DRAFT: EMERGENCY MEDICAL SERVICES PLAN

Prepared by: Department of Public Health & Social Services
First Revision 1980

27 FEB 1981

Memorandum

To: Director, Bureau of Planning

From: Director of Public Health and Social Services

Subject: Draft EMS Plan

Thank you for your comments on our draft EMS Plan.

We agree with your observation that objectives in the plan must be time framed. We have prepared a Work Program detailing the activities which must take place relative to achieving the stated objectives. This work program will be incorporated into the final draft of the plan.

Be advised that the same work program will be reviewed by GHPDA as part of their PUFF review process. Copies are available for inspection at the Office of Emergency Medical Services of our Department, GHPDA, and the Lieutenant Governor's A-95 review agency.

Once again thank you for your comments.

FRANKLIN S. CRUZ

cc: Chrono
✓CPHO
EMS
Dir. file

JGillan:jm
2/26/81

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GOVERNMENT OF GUAM
AGANA, GUAM 96910

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BUREAU OF PLANNING

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FRANKLIN S. CRUZ

(MRS.) BETTY S GUERRERO
DIRECTOR, BUREAU OF PLANNING

GOVERNMENT OF GUAM
AGANA, GUAM 96910

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BUREAU OF PLANNING

30 JAN 81

Memorandum

To: Agencies Concerned

From: Director of Public Health and Social Services

Gloria

Subject: Draft EMS Plan

Attached is a draft copy of the revised Emergency Medical Services Plan.

We ask you to carefully review the contents since this document will provide the direction for the development of Guam's EMS System.

Copies have been sent to most of you because your agencies/organizations impact or potentially impact on the EMS System.

Should you have more recent data or information which you feel should be added to the Plan, please let us know.

We would appreciate receiving your comments, criticisms and corrections, in writing. In addition, we would appreciate receiving endorsements of the Plan should you feel it is appropriate to do so.

Please address your comments/endorsements to this Department, attention Mr. Jim Gillan. Should you require additional information, contact Mr. Gillan at 734-2544.

We would appreciate receiving your comments no later than Friday, February 27, 1981.

Your assistance in this matter is greatly appreciated.

FRANKLIN S. CRUZ

Attachments

GOVERNMENT OF GUAM
DEPARTMENT OF PUBLIC HEALTH AND SOCIAL SERVICES
OFFICE OF EMERGENCY MEDICAL SERVICES

EMERGENCY MEDICAL SERVICES PLAN

FIRST REVISION
1980

This is the first revision of the Emergency Medical Services Plan since it was first completed in 1976. Since that time there have been some worked changes in the Emergency Medical Services System, most notably, training of EMT-A's, Communications and equipment.

The following pages describe the system as it now is and as we hope it will be in the future.

The Office of Emergency Medical Services wishes to thank Mrs. Virginia Rosario for her efforts in data collection and Ms. Juanita Lizama for her assistance in preparation of this revised plan.

TABLES OF CONTENTS

I. INTRODUCTION

Although there have been major advances made in the treatment and care of victims of emergency situations, deaths from heart disease, motor vehicle accidents, diseases of early infancy and non-motor vehicle accidents rank 1, 3, 4 and 5 respectively as the leading causes of death on Guam.[1]

Several U.S. studies have shown that mortality due to these four can be significantly reduced by prompt medical intervention. Studies of discharge records have shown a correlation between lessened complications and recovery, times when a responsive Emergency Medical Services System (EMSS) is in place.

Over half of the accidental deaths on Guam during the period 1971-77 were from automobile accidents.[2] While there are no data available on the number of preventable accidents, it is known that there is a relationship between reduced speeds, improved road pavements, more surveillance of drunk drivers, properly posted signs, seatbelt use and decreased highway accident mortality.

Accurate statistics for accidents which occur in the home and during recreational activities are virtually non-existent. Because Guam is a major tourist site recreational accidents have some impact on the EMSS. Further lack of information concerning home or recreation accidents means reducing the planners ability to determine need or project utilization of resources.

Statistics gathered on a national or regional basis are of value in indicating broad trends, but errors of judgement may result if these alone are used as a guide to local action. It is important that the

EMSS plan of Guam be based on a objective assessment of the existing system, evaluated in the light of probable future needs.

The EMS plan presented in the following pages is an initial step in this direction. It is anticipated that his plan will be reviewed and revised annually, especially since this draft describes the implementation of a Basic Life Support (BLS) system and has yet to address the development of an Advanced Life Support (ALS) system. Within the next year some of the objectives stated in this plan (see work Program in Appendix, page____) will be acheived while others may be delayed or changed. The involvement of a broad spectrum of the community will remain the key factor in future EMS plan revisions.

The services described in this plan including manpower, training, facility and equipment needs are specific to EMS. The Guam Health Plan describes far more comprehensively the overall health system and health status requirements of the Territory.

1. Legal Authority and Missiore, OEMS

Guam Public Law 14-11, establishes within the Department of Public Health and Social Services, the Office of Emergency Medical Services. This law enables the Department to apply for Federal Funds available under The Emergency Medical Services System Act (P.L. 93-154 as amended) and the Highway Safety Act of 1966.

Public Law 14-11 which was signed on April 5, 1977 prescribe the following activities for the Office of Emergency Medical Services (OEMS):

"SECTION 49252.2 ....

(a) Promulgate and implement emergency medical services and standards.

(b) 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.

(c) Develop and promote in cooperation with local public and private organizations, and person; A Territorial Program for the provision of emergency medical services, and to set policies for the provision of such services. The Administrator shall explore the possiblity of coordinating emergency medical services with like services in the military and the Trust Territories of the Pacific Islands.

(d) Assess all current emergency medical services. Capability and performance, and to establish programs to remedy identified deficiencies through the development and periodic revision of a Comprehensive Territorial Plan for emergency medical services.

The plan shall include but not be limited to the following:

(1) Emergency Medical Services personnel;

(2) Emergency Medical Services facilities;

(3) Emergency Medical Services transportation and related equipment;

(4) Telecommunications; and

(5) Interogency coordination and cooperation.

(e) Develop emergency medical services regulation; and standards for emergency medical services facilities, personnel, equipment, supplies, and communications facilities and locations

as may be required to establish and maintain an adequate system of emergency medical services.

(f) Provide technical assistance to Territorial organizations implementing the emergency medical services programs described in the Articles.

(g) Develop or assist other agencies in the development of training and retraining programs for personnel engoyed in the provision of Emergency Medical Services.

(h) Develop an effective Emergency Medical Services Communication system in cooperation with concerned public and private organization and persons.

The Communication system shall include but not be limited to the following:

(1) Programs ~~a~~ imal ~~rued~~ at locating accidents and acute illnesses on and off the roadways and directly reporting such information to the responding agency;

(2) Direct ambulance communication with the emergency medical services facility;

(3) Minimum standards and regulations on communication for all appropriate components; and

(4) 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.

(i) Regulate, inspect, certify and re-certify emergency medical services facilities, personnel, equipment, supplies and communications and locations engaged in providing emergency medical services under this Article.

(j) Establish criteria necessary to maintain certification as emergency medical servics personnel which shall include but not be limited to the following:

(1) A formal program of continuing education;

(2) Minimum period of service as emergency medical services personnel; and

(3) Re-Certification at regular intervals which shall include a performance examination and may include written examinations and oral examinations.

...(m) Promote programs for the education of the general public in first aid and emergency techniques and procedures."

Section 49253.1-2 of Public Law 14-11, establishes the Guam Emergency Medical Services Commission, a 14 voting member board which serves as a technical and advisory capacity to the Administrator, OEMS. Provision is made for the inclusion of ex-officio representation by the Air Force and Navy.

The development of an EMS plan is the initial and most basic step in providing guidance for the development and implementation of a system of Emergency Medical Services.

2. Purposes and Use of the Plan

The Emergency Medical Services Act of Guam, P.L. 14-11 reinforces the

purposes of the Federal Emergency Medical Services Act which was established to assist in the development of systems of emergency medical care that would significantly decrease current death and disability rates. The intent of the Federal Act is to initate regional planning. Such planning should seek to integrate 15 mandatory components, prescribed by HHS Guidelines, so as to provide for essential EMS services for all emergency patients.

For this purpose, the EMS Plan at a minimum accomplish the following:

- Describe the system as it is at present in view of the 15 mandatory components;
- Identify gaps in the system (or those barriers to integration of the 15 components);
- Determine what actions need to be taken to develop on integrated system;
- Identify resources available and needed to assure integration and implementation of the system.

This plan should never be deemed to be 'cast in concret' but rather a flexible document which allows for implementation of reasonable alternative. Just as any 'system' is not fixed, but rather, fluid, so the plan must be able to adopt to change in available resources, policies, laws, etc. The plan is an attempt to describe, as accurately as possible the methods for achieving an integrated system. The planner must always be prepared to make changes as demands require. The attempt to rationalize the planning process, without cognizance of the fources that really assure the system's implementation will doom the plan to failure.

3. SCOPE OF THE PLAN

The findings of the initial EMS Plan (1976) are still valid today. While certain system components have improved much still needs to be accomplished at the Basic Life Support Level (BLS). Further, the limited population, in terms of demand upon the system, and the limited economic sources dictates that a sophisticated advance life support system will require time and proper stagery of additional resources to implement.

The scope of this revision has not changed drastically from the initial plan. It will review the total 'system' as it is. Special attention has given to those tasks that must be accomplished in order to assure that the BLS is soundly in place. Specifically, the elements of BLS that will receive attention are:

- Specific training and public education program needs.
- Methods to assure the communication system operates at optimum potential.
- Measurement and evaluation criteria needed to determine the response/transport capabilities of the system.
- Development of a classification systems for treatment of the emergency patient.

The integration of the various EMS and related activities is another essential component which has been addressed in this plan. This is a necessary component given the fragmented duplicative nature of the existing system.

4. METHODOLOGY

Consumer and provider participation has been an integoal aspect of the EMS plan since its inception. However, due to time constructs, this

revision was drafted by OEMS staff with input from providers. The draft will be disseminated to various groups and organizations in the Community and will be updated or revised should there be fundamental disagreement with the goals and objectives of the draft. In addition the plan will be reviewed by the Guam Health Planning and Development Agency in order to assure that it is consistent with the purposes of the Guam Health Plan. A public hearing will be held 30 days prior to the final draft of the EMS Plan. The Guam EMS Commission will also review and approve the draft. All pertinent comments and suggestions will be incorporated into this draft of the Guam EMS Plan.

5. PROBLEMS AND CONSTRAINTS FOR DEVELOPING THE EMS PLAN

A member of constraints were identified in developing this revision. Many of them were the same as those that hindered the development of the first EMS Plan. The most severe problem continues to be the limited information available concerning the existing problem. That is not to say that it does not exists, but generally because of the differing roles of the key actors, e.g., the Department of Public Safety and the Guam Memorial Hospital Authority, the information is fragmented, sometimes duplicative, or useless. This constraint is really a 'system' problem in that it shows a lack of integration of system components.

The data 'problem' caused difficulty in determining trends and projecting future needs. Further, it is still difficult to state with any confidence the current utilization of services as well as total number of patients treated in specific categories.

Public Education programs are not new to Guam, but mechanisms to evaluate their effectiveness are not in place. Indeed, this appears to be a universal problem. Even if data ~~were collected~~ on the number of currently certified first aiders, CPR trained, etc. were available, the impact of these programs on the EMS system would be difficult to assess.

Finally, much of the data studies (most specifically Emergency Room records and DPS ambulance run records) were either inaccurate or the collection process was in question. To indicate that existing data are inadequate or not available the statement "to be developed" is used in this Plan. In the Recommended Goals section, objectives for the design and implementation of data systems ~~is~~ noted.

II. DESCRIPTION OF THE EMS PLANNING AREA

II. DESCRIPTION OF THE EMS PLANNING AREA

The objective of this Chapter is to provide an overview of the EMS planning area. The overview will be presented through a discussion of the EMS area's characteristics organized into the following major categories:

- Geographic
- Population

The characteristics to be discussed were selected based on their relevance to the development of an EMS plan, and to the plan's subsequent implementation.

A. GEOGRAPHIC CHARACTERISTICS

This section will describe the geographic characteristics of Guam through a discussion of the Island's location, topography and climate. The objective is to identify geographic constraints and other natural phenomenon which may affect the quality and/or delivery of emergency medical services.

1. LOCATION

The Island of Guam lies at the southern-most end of the Marianas approximately 4116 miles west of Honolulu, 1500 miles east of the Philippines, and 1550 miles south of Japan. It is approximately 30 miles long and from 4 to 8 miles wide, with an area of 212 square miles.

Guam's isolated location is significant to the development of an EMS plans for the following reasons: the transportation of critically ill or injured patients to special facilities off-island, establishment of mutual aide agreements, difficulties in obtaining assistance

in the event of mass casualties, continuity of care and assess to training facilties and personnel.

2. TOPOGRAPHY

Guam is the largest of the 15 Mariana Islands. It is an island characterized by two distinct topographical features, uplifted coral terraces in the north and hills of volcanic origin in the south.

The physical features impact upon the patterns of health care utilization, because of the natural harbors signficant to the Island and the focus of the population in that central region of the Island. Further, the topographical features of the southern portion of the Island with its mountianous characteristics has not been able to support a sufficient number of people; consequently, medical resources have not developed in this region. Travel time for these small population clusters in the south are also impeded by the terrain and consequently affect ambulance response time.

3. CLIMATE

The climate on Guam is typically characterized by warm weather, with temperature ranging from 72°F to 88°F. This appealing climate has created seasonal visitors. Whether tourists or temporary residents the potential result is the same, these individuals can place an added sometimes unforseen burden on the Island's emergency medical care system.

The usual temperate climate of Guam is frequently interrupted with typhoons and heavy rainfall. The most alarming evidence of the traumatic impact typhoons can have on Guam and its EMS system was in 1976 when Typhoon Pamela swept directly over the Island. The typhoon caused

extensive damage to the Island. The consequence for a short period being the medical service system was rendered practically imperable, many rads become impassable, and communications was practically eliminated. Assistance from local citizen band radio club member (now a formal REACT system) proved invaluable to Public Safety activities. Since this experience, the Government of Guam has established a formal disaster planning and operations system under the purview of the Office of Civil Defense. The disaster plan will assist in lessening the disruption to effective services in the event of future natural disasters.

Humidity and salt laden breezes play havoc with EMS equipment, most specifically ambulances. Standards for maintenance and care of EMS equipment must be developed with these factors in mind.

4. SUMMARY

In summary, it is important that the Island's location, topography and climate be considered in the development of this EMS plan. If these geographic characteristics were not accurately reflected in EMS planning it is unlikely that a viable EMS System could develop.

2. PUPULATION CHARACTERISTICS

This section discusses those population characteristics of the Island that are relevant to the development of an EMS plan. The characteristics that will be discussed include the total population of Guam; projected growth figures; income; education and employment composition; and accident and death statistics. Much of the data presented in this plan is from the Guam Health Plan prepared by the Guam Health Planning and Development Agency.

The objective of this section is to develop an understanding of how these various population characteristics might impact demand for services, and the need for emergency medical resources.

