctor's office waiting to be seen. Major private health providers have extended their office hours into the evenings and weekends. However, the clinics are not always prepared for large numbers of walk-in patients. Patients of public providers, on the other hand, have many complaints about how much of their time is "wasted" waiting to be seen, and of the length of time between making appointments for medical care and actually being seen at a clinic.

At times, the GMH Emergency Room is used by both consumers and providers for ambulatory

urgent care ignoring the fact that the Emergency Room is established to address life-threatening situations.

Manpower considerations also affect temporal access. At this point in time, Guam must appraise the health manpower shortage areas and improve on its recruitment and retention efforts. While not overly abundant, the supply of health professionals is sufficient to meet our present needs. The distribution of this manpower within the Government of Guam and, with the majority in the private sector, may ease the difficulty of scheduling visits that was mentioned earlier.

2. Geographical Access.

The geography of a certain area can serve as the major impediment to obtaining health services. On Guam, this translates to the geographical placement of the health services. Most are in the north-central villages of Agana, Tamuning, and Dededo. As a result, the residents of the southernmost villages must travel an average of 45 to 60 minutes for health care. For this reason, the Southern Regional Community Health Center was opened in Inarajan. Unfortunately, due to limited operating hours and the accepted habit of travelling to the center of the island, the health center has been underutilized. As many of the island's other businesses are located in Agana and Tamuning, the trip to these villages for routine health care is not seen as a hardship for most southern residents, but as a chance to conduct other business as well as a health visit.

Geographical access to off-island specialist care does not seem to be a problem, as FHP, GMHP, Medicaid, and the MIP program have contracts for service with qualified specialists and hospitals in Hawaii and in the U.S. Mainland.

3. Socio-Demographic Access.

Health beliefs, cultural mores, attitudes, and languages can cause significant problems for the individual or group in obtaining or maintaining access to health care. Despite the advanced degree of westernization of Guam's culture, non-western medicine is preferred by some segments of our community for certain health problems. The bartering nature of payment for the services of the Chamorro suruhana or suruhano and the Filipino hilot makes it difficult to ascertain the extent to which traditional healing and western medicine co-exist on this island. The well established acceptance of acupuncture and the emergence of chiropractic services can be viewed as indicative of the extent to which alternative health care services are supported by the people of Guam.

Since most of the population speak English as either a first or second language, there exists only a limited language barrier. This affects elderly Chamorros and new immigrants the most. However, they can take advantage of the health care practitioners on island who speak Chamorro or the Filipino languages; and many health education materials are being translated from English into Chamorro or Tagalog to reach those who have difficulty with English. Every attempt is made on the part of the health care community to reach all segments of Guam's multi-cultural population with information or services.

4. Financial Access.

Financial access is the ability of the population, or a segment thereof, to obtain available health services as determined by financial resources. Through HMO enrollment, mandated free care for certain diseases, and the Medically Indigent Program, many of the financial barriers to access of primary health care have been removed. Care for catastrophic illness lacks financial coverage, bringing considerable hardship to some individuals and their families. People without insurance coverage cannot get served by clinics and at times refer patients to the Emergency Room for ambulatory urgent care.

C. Health Care Cost.

When discussing health care costs, one usually means the total expenses and economic consequences resulting from the provision of health care services and goods. Measures of cost include consumer costs, direct provider costs, total program costs, indirect costs, capital costs, and operation costs. An additional factor on Guam are the costs to the community, through the Government of Guam's general funds, for health care provision to the uninsured, under-insured, and indigent inhabitants of the island.

A measurement of cost is effected by looking at data--facts and figures which have been collected over time. Unfortunately, to this date Guam has not established a system to collect uniform cost data from public and private providers. We have "approximate" cost figures arrived at by totaling available federal and local funding and their disbursement records; by summing the premiums paid by employers and employees for health insurance coverage; by looking at reimbursement information from Medicare, Medicaid, and the major insurers on island; by the operation costs of the hospital, and by hospital charges. However, information is patchy and does not in any event include opportunity costs and societal costs.

While exact figures on total costs for the provision of health care are unavailable, Guam's health care providers, legislators, and decision makers have increasingly become aware of the many issues of providing health care and medical services to the rather large portion of the population not covered by insurance or considered medically indigent. They are equally aware that the current ceilings of the HMOs and third-party insurers, and the funding limitations of Medicaid, Medicare, and the Medically Indigent Programs do not allow for catastrophic illness coverage for the population. Furthermore, it is recognized that the overall escalation of medical costs, particularly those for chronic care and long-term care, must be contained so that a proper balance can be found in the resource allocation for health care across the generations.

These issues are the subjects for discussion under this section. Not included, however, are the costs of medical care provided by the U.S. Naval Hospital to the island's veterans, military retirees, and their dependents.

1. Health Care Provisions for the Uninsured, Under-insured, and Indigent Population.

Health insurance, either through pre-payment or indemnity, has been called the backbone of the health care system as it assures access to needed health care. Employer-subsidized health insurance covers a majority of Guam's population.

Health insurance is often offered to employees as a fringe benefit by which the employer pays all or part of the insurance premiums. The Government of Guam pays an average of 48 percent

of the premium for single employees, and approximately 20 percent towards the premium of employees with dependents. Figures 21 and 22 on the following pages shows the expenditures for health insurance by the Government of Guam and its active and retiree employees, respectively.

a. Uninsured Population.

The decision to purchase health insurance is an individual one. Most people feel comfortable knowing that they are protected in case of accident and illness. Others perceive themselves as so healthy and invincible that they feel health insurance is a waste of their money. Yet others feel that they can pay for any illness with less monies than they would spend on the aggregated insurance premiums. Underlying this is the genuine belief that the Government of Guam will provide health care, if and when needed, regardless of the inability, or even deliberate intention not to pay for such care. Approximately 5 percent of the population fall into these categories.

A certain segment of the population cannot afford to purchase health insurance, even with the employer paying part of the premium. In the case of our local HMOs, insurance premiums for an employee and his family amount to approximately \$3,000 out of which the employee has to pay \$2,000 and this amount can often not be accommodated by the limited budget of a large family with a single breadwinner. It is estimated that 16 percent of the population belong to this group.

Of course, this category of people who cannot buy insurance because of their low income will most likely be eligible for the Medicaid or Medically Indigent programs, or one of the categorical programs of the Department of Public Health and Social Services, such as the Maternal/Child Health program and the Services for Handicapped Children. Some of these categorical programs are supported partially or totally by federal grants, while others are entirely funded by local revenues, as part of the Government of Guam's health care services.

b. Health Care for the Under-Insured Population and Catastrophic Illness Coverage.

A person is under-insured when his insurance payments do not cover his or her medical expenses. This can then become a financial access barrier to adequate health care. There are two categories of under-insured people: those whose insurance is not adequate for needed primary and specialist care, and those who have enough primary care and specialist coverage, but lack sufficient funds to finance care for catastrophic illness. Medicare subscribers are in the first category and almost all of Guam's population are in the second.

(1) Medicare Coverage.

Medicare is a health insurance program for which persons 65 or older and prematurely disabled persons who have contributed to the Social Security or Railroad Retirement Fund are eligible. Part A provides for medical care in hospitals and is considered an entitlement for those qualifying. Part B is a supplementary program, and can voluntarily be purchased by those entitled to Part A. It provides payment for a variety of physician and outpatient hospital services. The cost of premiums are co-shared by the beneficiary and the federal government.