1. POPULATION, SIZE, AGE AND SEX

a. POPULATION DATA BASE

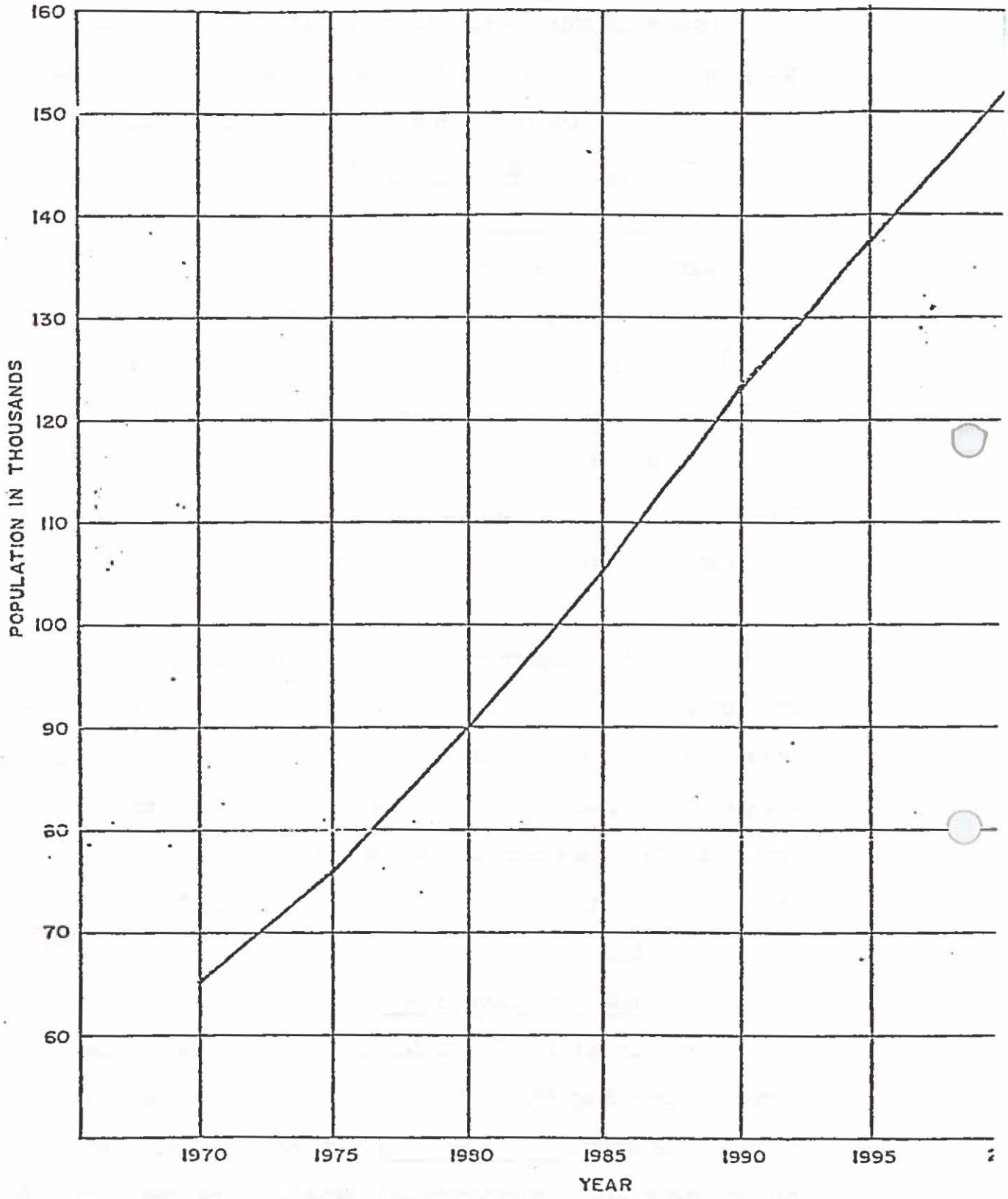
Although several population projections have been developed over the last several years, the Quinton-Budlong (Series A) population estimates (See Exhibit II-1) developed in 1973 and verified by the Guam Bureau of Planning in 1977, shall be used in this plan as the basis for population trends and projections. For certain years, however, notably 1975, the more accurate population data derived from a survey conducted by the Guam Bureau of Labor Statistics will be used for age, sex and village population breakdowns.

It should be noted that more accurate and consistent population data are needed in order to improve planning capabilities. The absence of an adequate data base, federal immigration policies and independent of local considerations, fluctuations in military personnel and their dependents, the seasonality of tourist traffic and levels, all contribute to the variation to be found in current population estimatates and projections for Guam.

b. Civilian Population 1970-75

Between April 1970 and September, 1975, the Civilian population increased from 64,510 to 76,089 for an annual growth rate of 3.4 percent (See Exhibit II-2 page 36). If this rate of growth is maintained, the civilian population will double by the year 1995. Between 1970 and 1974, 10,377 immigrants were admitted to establish permannent

EXHIBIT II - 1
GUAM ESTIMATED AND PROJECTED POPULATION
1970–2000



NOTE: 1990–2000 EXTENSION OF QUINTON-BUDLONG USING POPULATION PROJECTION METHOD.

SOURCE: QUINTON-BUDLONG POPULATION ESTIMATES, 1970–1990.

EXHIBIT II - 2
POPULATION
1970 — 1985

YEAR	POPULATION *	CHANGE - %
1970	64,510	
1971	66,838	3.6
1972	69,166	3.5
1973	71,494	3.4
1974	73,822	3.2
1975	76,089	3.1
1976	78,868	3.6
1977	81,647	3.5
1978	84,426	3.4
1979	87,205	3.3
1980	89,938	3.1
1981	93,102	3.5
1982	96,266	3.4
1983	99,430	3.3
1984	102,594	3.2
1985	105,706	3.0

AVERAGE ANNUAL GROWTH RATE 1970 – 1975 = 3.4 %

* CIVILIAN POPULATION ONLY

SOURCE: QUINTON-BUDLONG SERIES "A" POPULATION ESTIMATES

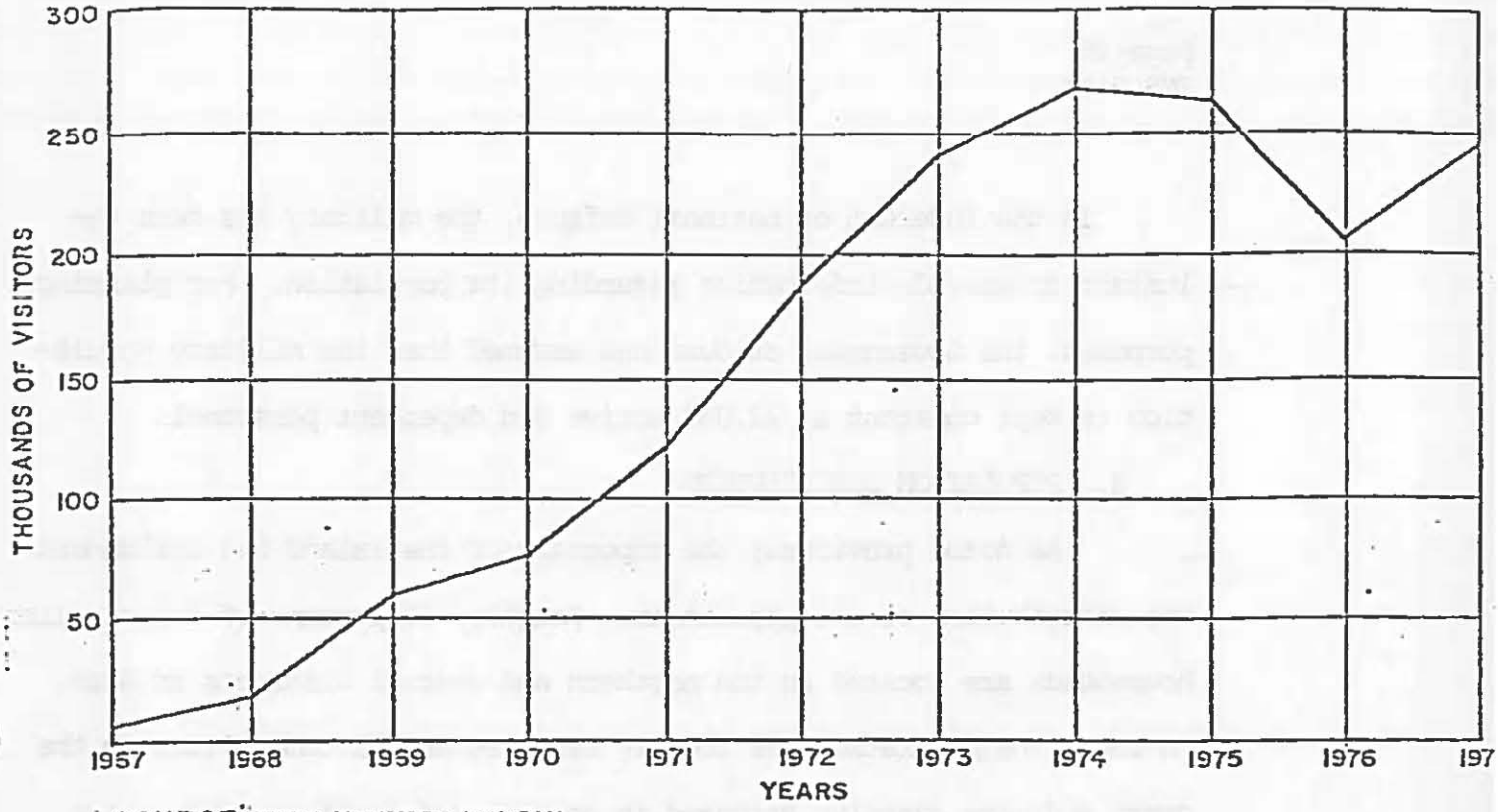
residency on Guam. As in the period 1960 to 1970, more than 50 percent of the population increase that occurred between 1970 and 1975 was due to meet in-migration. The median age of the civilian population increased from 16.1 to 18.9 years, reflecting a young population. The upward movement of the median age of the population was due to a declining birth rate and out-migration of an intermediate age population.

c. Transient Population 1970-1977

The growth of tourism and the military as Guam's largest industries make it necessary to consider the transient population in planning since visitors can become ill or injured during their stay on the Island.

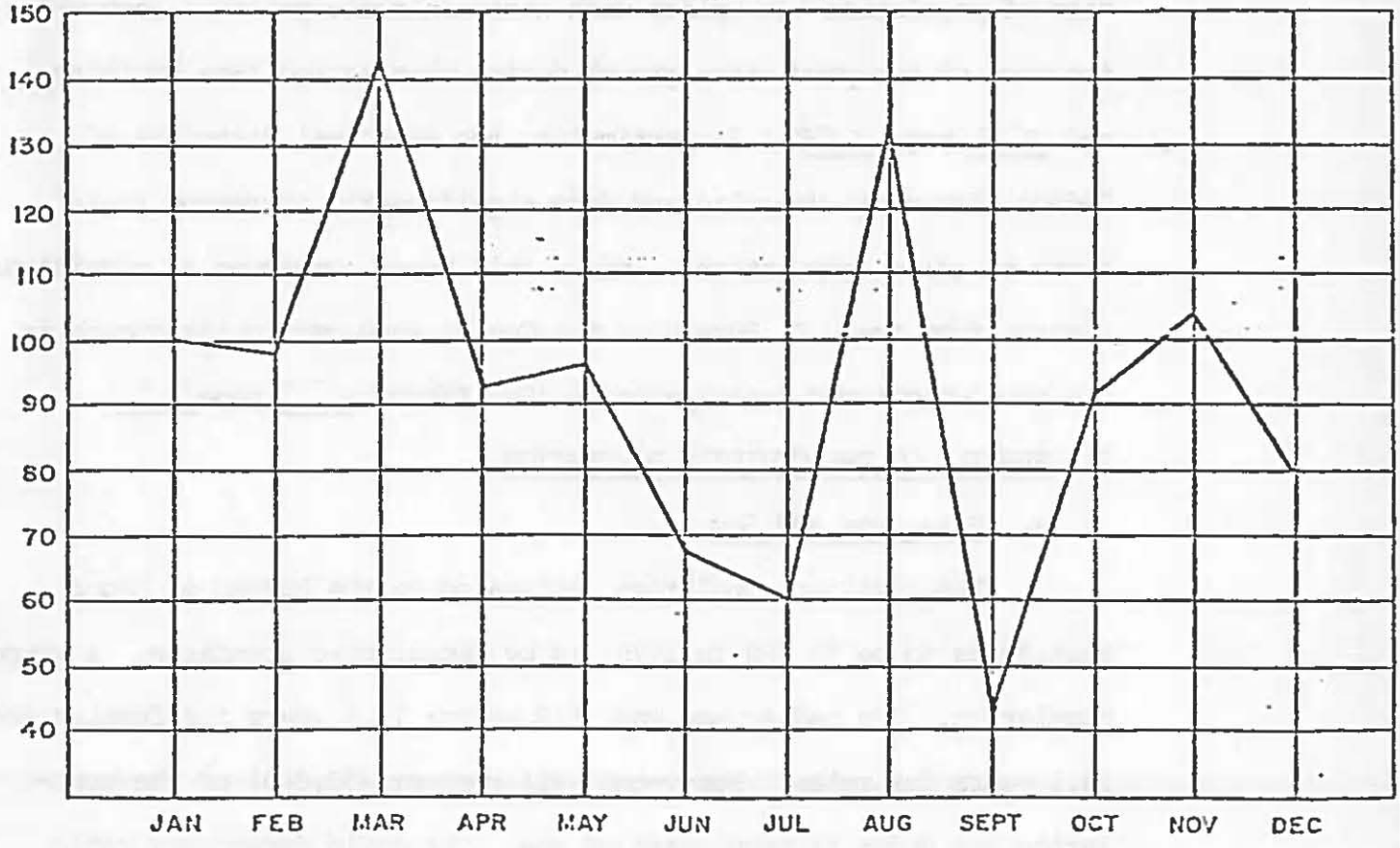
Guam's yearly tourist population has been steadily increasing from 73,723 to 240,267 between 1970 and 1977 (See Exhibit II-3 Page 4-A). The majority of Guam's visitors are tourists from Japan. The seasonal fluctuations of tourist arrivals increase the difficulty of determining the actual daily population and affects the ability to plan for emergency medical services for that specific group. However, during the peak tourist season (March through August) there is an average daily tourist population of 3,000 and approximately 1,000 tourists per day during the off-season months. Generally, these tourists are young married couples or young single persons. It may be assured that their impact on the EMS system would predominantly be in the areas of vehicular and recreational (water) accidents.

EXHIBIT II - 3



SOURCE: GUAM VISITORS BUREAU

SEASONAL INDEX OF TOURIST ARRIVAL TO GUAM
(JANUARY=100)



SOURCE: GUAM'S VISITOR INDUSTRY, AN ECONOMIC ASSESSMENT
BUREAU OF PLANNING, GOVERNMENT OF GUAM, 1977.

In the interest of national defense, the military has been reluctant to provide information regarding its population. For planning purposes, the Government of Guam has assumed that the military population is kept constant at 22,000 active and dependent personnel.

d. POPULATION DISTRIBUTION

As noted previously, the topography of the island has influenced the distribution of the population. Roughly, 80 percent of the civilian households are located in the northern and central districts of Guam. In 1969, the population was loosely arranged around Communities in the south and more densely situated in central and northern communities (Exhibit II.4 page 15.A). Between 1970 and 1975, a major redistribution of population took place with northern municipalities accounting for much of the population growth during this period (See Exhibits II.5 and II.6 page 15.B&C.) In particular, the municipal districts of Dededo, Tamuning, Mangilao and Yona significantly increased their share of island population. Indeed this trend continues as provisional figures from the U.S. Bureau of the Census show continuing growth in the above-mentioned municipalities (See Exhibit II.7 page 15.D).

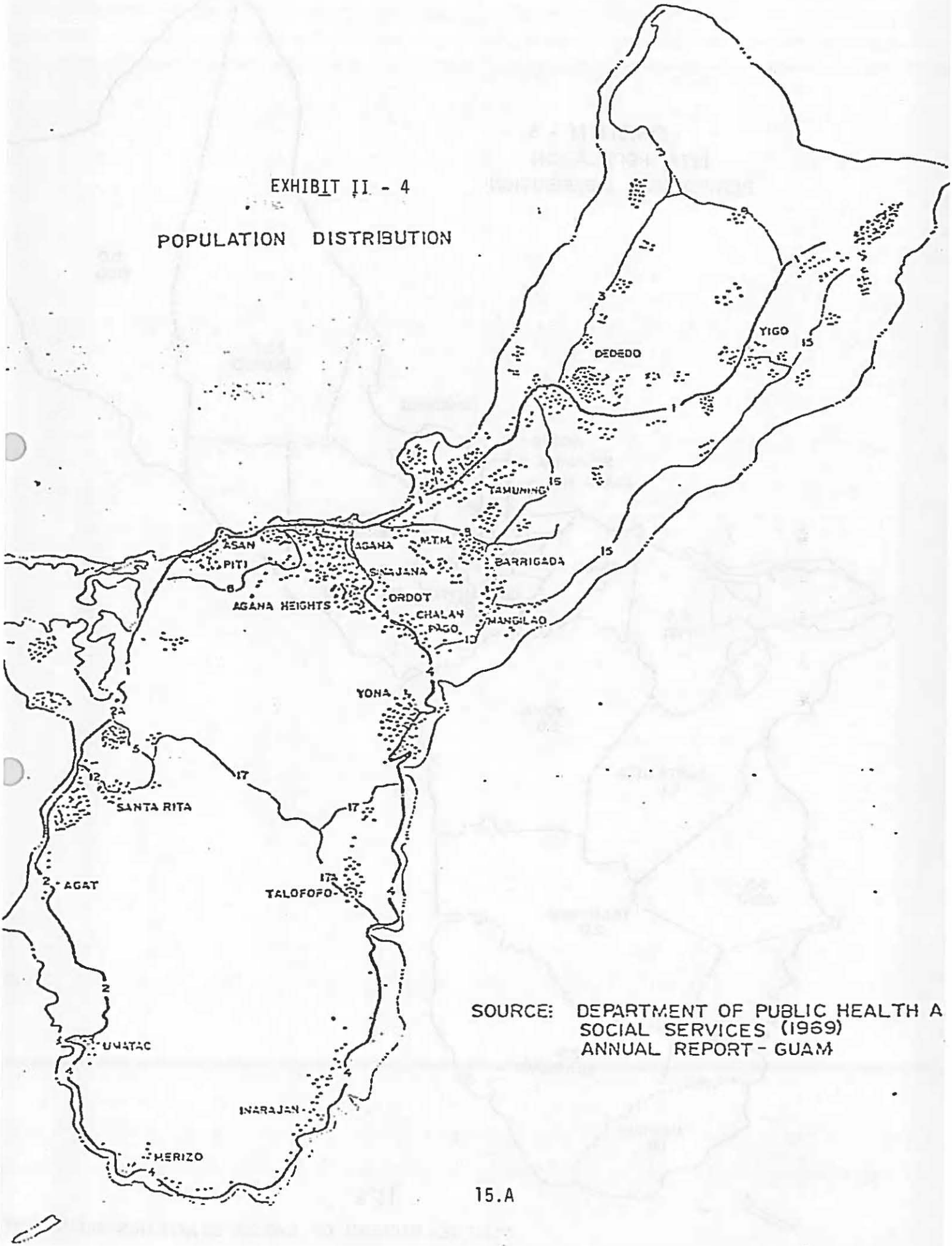
2. PROFILE OF THE CIVILIAN POPULATION

a. Size, Age and Sex

The civilian population, estimated by the Bureau of Labor Statistics to be 79,800 in 1975, is by demographic standards, a young population. The median age was 18.9 years; 19.6 years for females and 18.1 years for males. Forty-one (41) percent (32,800) of the population was under fifteen years of age. The child dependency ratio

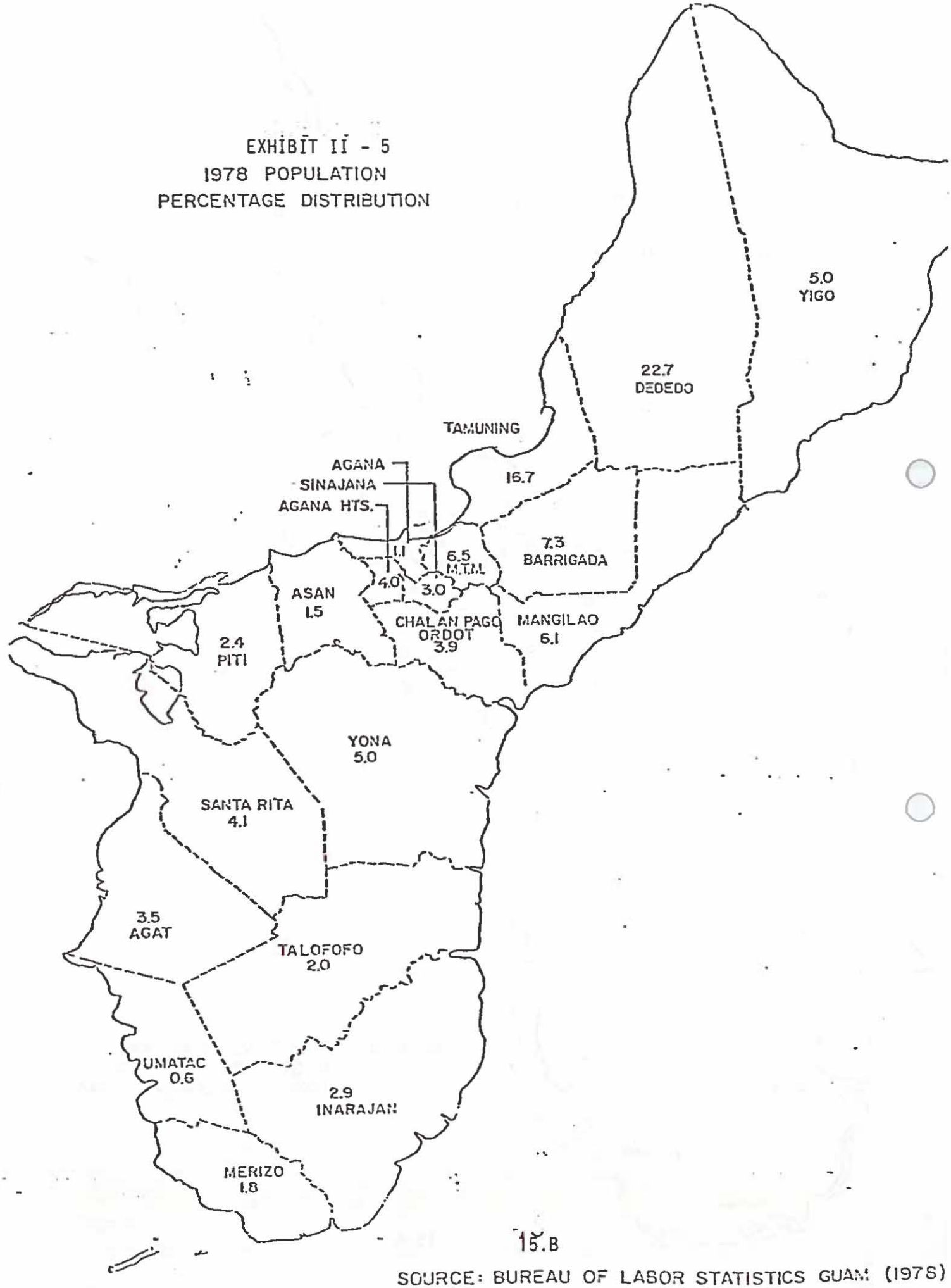
EXHIBIT II - 4

POPULATION DISTRIBUTION



SOURCE: DEPARTMENT OF PUBLIC HEALTH A SOCIAL SERVICES (1969) ANNUAL REPORT - GUAM

EXHIBIT II - 5
1978 POPULATION
PERCENTAGE DISTRIBUTION



SOURCE: BUREAU OF LABOR STATISTICS GUAM (1978)

EXHIBIT II - 6

PERCENTAGE CHANGE IN DISTRIBUTION
OF POPULATION ON GUAM, 1970-1978

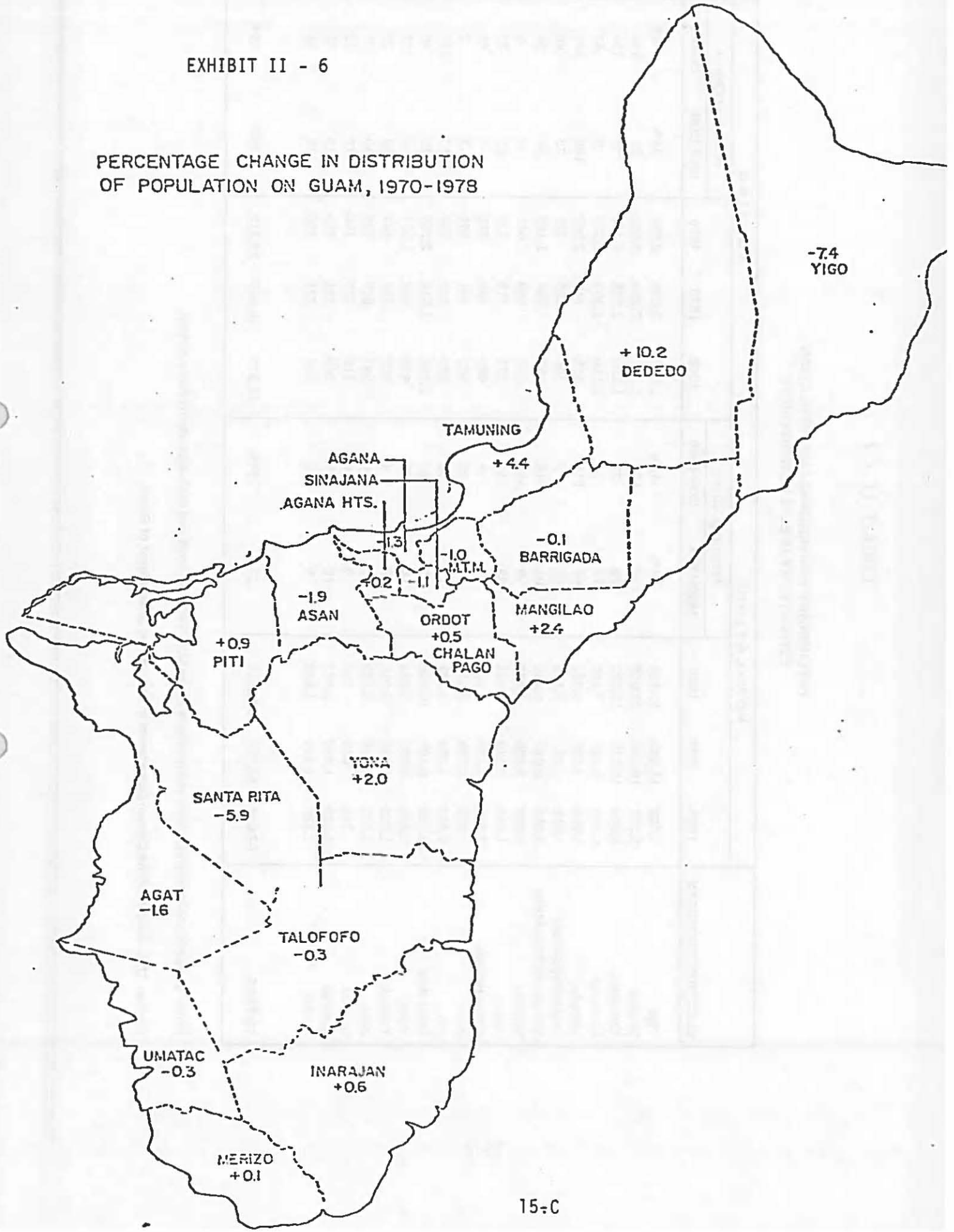


EXHIBIT II - 7

PRELIMINARY 1980 HOUSING AND POPULATION ESTIMATES BY 19 ELECTION DISTRICTS

ELECTION DISTRICTS	POPULATION					HOUSING				
				Percentage Change					Percentage Change	
	1960	1970	1980	1960-1970	1970-1980	1960	1970	1980	1960-1970	1970-1980
Yigo	7,682	11,542	10,424	50 %	-10%	1,539	2,056	2,892	34%	41%
Dededo	5,126	10,780	23,659	110	120	1,176	2,295	5,555	95	142
Tamuning	5,944	10,218	13,527	72	32	1,390	2,208	4,778	59	116
Barrigada	5,430	6,356	7,762	17	22	1,110	1,307	1,927	18	47
Mangilao	1,765	3,228	6,822	64	111	355	740	2,062	108	179
Chalan Pago-Ordot	1,835	2,931	3,135	60	7	304	526	736	73	40
Mongmong-Toto-Maite	3,015	6,057	5,230	101	-14	667	896	1,483	34	66
Sinajana	3,862	3,506	2,471	-9	-30	696	680	616	-2	-9
Agana	1,642	2,119	881	29	-58	331	515	376	56	-27
Agana Heights	3,210	3,156	3,284	-2	4	689	969	970	-3	45
Asan	3,053	2,629	2,012	-14	-23	602	581	591	-3	2
Piti	1,467	1,284	1,521	-12	18	275	239	502	-13	110
Santa Rita	12,126	8,109	10,408	-33	28	1,356	1,610	2,259	19	40
Yona	2,356	2,599	4,233	10	63	475	467	1,031	-2	121
Talofofo	1,352	1,935	2,016	43	4	208	350	447	68	28
Agat	3,107	4,308	3,979	39	-8	587	819	990	40	21
Umatac	744	813	732	9	-10	110	130	146	18	12
Inarajan	1,730	1,897	2,062	10	9	269	321	455	19	42
Merizo	1,398	1,529	1,658	9	8	234	271	396	16	46
TOTALS	67,044	84,996	105,816	27%	24%	12,373	16,680	28,212	35%	69%

Note: Includes non-immigrant aliens and members of the U. S. Armed Forces and their dependents living on post.