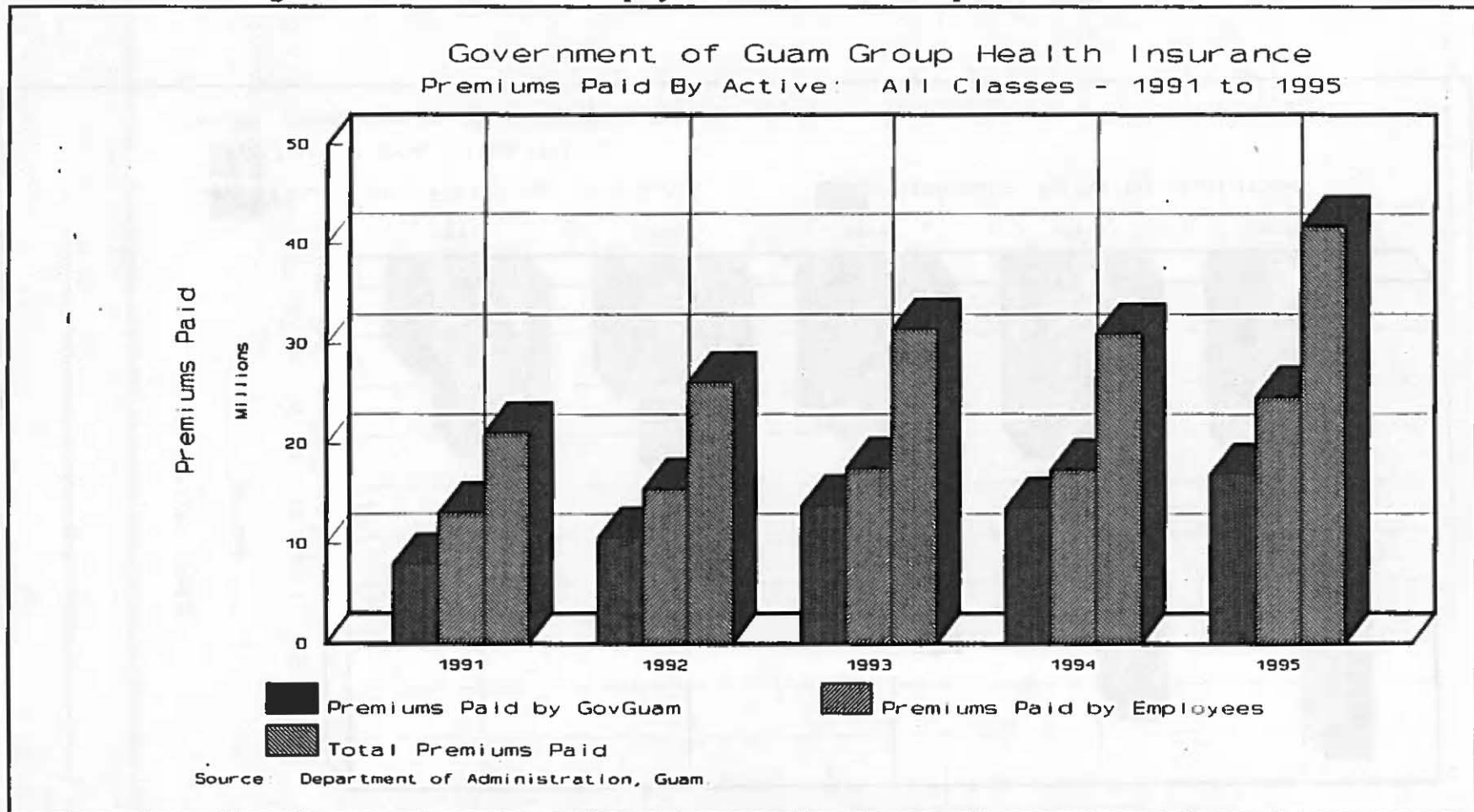
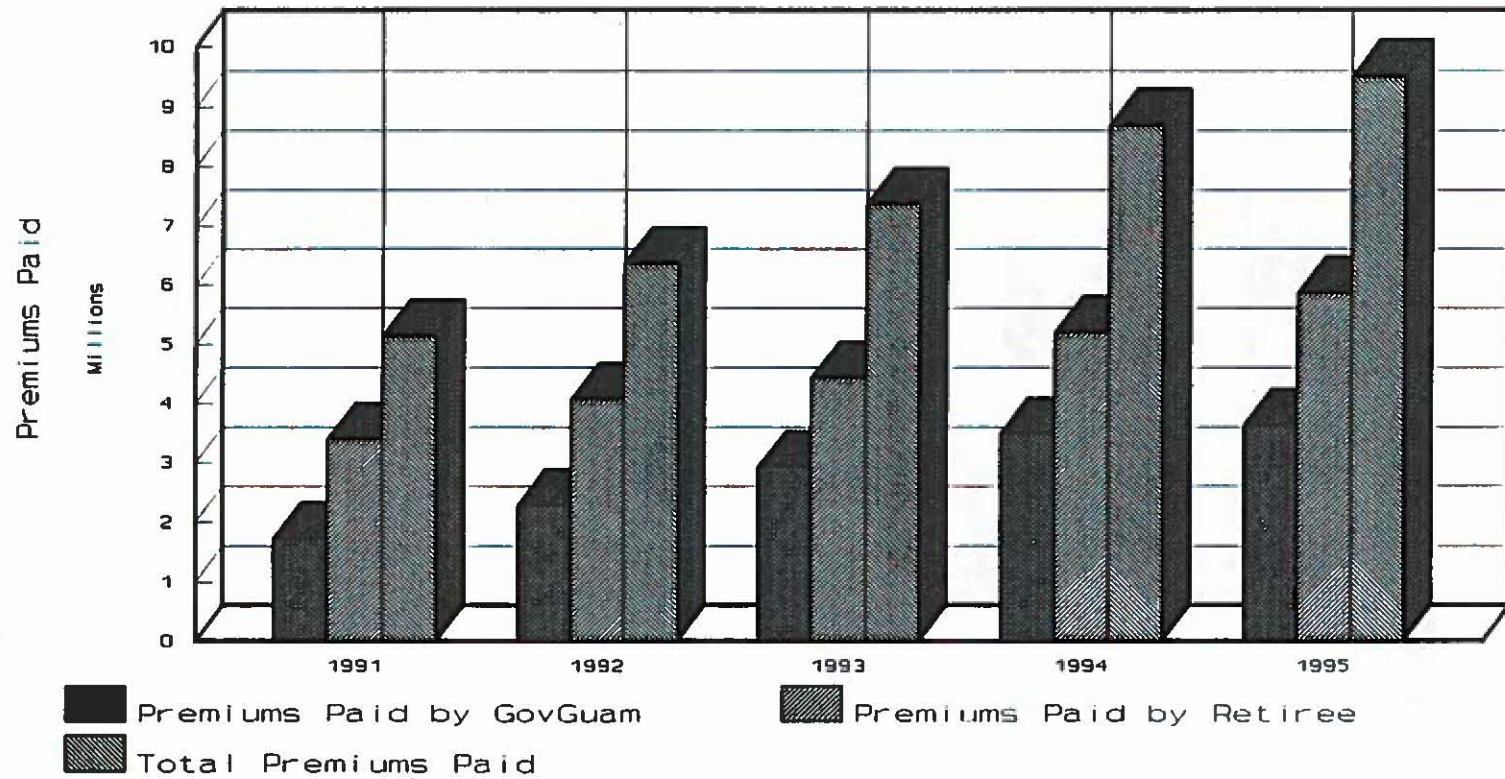
Figure 21: GovGuam/Active Employee Annual Insurance Expenditures - 1991 to 1995

Figure 22: GovGuam/Retiree Annual Insurance Expenditures - 1991 to 1995

Government of Guam Group Health Insurance
Total Premiums Paid by Government and Retiree - 1991 to 1995



Source: Department of Administration, Guam.

There is no doubt that Medicare has had a tremendous impact on the health status of older persons since its inception over 40 years ago. Even though deductibles, co-insurance, and illness-associated expenses cause considerable hardship for persons living on a limited retirement budget, basic medical care is assured through Medicare to approximately 2 percent of the population. However, with the tremendously accelerating costs of health care, the amounts required for deductibles, co-insurance, medications, and health aids have risen much higher than any increase in pensions, interests on savings, or Social Security benefits. Serious and chronic illness often depletes the lifesaving of seniors. At this point, a person then becomes eligible for Medicaid, which covers the deductible and provides co-insurance after the Medicare benefits are used up.

Medicaid eligibility criteria disallows the owning of land, which is a particular problem on Guam, as land is usually a family possession handed down from one generation to another and, in the majority of cases, produces no revenues. Still, it precludes acceptance into the Medicaid program. As Guam's elders usually do not possess significant cash resources, a senior on Medicare must then turn to the Medically Indigent Program in order to continue with medical treatment.

(2) Catastrophic Illness Coverage.

Catastrophic illness coverage pertains to insurance which will pay for medical expenses incurred for the care of catastrophic illness. A catastrophic illness is a medical condition requiring treatment and care which cause expenditures in excess of a specified level of threshold. Such conditions can be caused by major accidents necessitating several operations and a long period of rehabilitation; they can be precipitated by stroke or heart attack, and almost all types of cancer.

Some health care insurers provide a level of coverage sufficient for any kind of catastrophic illness. In addition, there are travel and cost-of-living expenses for the patient and accompanying persons to the area for treatment in either the Philippines, Japan, Korea, Hawaii, or the U.S. mainland. Few individual families have the financial means to pay for the medical expenses once the insurance benefits have been exhausted. Savings, monies set aside for education, and the sale of land must come before a person can apply for Medicaid or the Medically Indigent Program. Often a family must lose all assets and resources which might have been acquired over a life time, and be declared "indigent" before such help can be requested. Medicaid and MIP become in these instances the catastrophic illness insurers. Organized and formal catastrophic illness coverage is designed to forestall precisely such occurrences. It should be perceived as a necessity on Guam, because the government's financial dilemma may disallow provisions for medical care, on- or off-island.

The alternatives are either the individual directly pays for excessive medical care costs through pre-paid catastrophic illness coverage, or continue with the government paying for the cost. The cost will be spread among all taxpayers as taxes may have to be raised in order to obtain additional revenues to pay for such care. Regardless of choice, both measures will be opposed by the people. The mindset is clear. There are people who cannot conceive that they or their families can be stricken with a catastrophic illness. There are others who have no family and therefore not willing to buy catastrophic illness insurance, pay higher insurance premiums, or pay higher taxes. However, when such illness happen to them or a family member, they fully

expect the government to pay for the care out of community-collected general funds.

The issue of catastrophic illness coverage can only be settled when the common good of the community takes precedence over individual preference.

c. Coverage for the Uninsured and Medically Indigent.

Persons unable to provide for their own medical care may apply to DPHSS' two programs, Medicaid or the Medically Indigent Program. Both programs contract private providers to render the needed medical services to program enrollees.

(1) Medicaid Program.

For those persons with financial access barriers to health care, Title XIX of the Social Security Act established the Medicaid Assistance Program. This is a federal/local matching program available to categorically and medically indigent persons who meet the rigorous eligibility requirements of the program. Basic medical care and some optional services, including off-island referrals for specialized treatments, are provided to the over 8,000 persons currently enrolled in the program. There are no thresholds to limit the amounts spent for care for each individual.

(2) Medically Indigent Program.

Public Law 17-83 pertains to the Medically Indigent Program and makes references to Public Laws 17-25 and 17-37:7, which charge the Department of Public Health and Social Services with the administration of the program.

Interim guidelines state that an applicant to the program:

"...Is not eligible for Medicaid under Title XIX of the Social Securities Act; Has neither medical insurance coverage nor the financial ability to pay for such coverage or for medical services as determined by the programs; Has medical insurance coverage but such coverage is inadequate to cover the cost of medically required treatment and is otherwise qualified for the program as a result of inadequate income or resources. Any supplemental coverage are limited to Medically Indigent Program coverages and limitations."

The Medically Indigent Program is intended to be the last resort for the provision of medical services for those persons who cannot pay for medical services. Therefore, a person with medical insurance must refer claims to his or her insurance company first before the bills can be submitted to the Medically Indigent Program. Those services provided by federal or other territorial programs should be utilized first as the Medically Indigent Program is "the last dollar."

MIP provides coverage for primary and specialist care and functions in some instances as catastrophic illness coverage. Eligibility standards are somewhat less stringent than those of Medicaid since it allows additional property to that in which the program applicant resides, and an additional vehicle to that being used as the "family car." Coverage is considered somewhat more flexible and generous than that which is provided by Medicaid, particularly as MIP covers the costs for off-island transportation where there is a demonstrated need, as well as mortuary

expenses when the patient expires. There is no upper limit to the coverage provided by MIP.

MIP attests to the intent of Guam's legislators to assure medical care to each and every one of the island inhabitants, regardless of ability to pay. However, since approximately 16,000 to 21,000 of Guam's civilian population are not covered by any other insurance program and are not eligible for Medicaid, MIP needs much greater financial resources than currently appropriated by the legislature.

While funding is the major problem for MIP, it is not the only problem. The people's limited awareness of the Medically Indigent Program was of concern in the past. Often one does not learn about the program until he or she is struck with an acute illness or injury. The required diagnostic and treatment services are much more costly than any preventive measure would have been. The MIP administrators and the Department of Public Health and Social Services conducted a public awareness program that was aimed at those who were most likely to use public health services and enroll in MIP. The Department and MIP made the community aware of the medical assistance and services that were available. At the same time, DPHSS and the Medically Indigent Program administrators advocated that those who may be eligible for such health services and medical assistance secure preventive care before the need for diagnosis and treatment arises.