Source: U. S. Bureau of the Census; Department of Commerce, Government of Guam.

of 79 children 0-14 years old per 100 persons (aged 15+) is relatively high in comparison to many developed countries. People sixty-five ~~years and over comprised thr~~ year and over comprised three percent (2,400) of the population (See Exhibit II.2, page II.A).

Overall, the sex ratio of the population was one to one: 39,900 males per 39,000 females. However, this ratio does not hold constants throughout all age groups. Under the age of 5 years, there were 81 males per 100 females. Between the ages of 5 to 19 years, 45 to 54 years and 60 to 64 years, there were more males than females. Between the ages of 20 to 24 years, 30 to 44 years and 65 years and older, there were fewer males per 100 females.

b. The three major ethnic groups in the population are Chamorros (native Guamanians), Filipinos, and Caucasions. Chamorros comprise 55 percent (44,300) of the population with a median age of 18.1 years, followed by Filipinos at 19.3 percent (15,400) with a median age of 25.8 years and Caucasion at 9 percent (7,200) with a median age of 26.1 years. The remainder of the population (12,900) is composed of mixtures of Chamorros, Filipinos, Caucasians and other ethnic groups. (See Exhibit II.9 page II.3). The median age difference between Chamorros and the other major ethnic groups is indicative of the fact that the latter groups are primarily immigrants to the island (See Exhibit II.10 page II.C).

c. EDUCATIONAL STATUS

Thirteen percent (5,830) of the population 16 years and above have completed at least four years of college. Eleven percent (4,890)

CIVILIAN POPULATION ESTIMATES *
(AS OF SEPTEMBER 1975)

EXHIBIT II - 8

AGE GROUP	MALE NUMBER	PERCENT	FEMALE NUMBER	PERCENT	TOTAL
UNDER 5	4,800	46.6	5,500	53.4	10,300
5-9	5,600	52.8	5,000	47.2	10,600
10-14	6,400	53.8	5,500	46.2	11,900
15-19	4,700	52.8	4,200	47.2	8,900
20-24	3,200	47.1	3,600	52.9	6,800
25-29	3,000	50.0	3,000	50.0	6,000
30-34	1,700	43.6	2,200	56.4	3,900
35-39	1,900	47.5	2,100	52.5	4,000
40-44	1,900	46.3	2,200	53.7	4,100
45-49	2,200	53.7	1,900	46.3	4,100
50-54	1,600	53.3	1,400	46.7	3,000
55-59	1,100	50.0	1,100	50.0	2,000
60-64	900	56.2	700	43.8	1,600
65 & OVER	900	38.0	1,500	62.0	2,400
TOTAL	39,900	50	39,900	50	79,800
UNDER 15	16,800		16,000		32,800
% TOTAL	42.1		40.1		41.1
65 & OVER	900		1,500		2,400
% TOTAL	2.2		3.7		3
MEDIAN AGE	18.1		19.6		18.9

* EXCLUDING NON-IMMIGRANT ALIENS AND MILITARY DEPENDENTS STAYING ON MILITARY BASES.

SOURCE: BUREAU OF LABOR STATISTICS , GOVGUAM DEPT. OF LABOR

TABLE IV. 2

MORTALITY RATES: GUAM-U.S. 1970-77

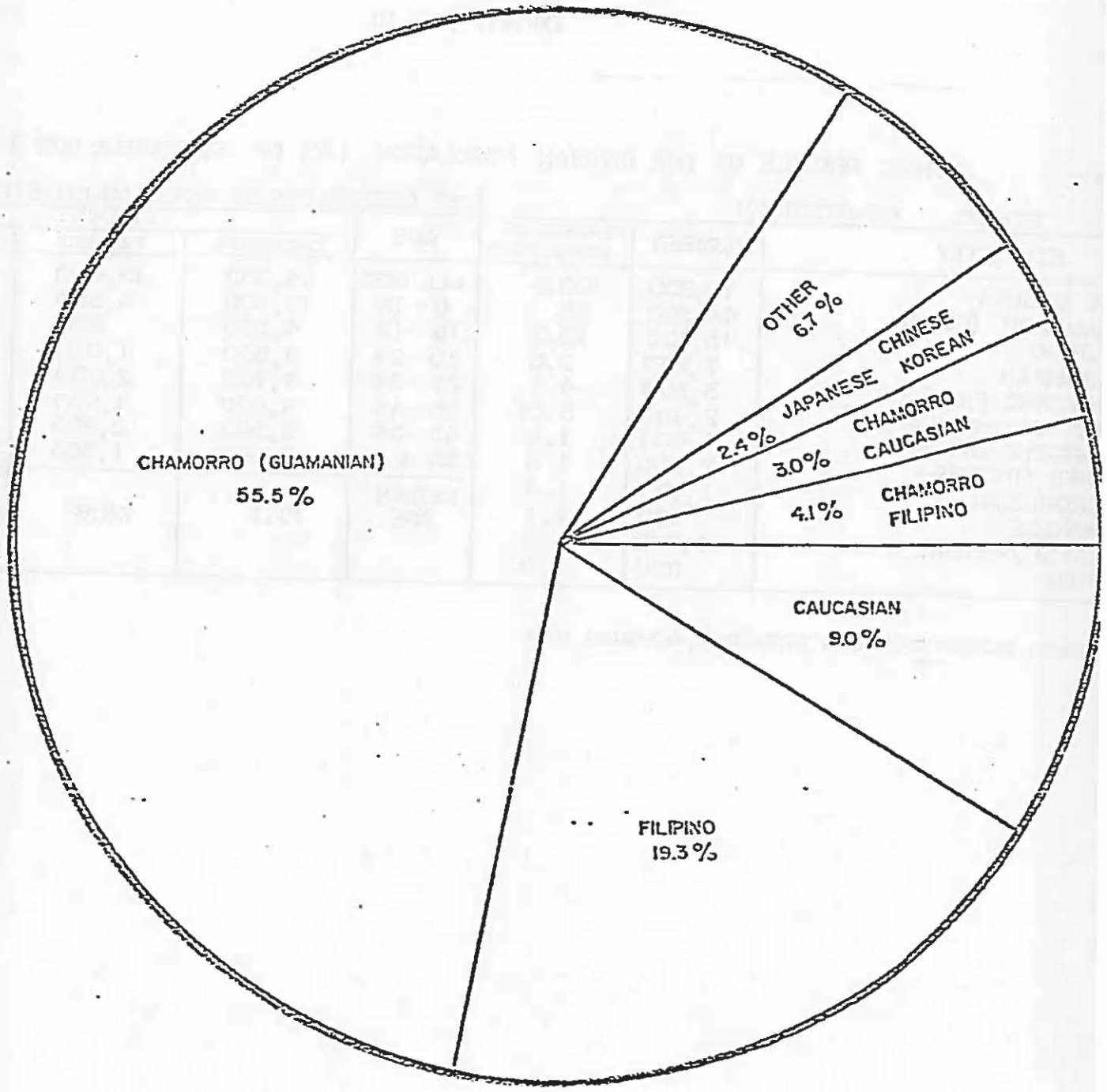
GUAM				U.S.			
YEARS	CRUDE DEATH RATES	MALE	FEMALE	YEARS	TOTAL	MALE	FEMAL
1970	5.5	6.9	3.9	1970	9.5	10.9	8.1
1971	5.4	6.8	3.9	1971	9.3	10.7	8.0
1972	5.9	6.6	5.2	1972	9.4	10.8	8.1
1973	6.1	7.0	5.0	1973	9.4	10.7	8.1
1974	6.1	6.8	5.2	1974	9.2	10.4	8.0
1975	5.8	7.2	4.2	1975	8.9	10.1	7.7
1976	5.3	6.7	3.8				
77	4.7	5.6	3.6	AVERAGES	9.3	10.6	8.0
AVERAGES	5.6	6.6	4.3				

SOURCE: STATISTICAL REPORTS 1970-77, OFFICE OF VITAL STATISTICS; DPHSS

SOURCE: STATISTICAL ABSTRACT OF THE U.S., 1977; U.S. DEPT. OF COMMERCE

EXHIBIT II - 9

ETHNIC COMPOSITION OF CIVILIAN POPULATION OF GUAM



SOURCE: 1975 BUREAU OF LABOR STATISTICS, GOVERNMENT OF GUAM.

EXHIBIT II - 10

ETHNIC PROFILE OF THE CIVILIAN POPULATION (AS OF SEPTEMBER 1975)

ETHNIC COMPOSITION			AGE DISTRIBUTION OF THREE MAJOR ETHNIC GROUPS			
ETHNICITY	NUMBER	PERCENT OF POPULATION	AGE	ETHNICITY		
				CHAMORRO	FILIPINO	CAUCASIAN
.L GROUPS	79,800	100.0	ALL AGES	44,300	15,400	7,200
IAMORRO (GUAM)	44,300	55.	0 - 15	19,700	5,500	2,000
_IPINO	15,400	19.3	16 - 19	4,300	900	4[illegible]
.UCASIAN	7,200	9.0	20 - 24	3,900	1,000	1,000
IAMORRO-FILIPINO	3,300	4.1	25 - 34	4,700	2,600	1,400
IAMORRO-CAUCASIAN	2,400	3.01	35 - 44	4,400	1,900	1,100
IAMORRO-OTHER	1,400	1.8	45 - 54	3,500	2,200	700
THER MIXTURE	2,000	1.8	55 +	3,800	1,300	600
CRONESIAN	1,100	1.4	MEDIAN AGE	18.1	25.8	26.1
.PANESE	900	1.1				
IINESE/KOREAN	1,000	1.3				
THER	800	1.0				

)URCE: BUREAU OF LABOR STATISTICS, GOVGUAM 1975

have completed high school. Sixteen percent (7,240) have completed certain levels of elementary schooling and eight percent (3,550) have completed either the seventh or eighth grades.

During the 1976-77 school year, there were 30,991 students enrolled in the island's school system (public and private, 57 percent (17,804) were in elementary level; 23 percent (7,175) in junior high schools, and 20 percent (6,012) in high school. The public school system enrolled 82 percent (27,272) of the total school population in 1976-77.

3.) POPULATION PROJECTION

The Quinton Budlong Series A population estimates for the Governor of Guam and projected yearly from 1970 to 1990 serve as the basis for estimating shifts in the age and sex distribution of the population for the foreseeable future. This population series has been selected less for the validity of its assumptions than for is comparability to 'known' population levels computed by the U.S. Bureau of Census and Guam's Bureau of Labor Statistics. The population projections for the period 1980-90 represent a conservative estimate of population increase; based on anticipated immigration levels, economic conditions; and demographic trends. Should there be major differences between the 1980 projections and the provisional 1980 Census datas; for planning purposes the extant projections will be used. (See Exhibits ___ thru ___, page ___)

4.) EMPLOYMENT

The number of employees on payrolls as of September, 1977 was 32,600 with 55 percent employed by the private sector, 20 percent by the federal government and 25 percent by the local government (See Exhibit

EXHIBIT II - 11

PROJECTED POPULATION BY AGE GROUP AND PERCENTAGE DISRIBIUTION ON GUAM, 1975-1990

AGE GROUP	TOTAL CIVILIAN POPULATION				PERCENTAGE OF POPULATION			
	1975	1980	1985	1990	1975	1980	1985	19
0–4	10,277	17,358	19,787	22,113	12.90	19.30	18.70	18.
5–9	10,617	14,110	16,751	19,094	13.30	15.70	15.80	15.
10–14	11,894	8,554	14,067	16,700	14.90	9.50	13.30	
15–19	8,940	8,836	8,435	13,870	11.20	9.80	8.00	11.
20–24	6,785	7,559	8,712	8,316	8.50	8.40	8.20	6
25 29	5,987	5,883	7,454	8,590	7.50	6.50	7.10	7
30 34	3,911	7,345	5,730	7,260	4.90	8.20	5.40	5
35 39	3,991	4,455	7,154	5,581	5.00	5.00	6.80	4
40–44	4,071	4,285	4,340	6,968	5.10	4.80	4.10	5
45–49	4,071	3,554	3,925	3,976	5.10	4.00	3.70	3
50–54	3,033	2,905	3,256	3,595	3.80	3.20	3.10	2
55–59	2,235	2,096	2,661	2,982	2.80	2.30	2.50	2
60–64	1,596	1,085	1,459	1,852	2.00	1.20	1.40	1
65–+	2,396	1,913	1,975	2,260	3.00	2.1	1.90	1
TOTAL	79,824	89,938	105,706	123,157	100.00	100.00	100.00	10

SOURCE: 1975, BUREAU OF LABOR STATISTICS, GOVERNMENT OF GUAM.
1980-99, QUINTON-BUDLONG.

EXHIBIT II - 12

PROJECTED POPULATION BY SEX AND AGE GROUP
15-44 ON GUAM, 1975-90

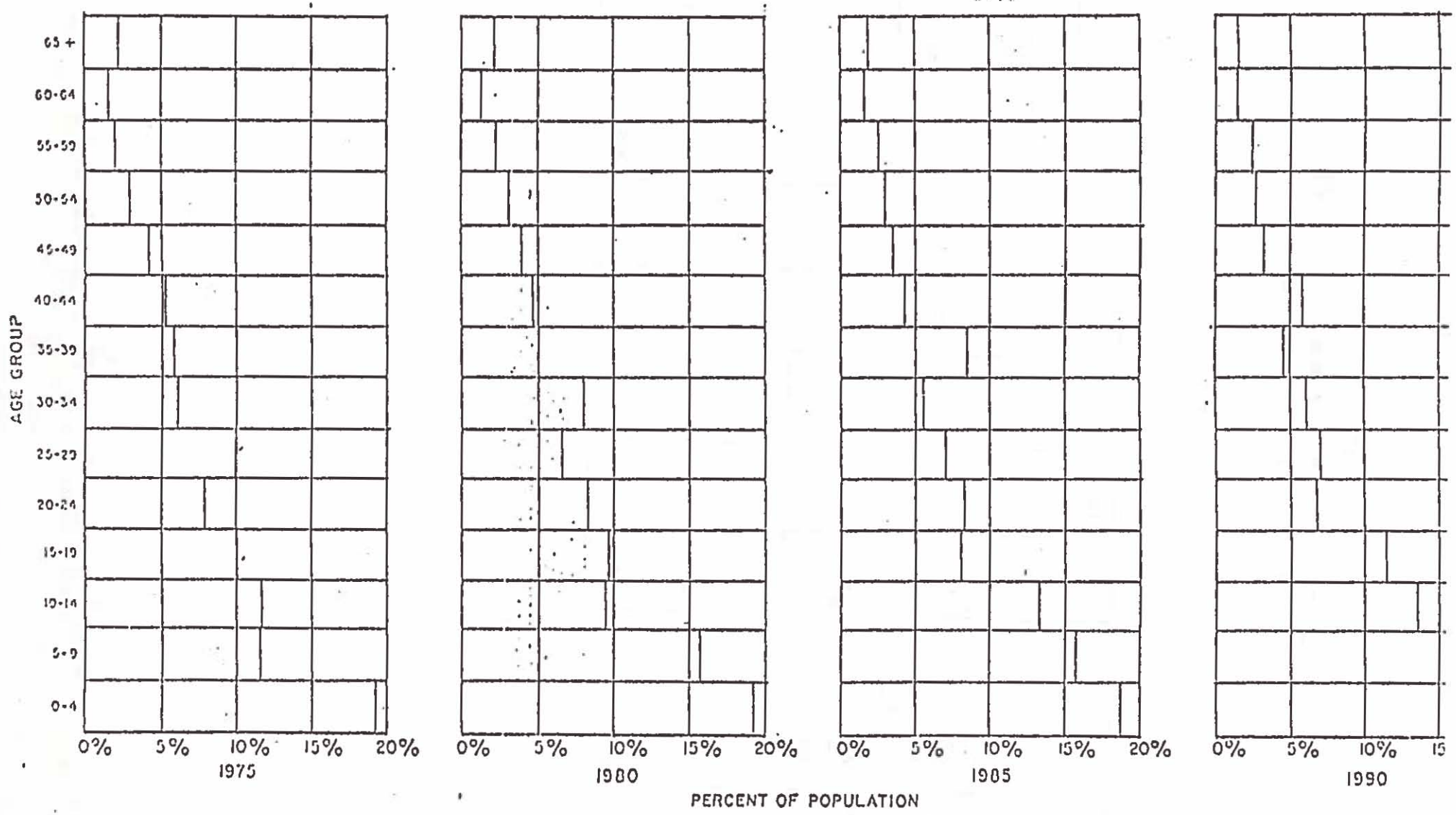
AGE GROUP	1975			1980			1985			1990		
	MALE	FEMALE	SEX RATIO	MALE	FEMALE	SEX RATIO	MALE	FEMALE	SEX RATIO	MALE	FEMALE	SEX RATI
15—19	4,381	4,559	49:51	4,548	4,283	51:49	4,323	4,112	51:49	7,101	6,769	51:
20—24	3,325	3,460	49:51	3,887	3,672	51:49	4,484	4,228	51:49	4,262	4,054	51:
25—29	2,934	3,053	49:51	2,985	2,898	50:50	3,833	3,621	51:49	4,421	4,169	51:
30—34	1,916	1,995	48:51	4,108	3,237	56:44	2,907	2,823	50:50	3,733	3,527	51:
35—39	1,956	2,035	49:51	2,398	2,057	54:46	4,001	3,153	56:44	2,831	2,750	51:
40—44	1,995	2,076	49:51	2,376	1,909	55:45	2,336	2,004	54:46	3,897	3,071	56:
TOTAL	16,507	17,178	49:51	20,302	18,051	53:47	21,884	19,941	52:48	26,245	24,340	52:

NOTE: SEX RATIO PER 100 IN AGE GROUP.

SOURCE: 1975, BUREAU OF LABOR STATISTICS, GOVERNMENT OF GUAM.
1980-99, QUINTON-BUDLONG.

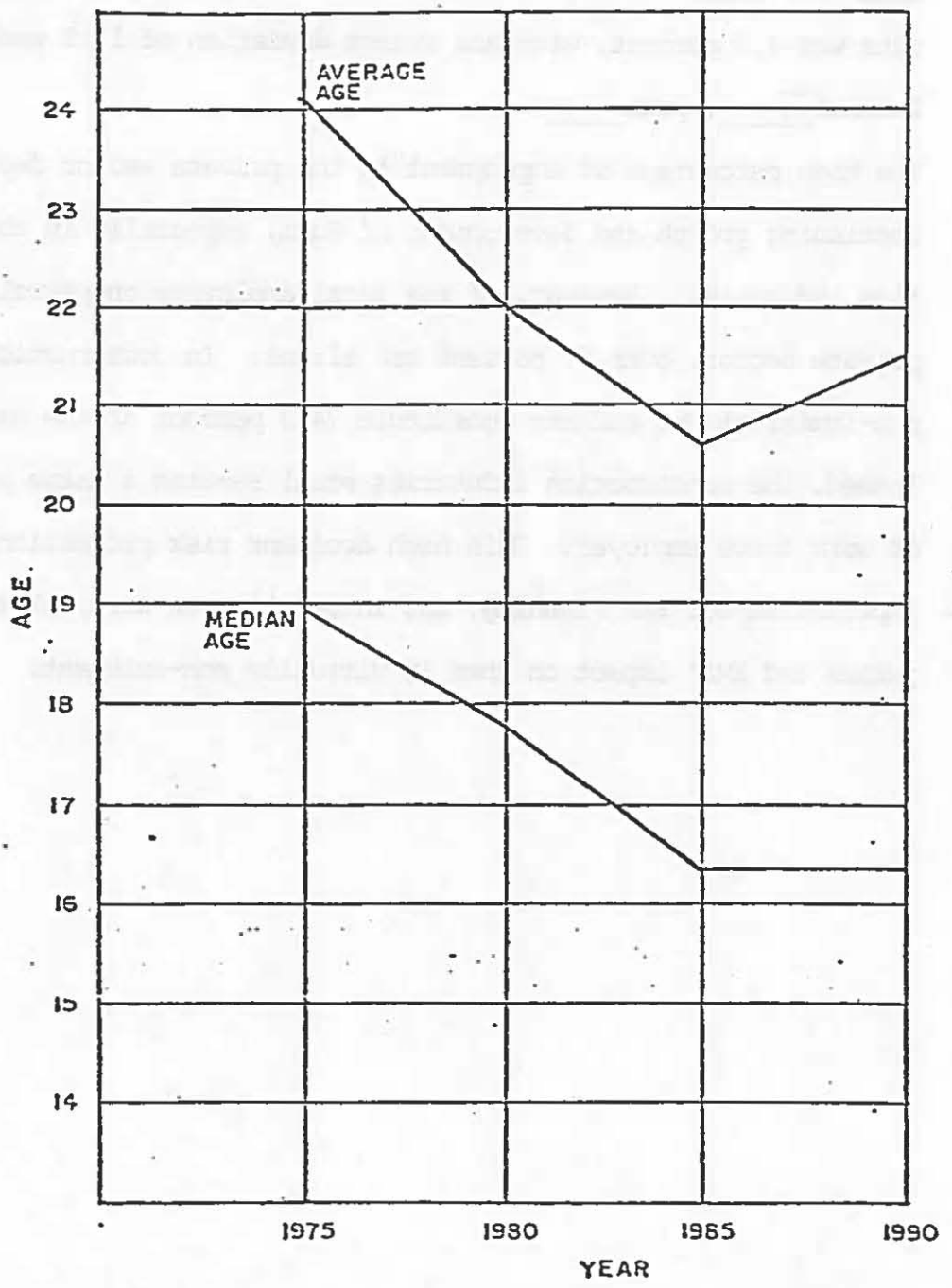
EXHIBIT II -13

PERCENT DISTRIBUTION OF PROJECTED POPULATION ON GUAM BY AGE GROUP



SOURCES: 1975, BUREAU OF LABOR STATISTICS, GOVERNMENT OF GUAM.
1980-1990, QUINTON-DUDLONG.

PROJECTIONS FOR MEDIAN AND AVERAGE AGE OF POULATIONS ON GUAM, 1975-1990



SOURCE: 1975, BUREAU OF LABOR STATISTICS, GOVERNMENT OF GUAM.
1980-1990, QUINTON-BUDLONG.

[illegible], page [illegible]). As of December, 1977, the total unemployment rate was 6.9 percent, with and avarge diviation of 11.5 weeks (See Exhibit [illegible], page [illegible]).

The high percentage of employment in the private sector depicts the continuing growth and development of Guam, especially in the construtions industries. However, of the total employees on payrolls in the private sector, over 47 percent are aliens. In construction alone, non-immigrant H-2 workers constitute 74.3 percent of the employees. Indeed, the construction industries still remains a large percentage of work force employer. This high accident risk profession has implications for EMS Planning, but information on work related injuries and EMS' impact on them is virtually non-existent.

EXHIBIT II - 15

EMPLOYEES ON PAYROLLS ON GUAM, BY INDUSTRY 1971 — 1977

INDUSTRY DIVISION	NUMBER (IN THOUSANDS) 71 SEPT.	72 SEPT.	73 SEPT.	74 SEPT.	75 SEPT.	76 SEPT.	77 SEPT.
TOTAL	26.8	30.4	38.0	37.0	33.8	29.5	32.6
TOTAL PRIVATE	14.3	17.0	22.6	21.1	18.4	15.6	18.0
FEDERAL	5.9	6.1	7.4	7.2	6.2	6.4	6.5
TERRITORIAL	6.6	7.3	8.0	8.7	9.2	7.5	8.1

SOURCE: BUREAU OF LABOR STATISTICS, DEPARTMENT OF LABOR, GOVERNMENT OF GUAM

EXHIBIT II - 16

IGHLIGHTS OF THE EMPLOYMENT AND UNEMPLOYMENT SITUATION ON GUAM - 9/75 to 12/77

	SEPT. 1975	SEPT. 1976	DEC. 1977
CIVILIAN LABOR FORCE	28,090	26,910	28,420
TOTAL EMPLOYMENT	25,390	24,600	26,460
TOTAL UNEMPLOYMENT	2,700	2,320	1,960
UNEMPLOYMENT RATES (% OF LABOR FORCE)	9.6	8.6	6.9
AVERAGE DURATION OF UNEMPLOYMENT (WEEKS)	6.7	7.1	11.5

TE: SUM OF INDIVIDUAL ITEMS MAY NOT EQUAL TOTALS DUE TO ROUNDING. DATA ON UNEMPLOYMENT AND LABOR FORCE DOES NOT INCLUDE NON-IMMIGRANT ALIENS.

JRCE: BUREAU OF LABOR STATISTICS, DEPARTMENT OF LABOR, GOVERNMENT OF GUAM

III. DESCRIPTION OF FACTORS WHICH IMPACT OR POTENTIALLY IMPACT ON THE EMS SYSTEM

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A. TRANSPORTATION

Guam's transportation links to the world are aircraft and ships. Unlike the continental U.S. Guam's off-island transportation is affected by the Jones Act which prohibits foreign ships or planes from traveling between two U.S. parts. Exceptions can be made on a case by case basis. For example, foreign airline companies with routes to the U.S. Can apply on a yearly basis to refuel on Guam.

(1)a. AIR TRANSPORTATION

The island is dependent upon airline carriers for transporting individuals; also some cargo is flown in. Guam is serviced by two foreign airline carriers, Air Nauru and Japan Airline; the latter bringing tourists to the island daily; and two domestic carriers, Pan American Airways, which has a daily flight to and from Hawaii and Continental Air Micronesia which has flight to and from Hawaii three times a week. The island also has several smaller domestic airlines which service the Northern Marianas.

Guam's dependence upon international flights, foreign and domestic, makes the island vulnerable to the economic and political powers of airline companies. This potentially impacts the EMS system in two ways:

(1) added costs of equipment

(2) potential for airline accidents

involving large numbers of people, exacerbated by frequent military

(Navy and Air Force) flights. Attempts have been made to develop a coordinated airline disaster plan. However its effectiveness has yet to be evaluated.

5. WATER TRANSPORTATION

Guam has a well protected, deep water harbor which facilitates shipping. Due to the prohibitive cost of air freight, most of the island's food supplies

Guam is serviced by two major domestic shipping lines. There are numerous foreign lines which service Guam also.

Apra harbor has a wharf for ~~many~~ NAVY ammunition ships. The implication for EMS is obvious. The ammunition handling activities at the harbor can endanger thousands of lives and the economy of Guam should an explosion occur. Located within the two mile radians — danger zone are the Commercial Port Facilities, Cabras Island Industrial Park ~~Corcomodating~~ Mobiel/Esso facilities, Guam Oil Refinery fuel ~~pieor~~ pier, Kaiser Cement Company and a feed mill), the Navy Ship Repair Facility, Navy family housing, fuel piers, a power barge and other civilian and Navy Facilities. Since waivers have been granted to handle ships with explosive cargo up to nine million pounds net explosives, an explosion of this magnitude within the area will substantially and adversely affect the island.

Site selection problems, deletion of 43 million dollars from the 1980 Defense Budget, and the agreement signed in 1966 by Governor Manuel Guerrero exempting the federal government for any damage caused by an explosion at the wharf have resulted in relocation delays.

However, it is critical that the Navy relocate its ammunition wharf to ensure the safety of those within the area and to allow for expansion of civilian facilities. In addition, the Navy, and the Government of Guam (Civil Defense, EMS, Public Safety and the Governor's Office), must develop a joint disaster plan detailing responsibilities, resources capabilities and procedures to the followed should a disaster of this magnitude occur.

Although most of the ships coming into Guam carry commodities and due to containerization have small areas, passenger ships also come into Guam's port. The passenger ships, which origninated either in Japan or Australia, brought 6,100 tourists to Guam in 1977. The ability of both the military and local government to handle a passenter ship disaster has yet to be determined.

With the exception of explosive carrying vessels, it appears that shipping has a small potential impact on EMSS planning. The cost of shipping of goods however does affect the price of EMS supplies and equipment.

e. GROUND TRANSPORTATION

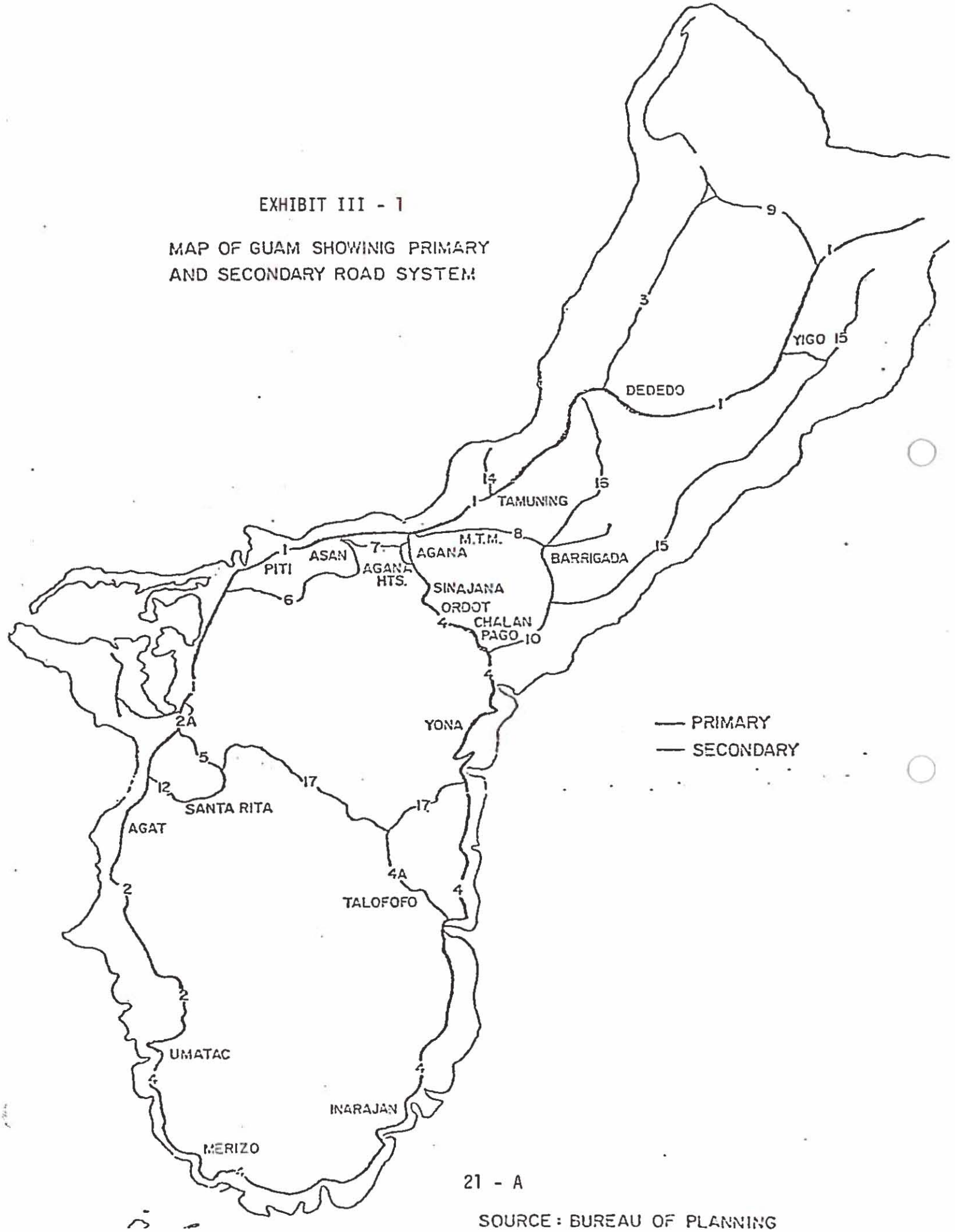
Guam has 256 miles of road, most of which are primary and secondary highways originally constructed by the military shortly after World War II (See Exhibit ../ , page ..). The traffic handling capacity of the road system is often inadequate; in many cases, there are few or no alternative routes between on village and another.