Furthermore, the agreement made between the U.S. and the Federated States of Micronesia, Compact of Free Association, has funneled local funds to residents from the FSM residing on island.

Figure 23, 24, and 25 shows the FAS/FSM enrollment, Medicaid expenditures, and Medically Indigent Program expenditures as a result of this agreement.

2. Cost Containment Measures.

Increases in medical care spending have surpassed that of the economy in general. In this respect, Guam is no different from any other community of similar size in the U.S. mainland. And for this reason, similar cost containment measures should be as effective here as elsewhere.

The Certificate of Need program, the control of hospital costs by restructuring Medicare and Medicaid reimbursement to hospitals, and the promotion of HMOs were considered major steps in the federal efforts to contain rising health care costs.

Fostering the development of HMOs was very successful with over 50 percent of Guam's population enrolled. An indirect by-product of the HMOs was a reduction in the average length of stay at Guam Memorial Hospital, and therefore a reduction in hospital costs, which is presumably reflected in lower premiums for the enrollees. Secondly, through its utilization review procedures, medical costs (and the quality of care) are continuously monitored.

There are no problems with the rates GMHA charges to its patients. However, collection for hospital bills has plagued GMHA since it was purchased by the government into the present. As there are a substantial number of uncollectible bills, a certain amount of cost shifting must take place, and this necessitated an increase in hospital charges. But even with increases,

Figure 23: FAS/FSM Medicaid/Medically Indigent Program Enrollment - 1991 to 1994

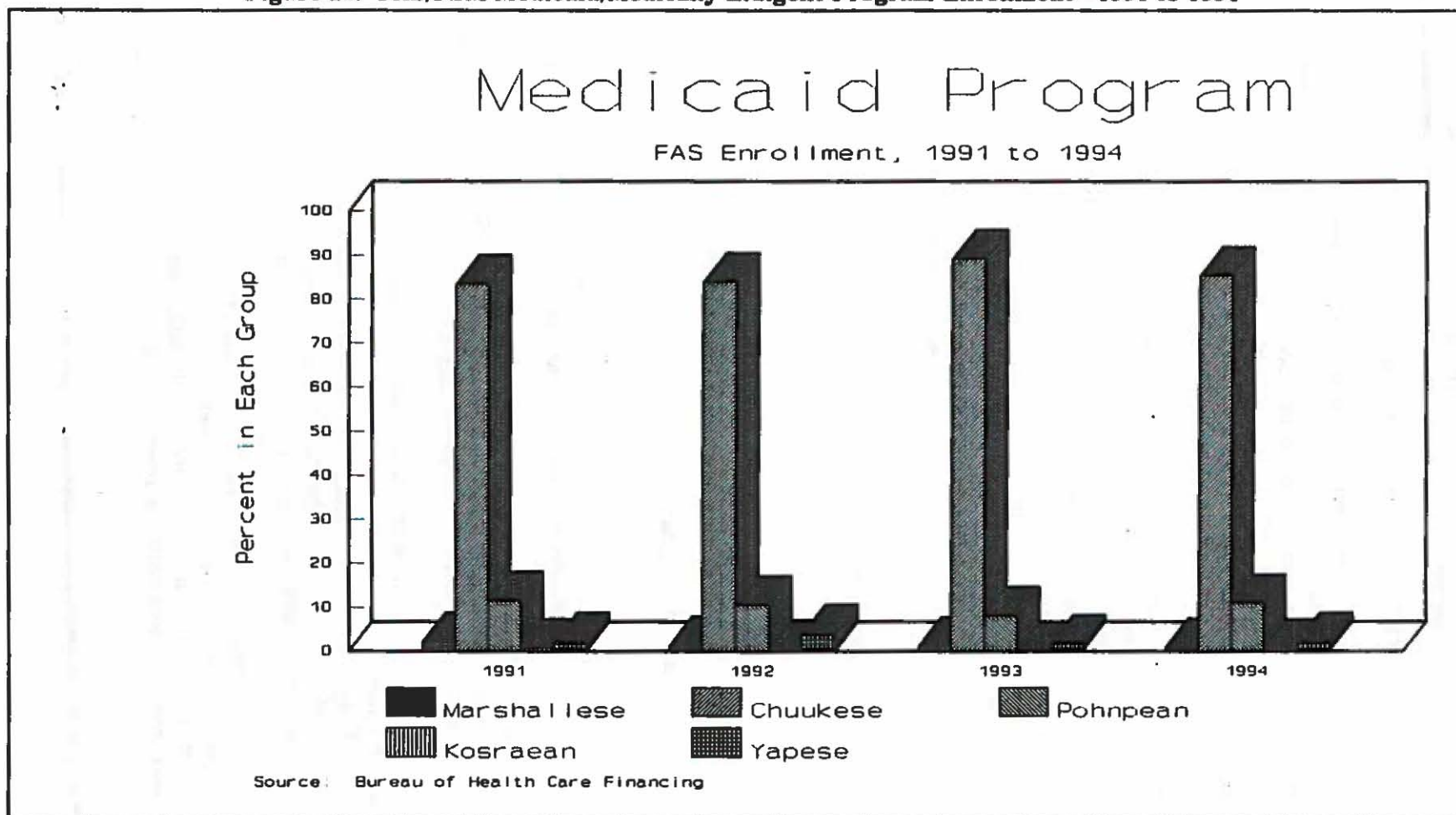


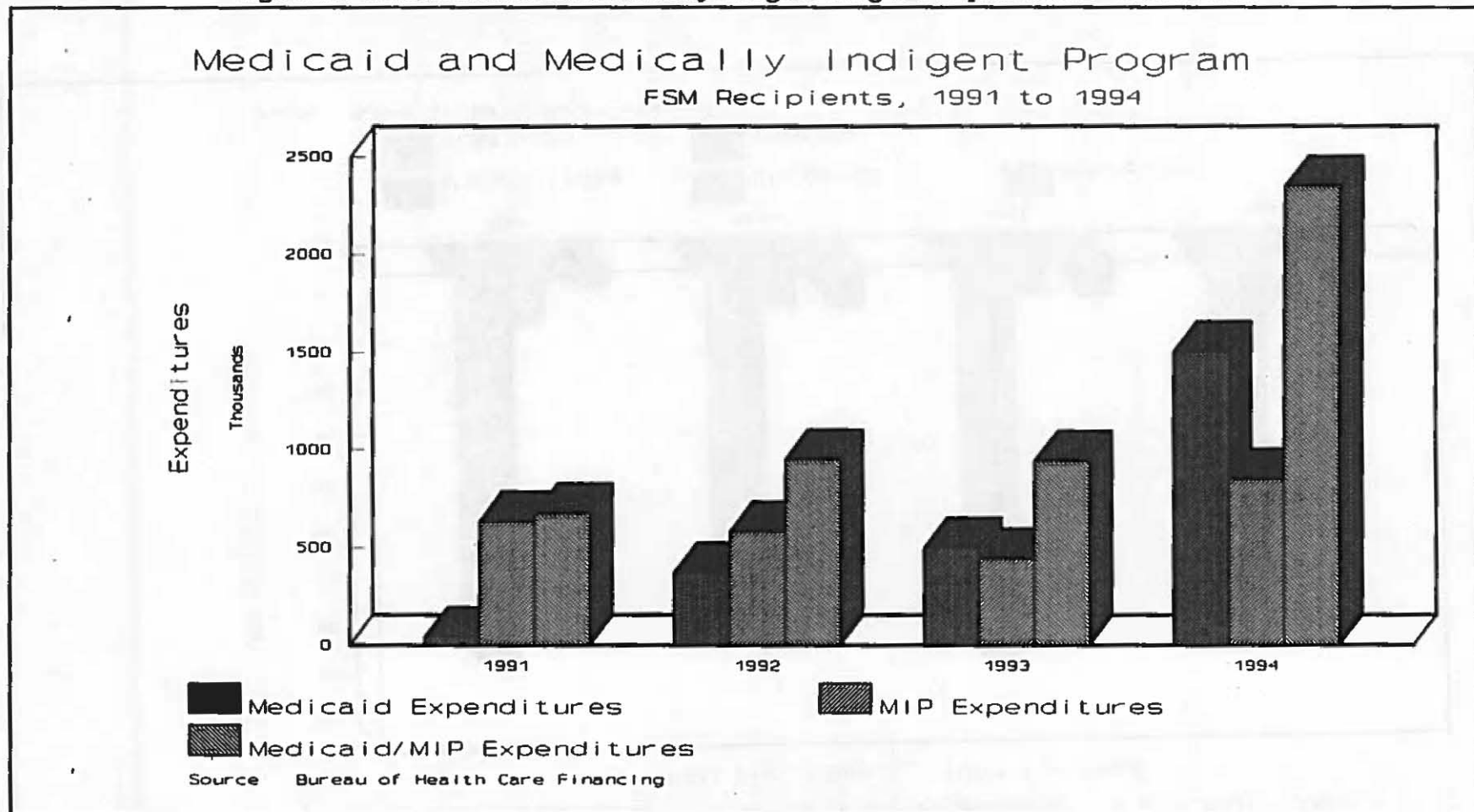
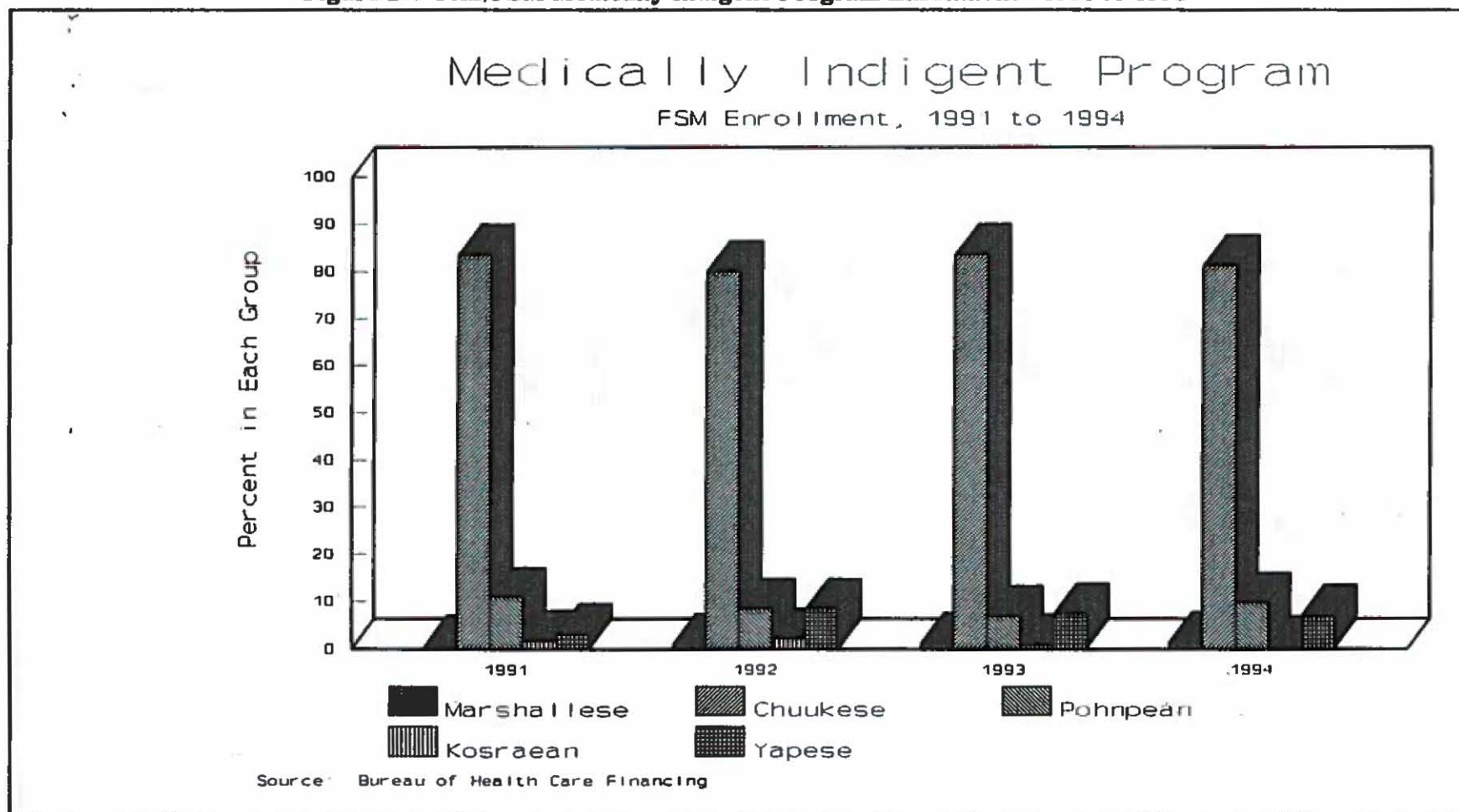
Figure 24: FAS/FSM Medicaid/Medically Indigent Program Expenditures - 1991 to 1994

Figure 25: FAS/FSM Medically Indigent Program Enrollment - 1991 to 1994



Guam's hospital rates are still comparatively low and do not lend themselves to any cost-containment measures.

Such measures must be applied to programs and services related to local funding and local spending. The Government of Guam represents the largest contributor to payment of health and medical care expenses. Approximately 40 percent of total health care costs are from direct federal appropriations for the delivery of health and human services, matching funds (such as Medicaid), locally collected taxes, and foregone federal revenues which are residual on Guam in the form of taxes or income.

Data, direct or indirect, on the total costs of health care, total revenues and total expenditures incurred by the provision of care are currently not available to thoroughly analyze the rising cost of health care and services as well as determining the cost-containment measures for our community. There is reluctance on the part of some health insurance providers and health providers to disclose such information. Whether or not the data needed to make the assessment is privileged information, the lack of cooperation to provide such information becomes a hinderance in determining our community's health care cost. The absolute factor is that federal funding is decreasing, the island's population is increasing, and the Government of Guam's health revenues are no longer sufficient to cover health care expenses for the needy population. Since the island cannot continue to rely on federal monies for all its needs and local revenues are insufficient, measures must be taken to stretch the available monies to cover a large number of people.

Several methods of cost-containment are examined. Some of them could be effective in a relatively short time, while others might take years to show their true effectiveness.

a. "Free" Disease Legislation.

The mandated free services have been repealed by P. L. 23-35 on June 27, 1995. Persons should receive Government of Guam assistance because they are categorically or medically indigent, not because they are suffering from a certain disease. Negotiations with the HMO's and health insurance providers to include these diseases in their benefit package has been addressed with amiable and positive results.

The mandate to provide free dental care to all children through age 16 has to be repealed. Only preventive and prophylactic services should be provided, which need to include island-wide fluoridation. This makes sound financial sense in view of the relatively inexpensive dental insurance which can be (and has been) purchased from the major insurers. The monies saved could be used to provide dental care for the categorically and medically indigent children and adults, and in particular seniors, who at present receive no dental care at all.

b. Consolidation of Medical Assistance Programs.

Consolidation of all federal and local health programs into a single Medical Assistance Program should be our goals. Currently, Medicaid/Medically Indigent Program and Catastrophic Illness Assistance Programs are administered by one Administrator in the Division of Public Welfare, Department of Public Health and Social Services. This would not only save on administrative overhead cost, but would considerably ease the burden of enrollment for the applicant. One

single intake procedure could identify whether a person is eligible for Medicare, Medicaid, or other assistance, eliminating the existing duplication of intake procedures. It would also allow for easier contracting of physicians and services, faster billing and reimbursement processing, and tighter utilization review and quality control. However, the management of the programs in the Division may be more efficient with the availability of funds for the programs and the recruitment of personnel to work in the Division.

c. Contracted Versus In-House Medical Care.

A thorough and careful cost-benefit analysis should be performed to determine whether it is less costly to purchase medical services from the private providers in the community than to provide these services directly through GMHA and DPHSS at the Southern, Central, and Northern clinics and some selected village dispensaries. Such analysis should recognize the importance of the new health providers, such as nurse practitioners, physician assistants, and mid-wives in the provision of cost-effective primary care. The feasibility of tying Professional Technical Awards and Student Loans for nursing and medical school students to working for a stipulated amount of time in DPHSS should also be investigated.

d. Alternatives to Institutional Care.

Much greater emphasis must be given to the strengthening of existing and the development of new home and community-based services, such as homecare nursing, homemaker/health aides, senior day care, foster care, and respite care to prevent inappropriate costly institutionalization and lengthy stays in hospitals. Any single service or combination of home- and community-based services has proven less costly than hospitalization or institutionalization, more emotionally satisfactory to the patient, and appropriate to island culture.

e. Promotion and Prevention.

Funds must be allocated to health promotion and disease prevention. Preventive health services should be made an integral part of all health care in an effort to contain the high costs associated with acute and chronic illness. Particularly, emphasis has to be placed on the prevention of medical complications due to obesity, high blood pressure, and diabetes, such as heart attack, stroke, ESRD, blindness, and amputation of limbs.

f. Fiscal Responsibility.

The costs of needed health care should be borne jointly by the individual (depending on his ability to pay), the community and the government. The feasibility of mandating employer/employee shared health insurance coverage for each employed person needs to be further explored. Various models of catastrophic illness insurance coverage have to be investigated and preliminary contact with such insurers must commence at the earliest date possible.

g. Data Collection.

A most important component of any cost-containment scheme is the monitoring of health care

costs. Therefore, all health care facilities and programs should be required to use a uniform reporting system to establish utilization and cost data. The Guam Health Planning and Development Agency may be the central Agency to monitor and collect, compile, and analyze the data through the establishment of a Health Information Management System. Thus, by centrally locating all health data, it can be used by government and private sectors to project future needs.

D. Quality.

The quality of health care refers to the level or degree of excellence in the delivery of health services. It is measured in terms of established professional standards and in the consumer's judgement of value. Measures of quality can be conceptualized as ranging from statements of some ideal to statements of set minimal standards. These measures often reflect three dimensions of care: input, or the licensure and certification of manpower and facilities; process, or the appropriateness of procedures in a given situation; and outcome, either actual improvements in conditions or reductions in harmful effects.

Quality assurance or quality control programs are an integral part of health care. The programs are carried out in varying degrees, and for various reasons or motivations, by health care institutions, medical societies, government agencies, and prepaid health plans. Overall, the goal of quality control programs is to assure an adequate level of quality in the delivery of care while, at the same time, maintaining a degree of control over utilization and costs.

1. Quality Control by the Government.

Licensing and certification programs for both facilities and personnel are generally provided by government agencies, and are often considered as programs to assure quality. Unfortunately, there is no legislation on Guam that requires a health care facility to be licensed or certified as such. However, hospital facility and free standing ambulatory care facilities, clinical labs and some x-ray facilities require federal certification to receive federal financial participation. The parameter of the licensing and certification statutes is limited to manpower.

The limited progress in the government's quality control activities stems in part from the rapid growth of the island's health care industry. For years, the federal government provided health services through military personnel that were not required to be licensed or regulated locally. When the Government of Guam assumed the primary responsibility for providing medical care, the lack of licensure and certification requirements was not unusual. Now, however, public and private health professionals agree that the development of health care in the private sector and the expansion of public health services necessitates that the government provide for sound quality control.

Legislation that identifies the need for quality assurance with health care institutions must be enacted. The implementation of detailed rules for monitoring quality control must follow.

The legislation and the program guidelines should be created and maintained to achieve the highest degree of health care services for consumers. Areas of particular concern are listed below:

- There should be a system for regular review of the quality in the process of medical care by internal and external agencies;
- All health care providers should be technically competent and have the appropriate license and certification;
- Health care services should only be provided when they are medically necessary, and should only be offered in those facilities which provide for quality control;
- Health care services should improve health status; and
- Quality should be assured in all medical support services and facilities.

2. Internal Quality Assurance.

Although the local government does not require quality control programs within the health care industry, there are various incentives that lead medical facilities and prepaid health plans and government health programs like Medicaid, Medically Indigent Program, and Catastrophic Illness Assistance Program on Guam to provide for quality assurance through formal in-house procedures. The programs are often a combination of utilization review and quality control.

a. Utilization Review.

The Guam Memorial Hospital Authority, Medicaid, Medically Indigent Program, Catastrophic Illness Assistance Programs, and the two federally approved HMOs each have their own utilization review (UR) procedures. Each of the UR activities is aimed at controlling costs and ensuring that the services provided, either within the hospital or under the respective health plan, are appropriate. Judgements for appropriateness generally focus on the process, or the procedures involved in health care; and these judgements vary with the standards of each entity that employs utilization review.