There are five classifications of roads on Guam, these are:

1. Trunk Highways: There are 38 miles of road which connect

EXHIBIT III - 1

MAP OF GUAM SHOWINIG PRIMARY AND SECONDARY ROAD SYSTEM



SOURCE : BUREAU OF PLANNING

the major centers of population and major traffic generators and carry large volumes of traffic for relatively long distances. Volumes are greater than 20,000 vehicles per day.

2. Major Highways: There are 18 miles of road which connect major population centers and traffic generators to small population of traffic over relatively long distances. Volumes ususally reach or are greater than 10,000 vehicles per day.
3. Minor Highways: There are 56 miles of road which connect smaller communities and lesser traffic generators to higher volume highways, minor highways also provide access to adjacent land. Volumes are generally less than 10,000 vehicles per day.
4. Collector Roads: There are 24 miles of road which funnel traffic to the higher order highways from surrounding level uses such as residential areas, industrial areas and institutional areas. Volumes are generally equal to or greater than 3,000 vehicles per day.
5. Local Roads: There are 103 miles of paved roads and 17 miles of unpaved roads. Primarily, they provide access to abutting residential land, both in urban and rural areas. Volume is generally less than 3,000 vehicles per day.

Although roads are being widened and resurfaced, much of the road system is currently in poor physicial condition. Many of the roads exhibit frequent surface and foundation failures or have inadequate drainage and shoulders. There are also few guard rails in those

areas needing them. In rainy weather the roads are very slippery due to the coral base in the paving material. There are few pedestrian walks and no separate bike lanes. Compared to Hawaii which has 134 registered vehicles per mile of road, Guam has 260 vehicles per mile of road. As a result of these and other factors. Guam has a high rate of motor vehicle related accidents. In 1976 alone, Guam had a total of 4,222 reported accidents/ Of which 54 involved pedestrians, 670 resulted in injuries and 20 in fatalities. Locally, Guam's major form of transportation is the personal automobile. Although there are privately owned taxi cabs, there is no mass transit or handibus system to meet the needs of those who are disabled, aged or poor. This impacts on the Ambulance system since many non-emergent 'transportation' runs are made in order to provide transport for patients who need medical service, but have no means of transportation. This problem will be addressed in the system goals section.

2. HIGHWAY SAFETY IMPACT PROBLEM AREAS

The Office of Highway Safety (OHS) of the Department of Public Works administers Department of Transportation/National Highway Safety Traffic Administrations, DOT/NHSTA funds. In their 1981 Highway Safety Plan, the OHS has identified the following problem areas:

a. Speed and Alcohol Involvement

Speed and alcohol were found to be significant contributing factors when examining Guam's fatal and injury traffic accident experience. For the time period from January 1978 through December

1979, 30.2% of the 10,010 total traffic accidents that occured on the island were attributed to the driver violation classified classified as "speed-impendent driving." As such, speed was the number one identifiable violation causing those traffic accidents. Speed involvement takes an added importance when considering only those traffic accidents resulting in death or injury. Of the 1,618 fatal and injury traffic accidents occuring during the same time period 43.8% were related to speed.

The significance of alcohol in relation to the island's traffic accident experience is evident. For the time period from January, 1978 through December, 1979, only 4% of all traffic accidents resulted in "driving under the influence" citations whereas 13.0% of all fatal traffic accidents were cited in that manner. Although neither of these percentages indicate a highway safety problems when analyzed separately, the large disparety between the two percentages indicate that the incidence of drinking driver traffic accidents not involving death has been underreported. On increased enforcement effort directed towards citing the drinking driver during 1980 supports this opinion.

b. YOUNG DRIVER INVOLVEMENT

Young drivers were identified in several of the problem areas. Not only did they experience a high level of involvement in the total accident experience, but they also were over-represented in driver at fault traffic accidents, speed-related and alcohol-related fatal traffic accidents, motorcycle accidents and pedest-

rain accidents. For the time period from January 1978 through December 1979, drivers between the ages of 15 and 24 were cited as the drivers at fault in 31.8% of all traffice accidents; and in 40.6% of the speed-related and 33.3% of the alchol-related fatal traffic accidents. Furthermore, it was found that 65.3% of the motorcyclists and their passengers involved in traffic accidents were between the ages of 15 and 24, as were 37.3% of the dirvers who were involved in pedestrian accidents.

During that same period of time, drivers between the ages of 25 and 34 were cited as the driver-at-fault in 25.5% of all traffic accidents; and in 28.1% of all speed-related and in 66.7% of all alcohol-related fatal traffic accidents. It was also found that 20.8% of the motorcyclist and their passengers involved in traffic accidents and 25.5% of the drivers involved in pedestrian accidents were between the ages of 25 and 34.

3.) PEDESTRIAN AND BICYCLE INVOLVEMENT

Guam's pedestrian accident experience is not only on the increase but the severity rate associated with those types of traffic accidents is disproportionately high. Of the 10,010 traffic accidents that occured in the 12 month period ending December 1979, 1.0% were classified as pedestrian accidents. However, it was found that 5.8% of the fatal and injury traffic accidents during that some time period were pedestrian accidents. Of all the pedestrians killed or injured in 1979, 52.9% were 14 years old or younger.

It was also found that the severity rate associated with bicycle accidents is disproportionately high. Although .1% of the total traffic accident experience from January, 1978 to December, 1979 involved bicyclists, .7% of the injury accidents were of this classification. Furthermore, 45.5% of the injured bicyclists were between the ages of 0 and 10 years of age, with another 27.3% being between 11 and 14 years of age.

4. MOTORCYCLE AND MOPED INVOLVEMENT

Motorcycle and moped involvement in Guam's traffic accident experience was identified as a problem are due to its disproportionately high severity rate. Of the 10,010 traffic accidents reported in the 12 month period 1.3% involved motorcycles. However, motorcycles were involved in 5.1% of the fatal and injury traffic accidents occuring during the same period of time.

Although the island's experiene with mopeds is limited and the magnitude of moped accidents does not appear to be overwheming, the growth potential for this made of travel suggests that an increase in moped accidents may occur over the next few years. During 1979, the moped operators and their passengers sustained injuries in each of the moped accidents which occurred.

5. PICK-UP TRUCK INVOLVEMENT

The pick-up truck plays a major role in the culture of Guam, being a common means of transporation and an inherent part of family life. This type of vehicle was identified as a problem area due to its high level of involvement in traffic accidents. For the

same 12 month period, pick-up trucks were involved in 20.2% of the traffic accidents that occurred on the island, and in 22.2% of the fatal and injury traffic accidents. It is estimated that only 12.1% of the registered motor vehicles are classified on pick-up trucks.

SUMMARY ON HIGHWAY SAFETY PROBLEM

Since the inception of Guam's Highway Safety Program in 1974, the island's traffic accident trends have revealed that the diverse efforts aimed at reducing deaths, injuries and economic loss attributed to traffic accidents must be continued if the traffic problem on the island is to be corrected.

Three principal indicators that reflect Guam's traffic accident trends are the accident rate, injury rate and death rate per mile, each of which is based on the number of vehicle miles traveled on the island in relation to the incidence of total traffic accidents, and their resulting injuries and death. The accident rate has declined from 979.4 per 100 million vehicle miles of travel in 1974 to 923.8 accidents per 100 million vehicle miles in 1979. Likewise, the injury rate has declined from 259.9 injuries to 251.3 during that same time period. In spite of those favorable trends toward decrease, the death rate has increased from 5.9 in 1974 to 6.5 in 1979 (See Exhibit ____, page ____).

Prior to any further discussion on accident trends, a distinction should be made between "traffic" and "non-traffic" accidents. Traffic accidents are defined as all accidents other than those occuring in parking lots, whereas "non-traffic" accidents refer exclusively to

parking lot areas. From 1974 through 1977, Guam's Highway Safety Program was structured around only those occurences that were classified as "traffic" accidents. However, during 1978 and 1979, an insufficient quantity and quality of statistical data was available by which to differentiate "traffic" from "non-traffic" accidents. As a consequence, the data contained in this plan concerning 1978 and 1979 traffic accident trends is a compilation of the "traffic" and "non-traffic" related accidents that occurrred over that two year time period. The significance of the two categories will be damped out due to this compilation. Current efforts, directed towards collecting the required statistical data for distinguishing between "traffic" and "non-traffic" accidents, will result in adjustment of these 1978 and 1979 data computations. The significance of the inlcusion of "traffic" and "non-traffic" accidents in the 1978 and 1979 accident computations in that the accident trends for that two year period are much higher than they normally would be. During 1978, a total of 897 of the 5,195 accidents were classified as "non-traffic" accidents. Of the 4,815 accidents occuring in 1979 a total of 913 were classified in that same manner. Following an adjustment of the 1978 and 1979 accidente computations, it is expected that Guam's traffic accident situation for those two years will show a favorable trend in reducing the incidence of traffic accidents as well as decreasing the death and injury rates per mile.

An average of three years of traffic accident; driver license and vehicle mileage data have been computed and compared to like

figures for 1979. Those Comparisons show that the incidence of fatal traffic accidents remained uncharged, personal injury accidents increased 5.1% and total accidents increased 4.9% and the number of licensed drivers increased 1.0%; and the number of vehicle miles of travel decreased 4.5% (See Exhibits ___ through ___ page ___).

C3. MORTALITY AND MORBIDITY INDICATEORS IMPACTING THE EMS SYSTEM

While it is time that ideally every Emergency Medical Services System must be capable of responding to and meeting the needs of all potential emergent situations; it is more practical given limited resources for a developing system to concentrate on those health status conditions that are most prevalent and can potentially be alleviated by pre-hospital care. For this reason, the following selected health status indicators were chosen:

(1)a. LEADING CAUSES OF DEATH

Mortality data by cause of death has long been recognized as an essential informational component for health status assessment. The indicators below are particularly important to EMS development since it is known that early intervention via pre-hospital i.e., Emergency Medical Care can reduce the mortality and lessen the severity of the aftermath of certain conditions.

The time period of this study of indicators is the seven year period from 1971 to 1977. This period was selected by the Guam Health Planning and Development Agency to reflect long term trends, if any were to be identified, and to provide an adequate range of data from which to derive average rates where desired. (See Exhibits

EXHIBIT III - 3

Accidents by Severity

	1977	1978	1979	3 Year Average	1979 % of Change
Fatal Accidents	36	19	27	27	.0
Injury Accidents	717	770	802	763	+ 5.1
TOTAL	753	789	829	790	+ 4.9

Comments: Table 3 displays the 1977 through 1979 accidents by severity. A trend analysis is included, based on a three year average of the 1977 through 1979 data as compared to the last year, 1979.

EXHIBIT III - 4

Accident Severity Rate Index

	1977	1978	1979	3 Year Average	1979 % of Change
Fatalities	38	20	34	31	+ 9.7
Injuries	1,031	1,158	1,276	1,155	-10.5
TOTAL	1,069	1,178	1,310	1,186	-10.5
TOTAL ACCIDENTS	3,724	5,195	4,815	4,578	+ 5.2
INDEX	28.7%	22.7%	27.2%	25.9%	+ .5

Comments: Table 4 displays the 1977 through 1979 accident severity rate index, which is defined as the composite number of traffic fatalities and injuries as compared to the total number of traffic accidents. A trend analysis is included, based on a three year average of the 1977 through 1979 data as compared to the last year, 1979.

EXHIBIT III - 5

Licensed Guam Drivers

Age of Driver	Male	Female	Total	% of Total
Under 20	5,045	3,526	8,571	15.5
20 - 24	4,988	4,851	9,839	17.8
25 - 29	4,930	4,786	9,716	17.6
30 - 34	3,914	3,458	7,372	13.4
35 - 39	3,314	2,415	5,729	10.4
40 - 44	2,807	1,721	4,528	8.2
45 - 49	2,635	1,091	3,726	6.7
50 - 54	2,110	628	2,738	5.0
55 - 59	1,206	294	1,500	2.7
60 - 64	715	135	850	1.5
65 - 69	312	50	362	.7
69 & Older	245	35	280	.5
TOTAL	32,221	22,990	55,211	100.0

Comments: Table 5 displays the age and sex of Guam's resident license driving population. This table is based on all drivers who were actively licensed with the Department of Revenue and Taxation as of December 31, 1979. The driver licensing data originally included age classification data on 6,002 drivers for which sex was not recorded. The figures indicated above were adjusted to incorporate those persons by adjusting the occurrence of male and female drivers in each age group based on their known representation in each age group.

EXHIBIT III - 6

Licensed Guam Drivers

1977	1978	1979	3 Year Average	1979 % Of Change
52,059	56,743	55,211	54,671	+ 1.0

Comments: Table 6 contains the island's driver licensing levels for the years 1977 through 1979. A trend analysis is included based upon a three year average of the data as compared to the last year, 1979.

EXHIBIT III - 7

Miles Traveled in Guam

1977	1978	1979	3 Year Average	1979 % Of Change
549,000,000	565,200,000	521,200,000	545,133,000	- 4.5

Comments: Table 7 contains the island's number of vehicle miles traveled for the years 1977 through 1979. A trend analysis is included based upon a three year average of the data as compared to the last year, 1979.

(__ through __, Page __)

The five leading causes of death over this time period were:

- heart disease
- cancer
- motor vehicle accidents
- diseases of early infancy
- and non-motor vehicle accidents

The accounted for just over 50% of the average total number of deaths from 1971 to 1977 heart disease alone accounted for 18% of deaths during this period.