The Guam Memorial Hospital Authority, for example, follows the standards set by the federally contracted Peer Review Organization (PRO) that monitors GMHA's operations with regard to Medicaid, Medicare, and Maternal and Child Health patients. The standards require that the hospital UR address the appropriateness of admission, lengths of stay, and services provided.

The HMOs are naturally concerned with similar aspects of the process involved with inpatient care, but the standards may vary from those of the hospital. In addition, each health maintenance organization monitors the utilization of the outpatient services, whether the services are provided in the HMO's own facility or in the office of one of its providers. Again, the cost of health care is the underlying cause for utilization review.

b. Quality Assurance.

The quality assurance programs that are operative in the island's health care institutions generally go beyond the scope of utilization review. Quality assurance addresses the facilities and the equipment and in the delivery of health services. As with utilization review, the

standards and criteria vary with the facility, but the goal of improving and maintaining the quality of care remains.

The Guam Memorial Hospital Authority and the Department of Public Health and Social Services use national standards and criteria in their quality control programs. The hospital, for example, must maintain the standards set by the Joint Commission on Accreditation of Health Organizations in order to keep an accredited status. Both GMHA and the Department of Public Health and Social Services serve Medicaid, Medicare, and MCH patients and therefore must meet the guidelines set by these federal programs.

Likewise, quality assurance is achieved to a certain extent within the two federally approved HMOs since they are federally mandated to incorporate quality assurance into the delivery of health services. In addition, federally qualified HMOs must meet certain guidelines that have been established by the federal government and are monitored for compliance through appropriate reviews. The criteria for federal reviews of HMOs are established for services provided by HMOs in an ambulatory setting, in a clinical laboratory, and in a surgi-center as well. Moreover, the recruitment process and peer evaluation of the medical manpower are to be included in the quality control activities.

E. Acceptability.

Acceptability is an individual's or group's overall assessment of available health care in terms of such factors as quality, cost, outcome, convenience and provider attitudes. It is generally measured in terms of the degree to which health care consumers and providers are satisfied with the performance of the health care system.

Unlike other characteristics, acceptability focuses on perception of the health system rather than the system itself. As such, it is a subjective judgement, influenced by culture and attitudes. For example, social stigma associated with certain illnesses, such as mental disorders, continue to serve as barriers to those requiring vitally needed services. Certain individuals or groups that have traditionally turned to the services of the church and clergy for emotional help may be less likely to utilize existing programs and services of the Department of Mental Health and Substance Abuse.

There are differences in cultures, perceptions, expectations and needs. Health care and service areas are also diverse. Many expect to receive all care on Guam, many expect referral for care in the Philippines, Hawaii or the mainland. In the past, our people expected to be cared for and accepted the services that were offered to them. Now, people have differing ideas of health care. Discussion involves topics such as primary care, preventive care, expanded public services, cost containment, etc. Many in the community expect to participate in determining their health care requirements and the accompanying cost.

Health officials indicate that public acceptance of certain health programs may be linked to awareness of the need for a particular service. For example, Micronesian and Chamorro women are consistently below the norm in seeking prenatal check-ups during the first trimester of pregnancy; these groups of women have the highest proportion of low birth weight infants. Maternal and Child Health Program officials feel that the low utilization of services by these groups of women is due to the lack of awareness for the need for prenatal check-ups.

A health care system study was conducted in the early part of 1980. The Health Care System Study of the Population of Guam reflects responses from 400 randomly-sampled households on their level of satisfaction with quality, accessibility and cost of health care services. The survey showed a 90 percent level of satisfaction with the information received from professionals about health conditions and treatment. Eighty-nine percent of those surveyed were satisfied with the quality of health care; eleven percent were not.

With regard to out-of-pocket costs, 69 percent noted some degree of satisfaction and of the 31 percent who were unhappy about costs, nearly one-third were very dissatisfied. One aspect of medical care that the group was most dissatisfied with was the length of time required from arrival at the doctor's office until care was received. Approximately 37 percent were not happy with the waiting time.

A high level of positive response was received on questions concerning days and times that medical care and related services were available. As compared to a previous survey, the findings reflect that the extension of doctor and clinic hours into time frames outside of the usual 8 to 5 Monday through Friday have been well-received by the public. The levels of satisfaction rose from 11 percent and 15 percent respectively for times and days, to the 90 percent range.

The majority of Guam's population find medical health care services acceptable. Prejudice against certain services and ignorance about the benefits of others are often rooted in cultural perception. Public education can eliminate this.

Waiting time, either at a private or public medical care provider, seems to exceed expectations and leads to dissatisfaction. It could not be measured whether such dissatisfaction would actually make the delivered health care services unacceptable to the consumer, prohibiting him from seeking needed care or continuing with treatment. More data needs to be collected to pinpoint the reasons for prolonged waiting time before any recommendations can be made.

F. Continuity.

Continuity is effective structuring, coordination, and delivery of health services on a continuous basis in one or more settings. Continuity is measured by the ease in which the consumer can move between required elements of the health care system and the degree to which these services are integrated. This characteristic of health care may be viewed as having three dimensions: 1) continuum of care; 2) scope of services; and 3) coordination of services.

1. Continuum of Care.

This dimension of continuity is the timely provision of health services from diagnosis to treatment to cure. Inherent to the problem of continuum of care is the multiplicity of local health care "systems" that do exist. Many programs and services overlap; some operate out of separate government agencies and private settings. Certain services are supported by federal funds and others by private monies.

The availability of a regular source of care is basis to continuum of services. A major problem facing the medically indigent who must depend on local government health programs is the lack of continuity of service with any single provider, such as GMHP enrollees might have with a

primary care physician. The use of the GMH Emergency Room for obtaining routine primary care contribute to increased health care costs with less continuity of care.

Services offered from the island's regional public health centers are generally fragmented and continuity of care is assured only to the extent that the same clinic and service is utilized. In the past, particular problems have arisen in instances when a pregnant woman comes to GMH to have her baby delivered by a physician who is not familiar with her case history. Occasionally, her medical records are not transferred to GMH from the DPHSS in time. This has led to confusion, if not complications. The process is then repeated in reverse order--the patient and child return to DPHSS without medical notes from the hospital. While problems with continuity of care have improved with DPHSS's contracting of physicians for prenatal and delivery services, these situations could reoccur if contracted services were unavailable in the future.

2. Scope of Services.

While a vast array of health care is available to island residents, these services are often limited by the lack or shortage of qualified personnel, necessary equipment, adequate facilities, and financial resources.

Ideally, the scope of Guam's health services should address not only immediate, but total patient needs as well. These services should encompass sound preventive programs as well as acute, chronic, and long-term care. Health services providers should develop patient care plans to ensure the provision of a wide range of services. One area in which there appear to be shortcomings is in securing necessary services following discharge from inpatient facilities, such as GMH and the Department of Mental Health and Substance Abuse. Although certain programs such as home care services, meal delivery, and other social services are available to the public, these alone are inadequate in addressing the needs of each patient when no coordination exists between the discharging facility and community services.

Another area of concern lies with off-island referral. Patients in need of health services that are not available locally are referred off-island when deemed necessary by attending physicians. However, previous concerns on the lack or weak referral mechanisms and follow-up procedures and infrequent airline flights to the referral center should be put to rest. Referral mechanisms are in place for both private and public sector. Follow-up procedures are handled by the referring facility and/or physician and off-island providers are familiar with their patient's situation. Both on and off-island medical referral offices are operating efficiently. Additionally, daily flights are available twice daily as a minimum. Thus, off-island physicians are not hesitant to release a patient for the trip back home for appropriate aftercare.

3. Coordination of Care.

Although certain programs reflect the most effective and efficient use of Guam's limited health care dollars, much improvement must still be made in bridging the gaps between services. Overall, the picture of health care on Guam is one of fragmentation, aggravated by the lack of coordination by both government and private providers. This is evident in the system of patient referrals and follow-up treatment for all levels of care, both on and off-island.

Health services should be interlinked with other social services in the community. Only through these efforts can holistic care of patients be realized. There are adequate habilitation and rehabilitation services scattered among several government agencies and private clinics, however, they need to be coordinated to maximize manpower and financial resources.

G. Health Care Policy Issues Conclusions and Recommendations.

1. Availability.

When viewed in total, Guam's health care delivery system can adequately serve most primary care needs of the majority of the population, and will continue to do so into the future. However, those requiring specialized care must often be referred off-island for service. Guam's population base is, at present, not large enough to support such specialized services as specialized neonatal, cardiological, neurological, and radiological care, yet the expense of off-island referrals almost justifies the establishment of such services locally. With their inception, and the support of qualified staff, Guam could accept referrals from other Pacific island nations and defray the cost of such services, as well as cut down the numbers and cost of its own referrals.

The inadequate supply of certain health professionals (i.e., pharmacists, laboratory technologists, nurses) has resulted in the reduction or elimination of certain health services. The inadequate supply is the result of not having a sufficient pool of trained personnel to meet the existing demand, the lack of training programs (basic or continuing education) for certain health specialty areas, and the lack of priority for health professional recruitment. These areas must be addressed to improve availability of health care and services.

For an isolated population such as Guam's, reliance upon services available locally is a necessity. The need for mental health services is growing, and the shortage of a psychiatrist and the limited number of clinical psychologists negates the value of services being offered.

As the population ages, with all the attendant physical impairments that aging brings, the need for long-term care facilities grows. The institutional facilities, with the addition of the Long-Term Care Facility and St. Dominic's Senior Care Home, will meet the needs of the present and the near future, but long-range planning is necessary to ensure that such facilities and services are available to all who need them in the distant future. Much greater emphasis must be placed on community and in-home services to prevent institutionalization until it becomes absolutely necessary.

Further recommendations include that:

- government health agencies should meet at least every other month to review and resolve health system coordination problems,
- the "Doc Sanchez" scholarship program should be changed to give scholarships that support career development in public health and primary care,
- health professional positions within DPH&SS and DMH&SA should be exempted from

government hiring freezes, not just GMH,

- government procurement, accounting, payment, and hiring processes for health service agencies should be expedited to avoid delays and downtime in the delivery of health services,
- increase support for health and consumer education through both government and private health and education settings,
- establish operating policy and protocols that will enable school health nurses to fully use their nursing skills and thereby make health services more readily available to students,
- place more emphasis and priority on preventive and primary health care which is the most cost effective approach, and
- recognize that the role and mission of DPH&SS is to prevent and control disease and promote the health of the territory separate and apart from the delivery of sick care services and should receive separate and distinct funding support.

2. Accessibility.

Many geographical, socio-demographic, and financial access barriers to routine health care services have been eliminated at this stage of Guam's health system development. Temporal access is seen as a problem by those who utilize private and public providers of care. For those who are employed by the government and utilize the public health clinics, this is not as much of a hardship as it seems, as they may use earned leave time for their doctor visits. However, it does place a stress on the health care delivery system because of the policy of obtaining a physician's slip to verify sick leave and thus, occupying appointment time for those that really need the service. For the low income who are not employed by the government and do not have leave time, this is a financial hardship that may prevent individuals from seeking medical care for themselves or their families. Major financial problems are encountered by those suffering from catastrophic disease.

People/consumers must recognize the value of the appointment system and encourage to use the system. Occasionally, waiting time is reduced using the appointment system. Walk-in patients must realize that priorities for doctor's visits are in place at the clinics. Additionally, consumers and providers must be cognizant on the use of the GHM's Emergency as treatment for life-threatening situations only and should not abuse it's use.

3. Health Care Cost.

It is the government of Guam's policy to provide health care to all its inhabitants regardless of the inability to pay. The mandated "free" services and the Medically Indigent Program attest to this. This policy requires a large portion of Guam's financial resources and has diminished, to some degree, the initiative of individuals and families to provide for their health care.

The ever decreasing federal programs and an ever increasing population have strained Guam's health care budget. The inability to pay should not determine the nature and quality of the

health care services an individual receives. However, the decreasing resources make it necessary to examine the provided services and to seek cost-containment solutions which might overcome some of the problems in the health care budget.

Various cost-containment measures have been explored. Abolishment of the mandated free services, consolidation of all medical assistance programs, contrasting the costs for contracted medical services to those of medical care provided by DPHSS, and investigating alternatives to institutional care are organizational or administrative mechanisms which have the potential of reducing health care costs in a relatively short time. Increasing an individual's sense of responsibility towards his own health care will take longer, as this involves a change of attitudes.

An increasing awareness of the close correlation between an individual's habits and lifestyle (smoking, drinking, eating, exercise) and his good or bad health have fostered greater personal responsibility. High blood pressure, heart disease, diabetes, and certain types of cancer--the leading causes of death--are linked to personal habits and lifestyles. Clearly, an individual has a great measure of control over his or her health, and being attuned to one's body, malfunctions or illness are noticed at an early and curable stage. Financial investment in health education, promotion, and prevention will guide individuals towards more healthful living, and will, in the long run, be the most effective measure for containing the costs for acute and chronic care.

In addition, a large number of individuals have to be weaned away from the belief that Guam's health resources are boundless, and that the government can easily afford to pay for health care. This attitude is a carryover from the naval administration when free care was dispensed to everyone, and supported by the years of "free" care provided by GMH. However, a much more equitable distribution of the responsibility for health care costs between individuals, health insurers, the community, and the government must take place. This should manifest itself in an increased number of enrollees in the major health and dental insurance programs, and a joint effort to cover each island resident with catastrophic illness insurance coverage. Whether such insurance is provided through increased insurance premiums, separate payments, or increased taxes is still debatable, but the outcome is most important: financial security in the face of catastrophic illness. This can only come about when individuals perceive themselves as being responsible for their own health and the collective health of their community.

4. Quality.

There is no question as to whether or not the quality of health care on Guam needs to be addressed. The questions involve, instead, who and how can the quality of care best be monitored and evaluated.

It is not likely that any new legislation for facility licensure and certification will include funding for the actual operations of the program or for the staffing of such a program. Moreover, the larger health care institutions like GMHA, DPHSS, and the HMOs are currently under federal guidelines and review for funding and certification purposes. The local government can, however, mandate that since these facilities serve the local population, and that since it is the government's role to protect the local population, the government has the right to access the federal review and certification records. The Government of Guam will avoid a duplication of regulating activities, but will remain informed as to the standards of the services provided. This

may result in the most effective and efficient use of the local government's limited health care dollars.

It is obvious with the rapidly growing and changing technology in the health care field that what is available and acceptable today can radically change in the next 5 years. It is also obvious that our island can not support all services for all medical conditions. What is important is to determine what the requirements/expectations are of our people and the prioritize and educate them on what we can afford and support. Quality indicators or monitors will need to be established in order to determine that quality care is actually being delivered. To determine what the requirements/expectations are of our people, a three prong health care survey must be conducted.

- Survey of consumers/recipients of health care and services.
- Survey of health care work force personnel.
- Survey of health care providers, to include the Government of Guam Agencies and Departments, Military, Private Profit and Private Non-Profit Organizations.

5. Acceptability.

The majority of Guam's population find medical health care services acceptable. Prejudice against certain services and ignorance about the benefits of others are often rooted in cultural perception. Public education can eliminate this.

Waiting time, either at a private or public medical care provider, seems to exceed expectations and leads to dissatisfaction. It could not be measured whether such dissatisfaction would actually make the delivered health care services unacceptable to the consumer, prohibiting him from seeking needed care or continuing with treatment. More data needs to be collected to pinpoint the reasons for prolonged waiting time before any recommendations can be made.

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- Survey of health care providers, to include the Government of Guam Agencies and Departments, Military, Private Profit and Private Non-Profit Organizations.

6. Continuity.

While both patient and provider have responsibility for assuring the maximum degree of continuity, the health system must be structured to ensure that services are delivered in the most efficient and effective manner. Problem areas that must be addressed are the provisions of:

- regular source of care;
- patient and medical information transfer;
- delays or interruption in service; and
- follow-up procedures.

VII. PLANNING FOR THE FUTURE

Guam Health Plan

Third Edition

VII. Planning for the Future

Health plans are usually prepared for 5 years and therefore the planning information presented in the previous chapters covers a wide range of issues relevant to Guam's health care provision through 2001. As a health system is dynamic in that it continually grows and changes, revisions are made during the third year of the planning cycle to accommodate unforeseen situations, newer technologies, or unusual population changes as they may arise.

When planning for a 5-year period, it is only natural to look beyond this time span. This is perhaps even more important on Guam than it would be on the mainland, as great distances separate the island from other more specialized and sophisticated medical providers. Health planning on Guam, therefore, is carried on with a view to the future and eventual self-sufficiency in the provision of health care. Some of the advocated goals, objectives, and actions can be considered as steps towards achievements which will not be fully realized until the year 2001 or 2010.

Changes over time that can be expected in Guam's population and its composition, the health status and health system, data collection, and health care financing, are briefly discussed as follows.

A. Population Changes.

Guam continues to experience population growth and by the year 2001, as seen in the last 10 years, the existing medical facilities and medical manpower will no longer be sufficient to provide quality health care to the island population.

The implications for planning are obvious. With an increase in population, an extensive expansion of all services and programs in the long-term care continuum must be initiated early enough to guarantee appropriate placement for each person in need.

One might rightly conclude that increased efforts in health promotion and disease prevention will result in a dramatic reduction in chronic diseases and disabilities, and a similar decrease in the demand for institutional long-term care. But since the senior population for the years 1995-2000 are already middle-aged or older, many carry the seeds of hypertension/cardiovascular disease, cancer, diabetes, crippling arthritis, lytico or bodig, Alzheimer's disease, or emphysema--the conditions which require care over a long period time. Therefore, attention must be given to the need for long-term care at all levels. The next generation and those to follow should be the ones to reap the harvest of the earlier endeavors of changing lifestyles and the course of diseases through promotion, prevention, and detection programs and services.

B. Health Status.

1. Reduction of Chronic Disease.

It is anticipated that vigorous health promotion, prevention, and screening efforts during the eighties and late nineties will show their desired result by the year 2001. If the national experience holds also true for Guam, then these prevention efforts should result in a noticeable downward trend in the incidence, prevalence, and mortality rates of the diseases or causes for

premature death.

Even though medical technologies and innovations have advanced tremendously over the past years, and no doubt will continue to do so at an even faster pace, it is still unrealistic to expect that cures will be found for Guam's leading causes of death in the next 10 to 15 years. However, lifestyle changes effected through health promotion and disease prevention and detection services will lead to greater individual knowledge about the diseases, resulting in either the prevention of disease or in much earlier diagnosis and treatment. This in turn will reduce the risk of life-threatening complications and premature death.

For instance, if people quit smoking--a major risk factor for cancer, chronic obstructive lung disease, and cardiovascular disease--many deaths and disabilities could be avoided. Control of obesity and stress, and an increase in physical exercise are known to prevent, or at least to beneficially impact on, diabetes and hypertension. Persons with controlled diabetes or hypertension can expect to lead a normal life; yet left untreated, hypertension leads to stroke, heart disease, heart attack, as well as end stage renal disease, and uncontrolled diabetes can result in blindness, amputation, stroke, and ESRD as well. The prevention or control of alcoholism will manifest itself in a lower alcohol-related accident rate, increased productivity in the community, and greater social cohesion.

There is a dual benefit to be reaped by making a serious investment in health promotion, disease prevention, and detection activities. Guam will have a healthier population and will also experience, over time, a cost reduction for acute and chronic care.

2. Holistic Approach to Medicine.

The successful reduction of illness and disability through promotion and prevention in the mainland has yet another effect. It has proven that the way to better health does not depend solely upon improved technologies and more sophisticated treatment modalities for illness. Modern medicine has come to view the human body as a machine that can be disassembled and repaired or have its parts replaced. An entire economic structure and payment system not only supports this view, but perpetuates it.

Yet more and more evidence points to the fact that a person's illness cannot be separated from his body, mind, and spirit, and if any treatment or cure is to be effective, this must be taken into account. "Holistic" medicine is a concept that has been increasingly employed over the last several years. It simply means that more is needed than the prescription of a drug for an ailment or the excision of an organ or tumor. Holistic medicine recognizes that the elements relating to health, healing, and recovery reside only in the physique of an individual, but are rooted in values, perceptions, emotions, spirituality, and other matters that are beyond the scope of modern mechanistic medicine.

Until now, health planners considered health care provision and health economy from a technical and financial point of view. For future planning the "human" element must be incorporated, as the benefits of holistic medicine are now being realized and the costs of fostering self-awareness, self-actualization and wellness are considerably lower than those required for highly specialized medical treatments in which the patient has no faith, and therefore provide no benefit to him.

C. Health Care Delivery System.

Guam's health care delivery system is a conglomerate of public, private, and military facilities, programs, and services as detailed in Chapter V. Guam's public facilities, the Guam Memorial Hospital, the clinics under the Department of Public Health and Social Services, as well as the Guam Mental Health and Substance Abuse Inpatient and Outpatient Facility, require long-range planning. While day-to-day activities continue, much thought is given to the future of these facilities and their services.