There was very little variance in the rankings of the ten leading causes throughout the period. However, diabetes, congenitalanonilies; homicide, and suicide did fluctuate from year to year as the tenth leading cause.

L. INFANT MORTALITY

People are subject to a high risk of death during the first year of life. The infant mortality rate has been widely used as an indicator of the health conditions of a community.

Many infant deaths on Guam have been atributed to congenital anowakes and diseases of early infancy.[3]

The U.S infant mortality rate has been steadily declining each year since 1962. Guam infant mortality rates have also shown a downward trend from 1973 to 1977. For 1972 to 1975 Guam's infant mortality rates were higher than the U.S. The infant mortality rate for

SUMMARY TABLE OF LEADING CAUSES
OF DEATH AVERAGED OVER 1971—1977

RANK	CAUSE OF DEATH	AVERAGE NO. OF DEATHS	RATE/1000	% OF TOTAL AVG. DEATHS
1	HEART. DISEASE	75.3	1.02	17.9
2	MALIGNANT NEOPLASMS	37.7	0.51	9.0
3	MOTOR VEHICLE ACCIDENTS	34.3	0.46	8.1
4	DISEASES OF EARLY INFANCY	31.6	0.43	7.5
5	NON-MOTOR VEHICLE ACCIDENTS	29.1	0.39	6.9
6	CEREBROVASCULAR DISEASE	26.8	0.36	6.4
7	PNEUMONIA	21.0	0.28	5.0
8	OTHER DISEASE OF CNS (ALS/PD)	18.4	0.25	4.4
9	CIRRHOSIS OF THE LIVER	13.3	0.18	3.1
10	DIABETES	11.1	0.15	2.6
11	CONGENITAL ANORMALIES	10.8	0.15	2.6
12	HOMICIDE	8.7	0.12	2.1
13	SUICIDE	7.4	0.10	1.8
	ALL OTHER CAUSES	95.1	1.28	22.6
	ALL CAUSES	420.6	5.68	100.0

SOURCE: STATISTICAL REPORTS 1971-77, OFFICE OF VITAL STATISTICS, DPHSS.

the U.S. in 1975 was 16.1 per 1000 live births in comparison to Guam's ~~infant mortality rate in 19~~ 21 per 1000. Guam's infant mortality rate in 1975 was third to the highest in the nation. (See Exhibit ___, page ___) (Figure IV.13).

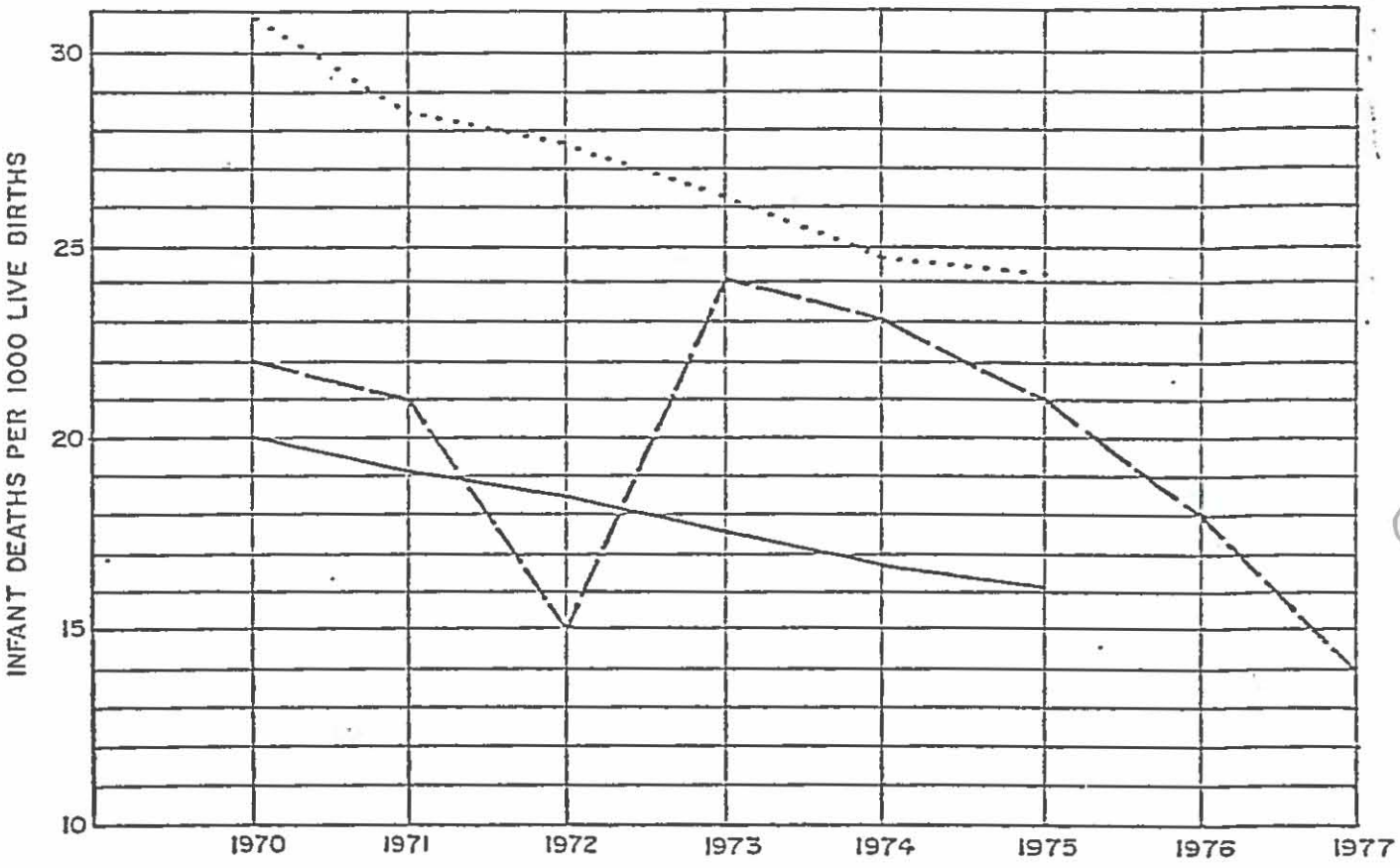
Guam's infant mortality rates have shown a downward trend since 1973 (See Exhibit ___, page ___) (Figure IV.14). The Guam infant mortality rate is 2 per 1000 higher than the national health goal of 12 per 1000 or less live births.

On the average, there were 63 infant deaths yearly from 1970 to 1977. Males accounted for 58% of the average yearly infant deaths. Municipalities with infant mortality rates above 20 per 1000 live births include Inarajan, Umatac, Santa Rita, Agat, Dededo, Agana Heights, Mangilao, Sinajana and Yona or almost half of the 19 designated municipalities of Guam.

Due to the high risk of dying in the first few weeks of life and the different in the causes accounting for infant deaths at the earlier and later stages of infancy, the infant mortality rate may be ~~browken~~ down into neonatal and postneonatalrates. Causes of very early (neonatal) infant deaths tend to be congenital anowalies injuries at birth, prematurity and other cause which are not easily prevented by modern medical and helath measures. On the other hand, causes of later (post-neonatal) infant deaths such as infections diseases and nutritional problemss are more easily corrected by modern health approaches.

a. NEONATAL MORTALITY

INFANT MORTALITY RATES :1970-1977



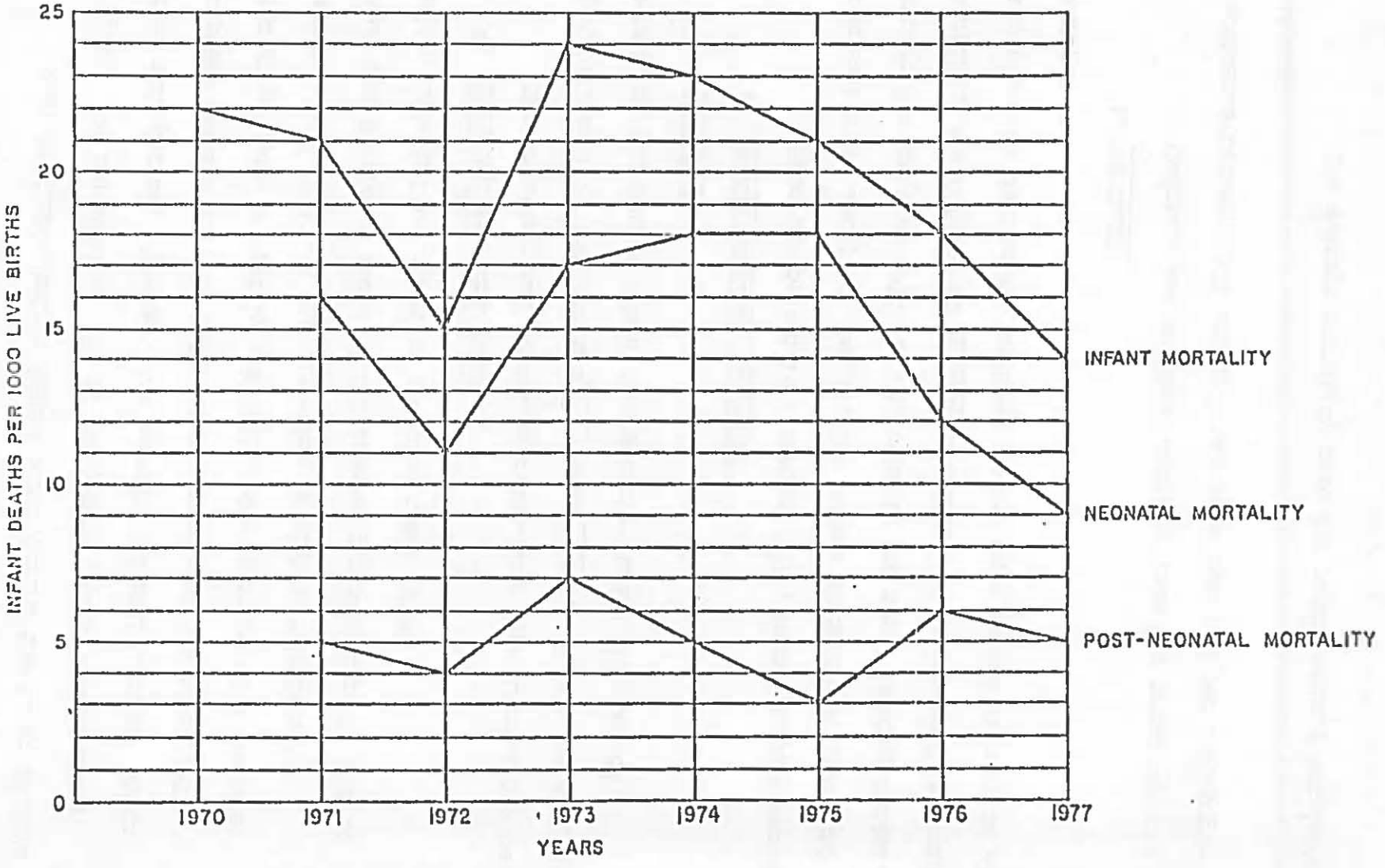
..... = U.S., ALL OTHERS EXCEPT WHITE.

———— = GUAM.

———— = U.S., ALL RACES.

SOURCE: HEALTH UNITED STATES 1976-1977, U.S. DHEW.
STATISTICAL REPORTS 1970-77, OFFICE OF VITAL STATISTICS, DPHSS.

GUAM INFANT MORTALITY RATES: 1970-77
NEONATAL AND POST-NEONATAL



SOURCE: STATISTICAL REPORTS 1970-77, OFFICE OF VITAL STATISTICS, DPHSS

Most of Guam's infant deaths occur during the first 28 days of birth. On the average, 75% of the yearly infant deaths occur during this period. However, the neonatal mortality rates, which increased between 1972 to 1974, have been decreasing since 1975. Although no data is readily available, the addition of a neonatal intensive care unit and the targeting of high incidence rate areas (See Section 1 above) for increased prenatal care by Public Health, have had an impact on reducing these rates.

b. POST-NEONATAL MORTALITY

The post-neonatal mortality rates have been fluctuating between 1971 to 1977 (See Exhibit ___, page ___). On the average, 25 percent of the yearly infant deaths occur during this period.

2. ACCIDENTS

a. MOTOR VEHICLES ACCIDENTS

From the period 1971 through 1977, motor vehicle accidents averaged third among the ten leading causes of death on Guam, and except for the year 1974, it has been in the top 5 leading causes. Accidents are defined as traffic accidents or as non-traffic accidents according to whether the accident occurs on a public highway or elsewhere.

i. MORTALITY

Overall, the average mortality rate for motor vehicle accidents between 1971 and 1977 was less than 0.5 per 1000 population.

The average mortality rate for motor vehicle accidents

EXHIBIT III - 11

FREQUENCY DISTRIBUTION OF INFANT MORTALITY
1970-1977

YEAR	BOTH SEXES	DISTRIBUTION BY ETHNICITY				TOTAL	MALE		TOTAL	FEMALE	
		GUAMANIAN	FILIPINO	CAUCASIAN	OTHERS		NEONATAL	POST NEONATAL		NEONATAL	POST NEONATAL
1970	62	36	8	11	7	38	N/A	N/A	24	N/A	N/A
1971	63	34	9	12	8	42	31	11	21	17	4
1972	49	22	4	16	7	25	19	6	24	17	7
1973	76	70	1	4	1	43	29	14	33	25	8
1974	75	42	12	14	7	43	34	9	32	25	7
1975	65	26	12	11	15	35	30	5	30	26	4
1976	55	30	11	11	3	30	20	10	25	17	8
1977	46	N/A	N/A	N/A	N/A	24	N/A	N/A	22	N/A	N/A
YEARLY AVERAGE	61	37	8	11	7	35	27	9	26	21	6

NOTES: 1. N/A = NOT AVAILABLE.
2. NEONATAL = 0-28 DAYS.
3. POST NEONATAL = 29 DAYS - UNDER 1 YEAR.
4. AVERAGE COLUMN MAY NOT ADD UP TO TOTAL AVERAGE.

... REPORTS 1970-77 OFFICE OF V... STATISTICS, DPHSS

almost doubles the average for the U.S., except for 1974. U.S. rates show a decline in mortality rates for the years 1972 to 1975; whereas, Guam's rates shows no definite pattern. The rates for 1976 and 1977 were .330 and .465 per 1000 respectively.

According to information in a recent Highway Safety Plan, accidents, fatalities and injuries on Guam are rising at rates proportional and higher than that of the motor vehicle population. In Guam most accidents occur during daylight hours but most fatalities occur at night. The pedestrian death rate is 30% higher than in the U.S., with most pedestrian fatalities occuring at night among males.

b. NON-MOTOR VEHICLES ACCIDENTS

On the average, for the years 1971 through 1977, non-motor vehicle accidental deaths ranked fifth among the ten leading causes of death on the island. Except for motor vehicle accidents, all other types of accidents are death with in this section (i.e., water and air transportation, poisoning, follo, fire and flames, drowning, suffocation, mechanical suffocation, hit by object, firearm missles, electric current, machinery, nature, etc.)

i. MORTALITY FROM NON-MOTOR VEHICLES ACCIDENTS

There was an average of 29 accidential deaths per year from 1971 to 1977. The highest number of deaths (38) occured in 1974 and the lowest (21) occurred in 1977. Where expressed in rates per 1000 Guam averaged .4 death per 1000 during this period. Although apparently low, Guam's rates exceed U.S. rates (See Exhibit ___, ___, ___ page ___).