1. Facility Planning.**a. Department of Mental Health and Substance Abuse.**

Inpatient and outpatient mental health services are provided at Department of Mental Health and Substance Abuse. The new mental health center serves as a regional referral center for mental health care. Vigorous efforts were used to secure federal and private funding for this endeavor.

b. Guam Memorial Hospital.

Every effort is presently directed towards having GMH reaccredited by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO). As such accreditation is in fact the hallmark of the successful delivery of quality health care to the population. Major activities geared towards reaccreditation have been completed. These include the relocation of the Hemodialysis Unit, the Skilled Nursing Facility; the construction of a new maternal wing; the addition of dietary services to inpatient meals including preparation; and more importantly, the correction of existing structural deficiencies that were identified in the hospital facility. Major capital outlay is required for this very necessary endeavor.

c. Department of Public Health and Social Services.

The Department of Public Health and Social Services needs to establish a long-range plan for its facilities and services. While the new Northern Area Regional Health Center to opened its doors in 1985, the Southern and Central clinics are over 19 years old and will require extensive renovations. Any plans for renovations must be tied to the Department's plans for the delivery of services.

Over the last 10 years, budget constraints within the Department have resulted in problems with maintaining DPHSS clinic services; shortages in physician and nursing manpower have further hampered the Department's ability to effectively deliver its services. The Department then, must first determine whether it is more economical to purchase services from physicians in the private sector or to continue providing services directly to DPHSS clients. Once the determination is made, the plans for the renovation and equipment purchase requirements for the three regional health clinics can be developed accordingly.

2. Planning for Medical Referral Services.

Off-island medical referrals are generally made because Guam lacks the required specialist health manpower and equipment for needed diagnosis and treatment. The outlying islands of

Micronesia are usually in still greater need of referral because their technical capabilities trail behind Guam's and their population bases are even less able to support specialized manpower.

Cardiac procedures were diversified, ranging from catheterization, angiogram, and angiographies to very intricate double and triple bypass operations. Neonatal treatment was most often required for complications of premature birth and congenital anomalies. Radiation treatment to various sites was administered to effect cure or palliation in cancer victims.

There is no doubt that the majority of medical referrals are justified in light of the existing medical technologies. It is also a fact that as remote as Guam is from other health care centers, the knowledge of available technologies has travelled to Guam far in advance of the capabilities to perform specialized health services. The media, for one, keeps islanders traveling to the mainland and abroad and are exposed to advanced medical technologies; others hear about them from kin residing off-island. There are also the younger physicians trained in the mainland who are returning or coming to Guam and are trained to use the latest state-of-the art tests, procedures and equipment. They feel that their patients ought to have no less in their care. Additionally, the fear of medical malpractice litigation and the unavailability of malpractice insurance may in part be responsible for the increase in off-island referrals, since a physician prefers to be safe rather than sorry when uncertain about the diagnosis or treatment of a patient.

The best possible way to decrease off-island referrals and retain health dollars on Guam would be to enhance the island's medical capabilities. The GMH is equipped to provide all general acute care services. With MRI located on hospital grounds, patients are now able to receive more advanced diagnostic services that were once available off-island only.

At this time it is important to look still further ahead and plan for medical services that can be performed on Guam 5 years from now or by the year 2000. Since cardiological procedures, neonatal care, and radiation treatment comprise the bulk of medical referrals, they warrant closer examination. It must be stated that conventional planning by which a certain population base is related to the need for a specific service is not truly applicable to Guam. For island inhabitants, all medical costs are combined with the additional high air fares for the patient and his accompanying caregiver or escort, as well as the living expenses for the escort and patient if treatment is on an outpatient basis. Furthermore, it must be considered that several million dollars leave the island's economy for services which do not greatly impact on Guam's health status and do nothing for the improvement of the health care system. Additionally, the emotional impact of separation caused by off-island referrals added to the trauma of coping with serious disease leads to stress which cannot be equated with dollar amounts, but which are nevertheless a very real component of medical referrals. In view of this, it makes sense to explore the possibility of retaining the patients and the health dollars on Guam and aim towards the provision of as many specialized services as is realistically feasible.

a. Specialized Cardiac Care Services.

Such services consist of diagnostic cardiac catheterization and cardiac surgery. Cardiac surgery might be as simple as the implantation of pacemakers, or be open or closed heart surgery. Open heart surgery has developed rapidly since the introduction of pulmonary bypass procedures, a technique by which the patient needs to be connected to a pump oxygenator

which takes over the function of the heart and the lung during the operation while the heart is being repaired. Open heart surgery benefits patients with congenital and acquired heart defects. Coronary artery bypass grafts, either single, double, or triple, are the most common of the open heart procedures.

Cardiac catheterization is an invasive diagnostic procedure by which a thin hollow tube is introduced through the circulatory system into the chambers of the heart. This permits direct measurement of intracardiac pressure, valve function, structure, flow patterns and vascular anatomy. Catheterization is performed in order to make a decision about surgery; however, at least one-half of patients who undergo catheterization are found not to require surgery.

Closed heart surgery refers to operations that do not need a mechanical pump during surgery. The repair of aneurysms, pulmonary arteries, and systemic pulmonary shunts fall into this category.

Cardiac catheterization and open heart surgery require specialized staff, equipment, and organizational arrangements in a hospital setting. Many factors are involved in planning for such services. One is the population base for which such services will be performed, another is the incidence and prevalence of heart disease for that population. From this can be calculated the number of actual procedures which will be performed. National standards recommend that 200 procedures per year be performed in a specialized cardiac care center. It is questionable whether or not that many procedures will ever be demanded by Guam and the other Micronesian islands. Only a careful cost-analysis of referrals for cardiac procedures over the years compared to the costs of providing these services on Guam will allow for realistic planning and decision making. Additionally, it must be established what minimum volume of procedures and aftercare has to be provided to assure the maintenance of professional skills for quality care.

A cardiac specialist team should include, at a minimum, the following:

Cardiologist(s)	Perfusion Team - Certified technicians or nurses
Cardiac Surgeon(s) assisted by a senior surgical resident	Nurses - specially trained scrub for cardiac surgery and circulating nurses
Anesthesiologist assisted by a resident or nurse anesthetist	Other staff - should be available for providing immediate lab work

Besides the pump oxygenator, the other necessary equipment, such as x-ray, oximeters, cardioverters, defibrillators, and pacemaker units are generally available in a hospital. The nursing team of the Cardiac Care Unit is trained and able to provide the required care during recovery.

b. Level III Neonatal Specialty Nursery.

At present, Guam Memorial Hospital (and the U.S. Naval Hospital) are well equipped to manage maternity patients not at risk, or patients at minimal risk. At the same time, because of the possibility of unexpected complication during pregnancy, it is necessary to have immediate access to a facility which provides care for infants with critical conditions.

Such a facility should be available to all pregnant women at considerable or high risk. A high risk pregnancy is one with a great likelihood of requiring intensive care for either the mother or the infant. Guam Memorial Hospital uses Kapiolani Women's and Children's hospital in Hawaii as their high risk intensive care center. The U.S. Naval Hospital refers its high risk maternity patients to Tripler Army Hospital in Hawaii.

New technologies make it possible for such infants to survive, when formerly they would have died because of a lack of specialized care. Level III nurseries have experienced dramatic successes with the saving of more than 50 percent of those infants weighing 1,000 grams, and more than 90 percent of those weighing 2,000 grams. Such specialized care assures improved survival and optimum physical and neurological growth and development of the newborn, while avoiding such complications as neurological deficits leading to mental retardation, cerebral palsy, diverse behavioral problems, epilepsy and the more subtle, later occurring ophthalmologic and auditory deficiencies and learning disabilities.

GMH's neonatal intensive care unit was originally intended as a Level III nursery, designed to provide care to the critically ill newborn of Guam's civilian and military population, and also to function as a regional center for the other islands in the Western Pacific. Lack of equipment, a sufficient number of nurses, and neonatologist have prevented GMH from providing Level III nursery care.

A neonatologist is a medical specialist trained to provide intensive care during the first critical hours and days of a high risk infant, thereby improving recognition and therapy of neonatal problems. It might be questioned if there are a sufficient number of at-risk infants in any given year to warrant the hiring of a neonatologist and to justify the purchase of the additional equipment needed to upgrade GMH's NICU to a Level III unit. Again, costs for off-island referrals have to be compared to the cost of providing such services on Guam. Such a cost-benefit analysis must include the consideration of the impact of separation through off-island referrals on the parents and the newborn, as well as the long-range consequences this will have on the infant's emotional development. Furthermore, it must be taken into account that a neonatologist can also provide regular pediatric care, can teach obstetricians, pediatricians, nurses, and expectant parents about the risk factors of pregnancy and how to avoid or deal with them, and thereby considerably improve maternal and child health on island.

c. Therapeutic Radiation Services.

Radiation therapy involves the use of equipment to bombard specific sites of the body where malignant cells are located with intensive doses of radiation for short periods of time.

Estimates indicate that more than one-half of all patients with cancer receive radiation therapy at some time during the course of their disease. Radiation therapy may be used as the principal

form of treatment or in conjunction with surgery and/or chemotherapy.

Radiation therapy is the preferred type of treatment for most cancers of the cervix and lymphomas, particularly Hodgkin's disease. It is the most frequently used treatment for esophageal, lung, and bronchial cancer, as well as cancer of the larynx. The primary effect of properly applied radiation is the destruction of cancer cells for curative purposes (curative therapy) or for the alleviation of pain and suffering without curative intent (palliative therapy).

Several types of radiation are used for therapeutic purposes. Among these are:

- External irradiation (therapy) from sources at a distance from the body;
- Local irradiation from sources in direct contact with the tumor;
 - surface irradiation using applicators loaded with radioactive material (for example, molds for the treatment of certain oral and skin tumors);
 - intracavitary irradiation in which radioactive materials in removable applicators are inserted into body cavities, such as the uterus or sinus;
 - interstitial irradiation where radioactive sources are inserted into tissue; includes insertion of removal seeds, nonremoval seeds of radioactive material, nylon sutures containing small radioactive particles, or radioactive wire; and
- Internal or systemic irradiation by radioactive sources administered intravenously.

There are several ways in which the various types of radiation therapy can be administered. Most radiation therapy is carried out with beams of x-rays or gamma rays. The term x-ray applies to electromagnetic radiation produced by human made machines. Gama rays emanate from naturally occurring or artificially produced radioactive elements, (for example, Radium and Cobalt 60).

Several types of machines are currently being used to apply these rays to bombard the area being treated. The megavoltage machines are the preferred equipment to administer radiation therapy.

Demand for radiation therapy services is generally a function of the incidence of cancer in the population, the proportion of cancer patients for whom radiation therapy is deemed appropriate, and the number of treatments to be given during the course of therapy. The incidence of cancer in a population is affected by population growth and aging, and by changes in the age-specific cancer incidence rates. Cancer incidence varies with age, with incidence rates among older persons as much as 200 times greater than the rates experienced among the younger age groups. Since Guam's older population is growing at a higher rate than the general population, an increase in the incidence of cancer can be expected over the next 5-15 years.

Since radiation therapy services are needed by a small proportion of the population, involve use of expensive, highly specialized equipment, and require sophisticated treatment planning and supervision by physicians (radiation therapists/oncologists), and other health professionals with

experience in the technique, a regional approach to the planning and development of radiation therapy facilities is needed. Such an approach will help to ensure the availability of a consistently high level of care and the timely incorporation of advances in cancer management into all treatment programs. For these reasons, the need for and availability of radiation therapy services for Guam and the surrounding island needs to be closely investigated.

The National Guidelines for Health Planning state that a megavoltage radiation therapy unit should serve a population of at least 150,000 persons and treat at least 300 cases annually, within 3 years after the initiation of service. A treatment is equivalent to one patient visit. The guidelines permit downward adjustment in the required number of cases where travel time and expenses to an alternate unit (such as the ones in Hawaii and the U.S. mainland) pose a serious hardship to patients due to geographic remoteness.

It cannot be stated often enough that careful thought and deliberation must be employed when investigating the feasibility of having Guam directly provide the specialized medical services for which people currently have to travel off-island to obtain. It has been established that we do not have the population bases normally required to support cardiac specialty services, a Level III neonatal specialty nursery, and therapeutic radiation services. The issue here is not so much the purchase of all the required equipment. Even though Guam's financial resources are expected to remain scarce through the next decade or more, monies invested in our health care system will be recouped by a reduction in off-island referrals. The real problem is finding and retaining the required specialty medical manpower.

There are several approaches that could be used to prepare for the above services within 10 years. One would be the channelling of new medical students into the required medical specialties through Professional Technical Award or Student Loan incentives. Another approach would be to purchase the necessary equipment and to upgrade the skill of medical technicians, technologists, and nurses, but to hire specialist services through contractual agreements from reputable medical centers specializing in the needed services. Specialists in cardiology/cardiac surgery and oncology/radiation therapy could make scheduled trips at regular intervals to the island to examine patients, set up treatment protocols as indicated, perform cardiac surgery or radiation therapy, and provide follow-up. Furthermore, the specialists of their contracting institutions could also be responsible for training all support personnel as well as on-island physicians to upgrade their skills, and accept the referral of unusually complicated cases in their respective specialty from Guam Memorial Hospital. Similar arrangements have already been made by some of the private providers for a nephrologist/surgeon and this arrangement has proven to be satisfactory.

A third option would be to provide only some of the services, e.g., diagnostic cardiac catheterization, but not the surgery. An argument against this option is that equipment has to be purchased and staff upgraded and hired, yet the need to refer patients off-island will remain.

A weighty factor in favor of providing specialist services on Guam regardless of the population base are the costs involved in off-island referrals. For instance, radiation therapy on the mainland requires that the patient drives to the facility, spends 12-15 minutes in treatment, and returns home or even to work. For someone from Guam or the other Pacific Islands, matters are much more complicated. There is a long and expensive flight for the patient and his escort

(since island culture as well as medical practice dictate a sick person should not go off-island unattended); there are rent and living expenses for several weeks or months in the referral area to consider, as well as the loss of wages; and quite often there is the culture shock of coming to a booming metropolis (Honolulu, Los Angeles) from a relatively isolated and sedate island, combined with the anxiety of leaving the family behind. If the real and social costs for patient off-island radiation treatments are added up and compared to customary radiation treatment costs, one will find no doubt that Guam does not need to treat the number of patients or provide the number of treatments set forth in the national guidelines in order to meet the threshold of financial feasibility for such services.

Guam, of course, cannot solely bear the financial brunt of such a venture. After a feasibility study which compares the upgrading of Guam's medical system to the expenses of referring persons from the different island entities to Hawaii, to the U.S. mainland or the Philippines for needed specialized medical care, a method of financing has to be worked out, and negotiations have to begin. Such negotiations must include the U.S. Naval Hospital, who now refers a number of patients to Tripler Army Medical Center in Hawaii for services they could receive at Guam Memorial Hospital under CHAMPUS reimbursement. The feasibility of special federal funding for this venture needs to be investigated. Formal inter-governmental agreements between Guam and the other participating islands in Micronesia for the referral of patients and payment for their care have to be reached and legalized, as Guam's resources cannot and should not be the sole basis for the creation and maintenance of a regional medical referral center.

D. Health Data Collection.

Guam's health service system has grown tremendously over the past two decades. From the initial U.S. Navy-administered hospital and public health programs, the delivery system has expanded into a sophisticated network of governmental and private providers delivering health care to the island residents in a variety of ways. This growth of the health care system has beneficially impacted the health status of the island population. It has altered disease patterns, moving away from diseases caused by environmental conditions to those associated with more stressful living, faulty diets, and excessive smoking and drinking. However, this improved health status and determinants of this status have yet to be explored in depth.

Such an assessment requires the continuous compilation of health status indicators and an evaluation of the availability of health resources and health services; it has to monitor the utilization and acceptance of these services by the island residents, and also examine health care expenditures. The analysis and evaluation of Guam's health status determinants, in conjunction with a review of our growing health care system, will enable policymakers and health care providers to more clearly establish the direction that Guam's health care system should follow in the future. This is especially important in an era where health care resources are becoming scarce and allocation of these resources must be prioritized.

A particular gap in Guam's health information inventory are data pertaining to hospital stays and physician visits in relation to health conditions and health expenditures. In addition, Guam has yet to establish a medical price index, or a health facilities capital assets inventory.

It can be anticipated that in a very short time all the major public and private health care providers will utilize a computerized system to track service utilization and expenses. The Guam Health Planning and Development Agency is in the process of establishing an automated Health Information System. If

all health care providers and agencies collaborate with GHPDA by providing ongoing information, then the Agency will be able to compile and analyze health information of various kinds and forms. This information will allow continuous assessment of the efficiency, effectiveness, and equity of Guam's health care provision, it will clarify trends, patterns, and relationships of health problems, and identify gaps in services as well.

The major benefit derived from a well-organized health information system is the availability of valid and reliable data which enable planning and policymaking that is based on reality rather than suppositions, and which provide baseline from which evaluation and measurements of progress and improvement in Guam's health system can be made. Such information is particularly valuable when important decisions pertaining to the allocation of health resources have to be made, or cost-containment measures initiated.

E. Health Care Financing.

1. Health Resources.

Guam's financial resources for health care are limited; no changes are foreseen for the near future. Federal funding, which comprises a large share of Guam's health budget, has been reduced over the last few years, and this trend is expected to continue under the present administration in Washington. Guam's own health finances are derived from taxes and revenues, and are not anticipated to increase unless the island experiences another economic boom.

As negotiations are underway to change Guam's status from that of a Territory to a relationship with the U.S. that is more appropriate to present circumstances, the pattern of federal assistance might also be renegotiated. Perhaps then Guam's fixed ceiling of Medicaid can be removed and Supplemental Security benefits paid to the needy. It is also hoped that the federal government will, in the near future, change its policy on long-term care and allow Medicare to reimburse for intermediate and nursing home care.

It is doubtful that there will ever be a surplus of health finances. Guam's decision makers and health care providers must continue their efforts to provide the best possible medical care to every island resident, regardless of the inability to pay. A consolidation of all medical assistance programs is considered a cost-saving measure that will also improve a needy patient's access to quality care. Establishing employer-shared health insurance for each person in the labor force and catastrophic illness insurance for all of Guam's population within the next 10 years is expected to reduce the government's large share of financing health care, while providing greater financial security to the island inhabitants.

2. Consideration of Ethics and Values.

A discussion of health care financing for the future must include the ethical considerations now inherent in health planning, particularly as it pertains to lifesaving technology and expensive long-term care for the elderly. The prevailing U.S. (and Guam) policy of denying no one access to life-sustaining technology, regardless of age, is now being questioned by policymakers. In Britain, for instance, a person over age 60 is no longer able to receive hemodialysis, as the costs of the treatment and the expected return for such costs can no longer be balanced. This is just

an example, but it illustrates that serious considerations are given to resource allocation in order to curb health expenditures in the mainland and abroad.

The number of older Americans are increasing more rapidly than any other age group; additionally, these older persons can look forward to living longer than any of the previous generations. The senior, with their many chronic conditions, have become the main consumers of health services and health dollars. This leads to questions regarding "generational justice." Solutions to this dilemma are sought, since many now advocate that the monies spent on the aged ought to be reallocated to better health care and education for the young, since the youth's future lies ahead and the country can expect many years of productivity from them. Others argue that these monies ought to be invested in capital improvement projects, such as dams, roadways, and water systems, which will contribute to the good of society and will benefit future generations.

The arguments have come down to a question of ethics and values. The issue of special obligation to the elderly because of their past collective contribution to society is widely debated in view of dwindling resources available for health care across the generations. Additionally, the concept of "useless" or "hopeless" life, terms which are increasingly being used to spark debate on the expenditure of social and health resources for the old and frail, seems now a criterion for measuring individual worth. Such measurements are based solely on the individual's ability to contribute to the common good of the community through certain types of social activities, and not on previous contributions.

These debates are countered by the arguments that a community ought to take care of all its members, regardless of their abilities and contributions. As the theologian Karl Barth has aptly observed:

"No community, whether family, village, or state, is really strong if it will not carry its weak and even its very weakest members. They belong to it no less than the strong, and the quiet work of their maintenance and care, which might seem useless from a superficial view, is perhaps more effective than common labor or cultural or historical conflict in knitting it closely and securely together."

The sentiments of this statement are particularly pertinent to the population of Guam, as there is a centuries-old tradition of providing care to all in need within the extended family and the community. However, this tradition has been weakened by demographic changes, modernization, and western acculturation, and on Guam, like everywhere else, the question of resource allocation needs to be addressed eventually, since our finite health resources limit the kind and quality of health care given to the island residents.

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