FREQUENCY DISTRIBUTION OF ACCIDENTAL ACCIDENTS MORTALITY 1971 - 1977[a]

	TOTAL	SEX		AGE GROUP													
				0 - 4		5 - 14		15 - 24		25 - 44		45 - 64		65 - 74		75/OVER	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
	25	22	3	2	0	1	0	10	0	6	0	3	2	0	0	0	1
	36	28	8	0	2	2	2	9	1	12	0	5	2	0	0	0	1
	34	32	2	7	1	0	0	6	0	8	1	7	0	1	0	3	0
	38	25	13	4	5	1	3	8	1	9	3	2	0	0	1	1	0
	25	19	6	1	1	1	0	3	0	7	2	1	1	1	0	2	2
[b]	25	23	2	0	0	0	0	9	0	5	2	7	0	0	0	2	0
	21	14	7	1	3	1	0	3	1	6	3	1	0	2	0	0	0
	29	23	6	2	2	1	1	7	.5	7	1	4	1	.5	.0	1	.5

XCLUDES ACCIDENTAL DEATHS DUE TO MOTOR VEHICLES, HOMICIDE, SUICIDE, AND OTHER EXTERNAL AUSES.

XCLUDES AIRPLANE CRASH VICTIMS (46)

RCE: STATISTICAL REPORTS 1971-77, OFFICE OF VITAL STATISTICS, DPHSS

EXHIBIT III - 13

CCIDENTAL ACCIDENTS MORTALITY RATIO BY AGE GROUP PER 100 TOTAL DEATHS BY AGE 1971-1977[a]

R	AGE GROUP													
	0 - 4		5 - 14		15 - 24		25 - 44		45 - 64		65 - 74		75/OVER	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
	4.26	0	20	0	25	0	18.75	0	4.76	6.25	0	0	0	4
2	0	6.9	25	40	33.33	9.09	23.53	0	6.25	5	0	0	0	2.7
3	14.8	2.78	0	0	19.35	0	20	6.25	7.61	0	3.45	0	12.5	0
4	8.7	12.82	25	75	30.77	10	18.75	17.64	2.6	0	0	3.85	3.7	0
5	2.56	2.86	25	0	9.37	0	17.07	16.67	3.57	2.56	3.03	0	7.14	5.88
6[b]	0	0	0	0	30	0	10.42	20	8.33	0	0	0	6.9	0
7	4.17	12	20	0	8.57	14.28	15	15.79	1.15	0	6.25	0	0	0
GE	4.93	5.34	16.43	16.43	22.34	4.77	17.65	10.9	4.9	1.26	1.82	.55	4.32	1.8

CLUDES ACCIDENTAL DEATHS DUE TO MOTOR VEHICLES, HOMICIDE, SUICIDE AND OTHER EXTERNAL CAUSES.

CLUDES PLANE CRASH VICTIMS (- . IN ACCIDENT RATE & PER 100 CALCULATIONS.

EXHIBIT III - 14

ACCIDENTAL ACCIDENTS MORTALITY RATIO PER 100 TOTAL DEATHS[a]

1971 - 1977

YEARS	TOTAL	SEX	
		MALE	FEMALE
1971	6.87	9.02	2.5
1972	8.8	11.52	4.82
1973	7.81	11.98	1.2
1974	8.46	9.29	7.22
1975	5.67	6.55	3.97
1976[b]	5.95	7.64	1.44
1977	5.53	5.76	5.10
AVERAGE	7	9	4

a. EXCLUDES ACCIDENTAL DEATHS DUE TO MOTOR VEHICLES, HOMICIDE, SUICIDE AND ALL OTHER EXTERNAL CAUSES.

b. EXCLUDES AIRPLANE CRASH VICTIMS (46)

SOURCE: STATISTICAL REPORTS, 1971 - 1977; OFFICE OF VITAL STATISTICS, DPHSS

FREQUENCY DISTRIBUTION OF MOTOR VEHICLE ACCIDENT MORTALITY 1971-1977

R	TOTAL	SEX		AGE GROUP													
				0 - 4		5 - 14		15 - 24		25 - 44		45 - 64		65 - 74		75/OVE	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
	39	33	6	1	0	3	2	20	3	6	1	2	0	0	0	1	0
:	36	29	7	0	0	1	1	10	3	14	3	4	0	0	0	0	0
;	43	38	5	1	0	0	2	15	1	12	2	9	0	1	0	0	0
:	25	20	5	0	1	2	0	4	1	10	3	3	0	1	0	1	0
;	33	27	6	2	0	1	0	9	2	7	1	8	3	0	0	0	0
;	26	25	1	0	0	2	0	6	0	16	1	1	0	0	0	0	0
7	38	27	11	1	3	1	0	11	2	11	4	1	3	1	0	0	0
:	34	28	6	1	.50	1.50	1	11	2	11	2	4	1	.50	0	.28	0

E: STATISTICAL REPORTS 1971-77, OFFICE OF VITAL STATISTICS, DPHSS

EXHIBIT III - 15

ACCIDENTAL ACCIDENTS MORTALITY RATE PER 1,000 POPULATION 1971-1977[a]

AR	TOTAL	SEX		AGE GROUP													
				0 - 4		5 - 14		15 - 24		25 - 44		45 - 64		65 - 74		75/OVE	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	.37	.61	.1	.39	0	.11	0	1.37	0	.61	0	.71	.65	0	0	0	3.8
2	.52	.76	.25	0	.37	.23	.24	1.25	.15	1.17	0	1.14	.64	0	0	0	3.8
3	.48	.84	.06	1.12	.11	0	0	.84	0	.75	.12	1.54	0	1.75	0	15.82	0
4	.51	.63	.38	.58	.56	.11	.35	1.13	.15	.82	.35	.42	0	0	1.69	5.1	0
5	.33	.47	.17	.13	.14	.11	0	.43	0	.62	.22	.82	.3	1.59	0	10.56	8.
6[b]	.32	.55	.05	0	0	0	0	1.24	0	.44	.22	1.39	0	0	0	9.76	0
7	.26	.32	.18	.12	.13	.1	0	.4	.14	.52	.32	.19	0	2.91	0	0	0
AGE	.4	.6	.27	.33	.19	.09	.08	.95	.06	.7	.18	.89	.23	.79	.24	5.83	2.2

CLUDES ACCIDENTAL DEATHS DUE TO MOTOR VEHICLES, HOMICIDE, SUICIDE AND OTHER EXTERNAL CAUSES.
TIO ROUNDED TO NEAREST 1/100.
CLUDES AIRPLANE CRASH VICTIMS (46)

Guam's average for the three years (1973-1975) exceeds the U.S. average. In comparison to U.S. rates, which appear to be declining from 1973 to 1975, Guam's rates seen unpredictable for the same period. When Guam's for 1976 and 1977 are included .320 and .260 per 1000 population respectively, there appears to be a progressive downward trend from 1974 to 1977.

c. OCCUPATIONAL ACCIDENTS

The incidence of cases of occupational injury in Guam, expressed as a rate per 100 employees covering all private sector industries has declined from 6.8 in 1974 to 6.0 in 1975 and 4.7 in 1976. During the same period, the incidence rate of injury in the contract construction industry fell from 13.1 cases to 12.2 cases per 100 employees. In 1976, a rate of 21.4 cases per 100 employees was recorded for residential construction. Two of the total of 5 fatalities in that year were registered in the construction sector. The occupational injury incidence rate in the private sector on Guam is less than the U.S. rate for these years.

3. CHRONIC DISEASES

a. HEART DISEASES

Disease of the heart is the leading cause of death in Guam as well as in the nation. Initially, Guam's death rates from heart disease appear to be lower than the national rates (See Exhibit ____, page ____) and most states, because Guam has a relatively young population, while those at risk of dying from heart diseases tend to be older people. If the age distribution of Guam's population

EXHIBIT III - 16

HEART DISEASE MORTALITY RATES, GUAM - U.S.
1971-1977

YEARS	GUAM	U.S.
1971	.77	3.6
1972	1	3.6
1973	.9	3.6
1974	1.1	3.5
1975	1.3	3.3
1976	1.2	N/A
1977	.9	N/A

SOURCE: STATISTICAL REPORT 1971-77, OFFICE OF VITAL STATISTICS, DPHSS

SOURCE: STATISTICAL ABSTRACT OF THE U.S. 1977, U.S. DEPT. OF COMMERC

were similar to the U.S. population, the Guam rates would be higher As an example, the U.S. Crude death rate was 8.9 per 1000 in 1975. Guam's Crude death rate for the same year was 5.8 per 1000. However, age-adjusted death rates, using the U.S. population as a standard was 12.7 per 1000 for Guam.

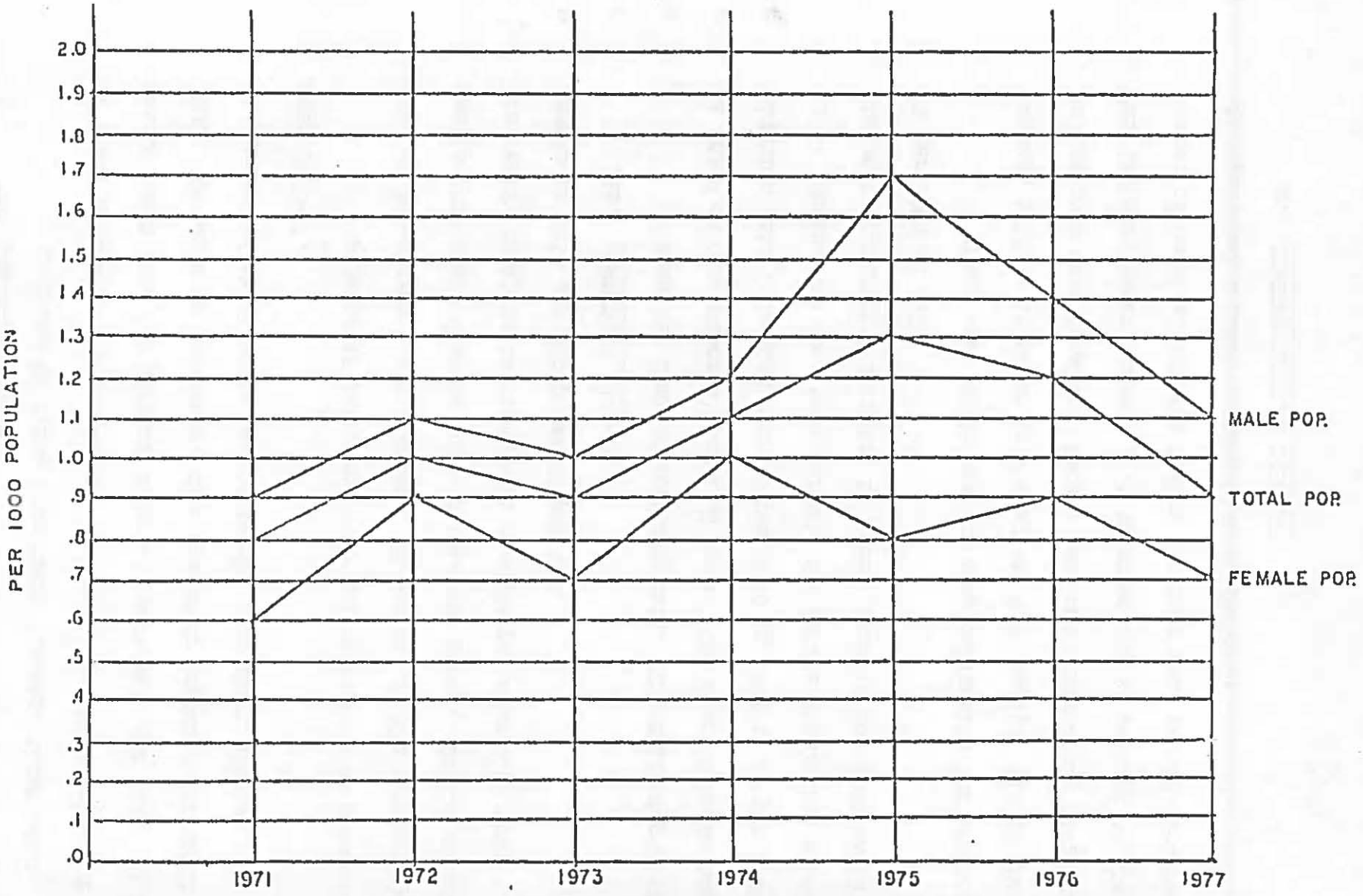
Guam's death rates from heart disease for the years 1972 to 1975 were lower than the national rates. The nation's rates were 3.6, 3.5 and 3.4 per 1000 population. For the same period, Guam's rates were 1.0, 0.9 and 1.1 per 1000.

Guam's death rates from heart disease were consistently higher than the national rates if compared by age group. The 1975 national death rates from heart disease for those 25 to 44 years old were .42 per 1000 for males and .13 per 1000 for females. Comparatively, Guam's rates for the same year and age group were .1 per 1000 males and .2 per 1000 females. In the 45 to 64 age groups U.S. rates were .5.66 per 1000 for mailes and .1.87 per 1000 for females. For the same age group on Guam, the rates were 7 per 1000 for males and 2.7 per 1000 for females.

i. MORTALITY

There is a demonstrable decrease in observed death rates from heart disease from 1971-77 (See Exhibit ___, page ___). The highest recorded death rate; 1.26 per 1000 occurred in 1975. This rate has declined in a two year period to .87 per 1000. Most of the deaths were related to is chemic heart disease. This form of heart disease accounted for almost 80 percent of the total heart disease deaths between 1972-76.

GUAM HEART DISEASE MORTALITY RATES: 1971-1977



SOURCE: STATISTICAL REPORTS 1971-77, OFFICE OF VITAL STATISTICS, DPHSS

ii. AGE DIFFERENCES

In terms of dying from heart disease, those below 45 years of age were generally at low risk. On the average the yearly death rate for persons under 45 years was less than .50 per 1000. In terms of frequency, this age group accounts for about 13 percent of the average yearly deaths from heart disease between 1971-77.

Persons 45 years and over are definitely at greater risk of dying from heart disease. 87 percent of the average yearly deaths from heart disease were in this age group. On the average, the yearly death ratio from heart disease per every 100 total deaths in this age group was 69 per 100.

iii. MORBIDITY 1973-76

Guam has limited morbidty data. The following discussion is based on Guam Memorial Hospital data. The heart disease hospitalization rate increased from 10 per 1000 in 1973 to 13 per 1000 in 1976. During the four year period, the female population experienced the most significant increase in rates, from 10 per 1000 in 1973 to 15 per 1000 in 1976.

There were 3,555 case of hospitalization for heart disease between 1973 to 1976, or an average of 889 yearly. 51% of the hospitalizations were females. People were most frequently hospitalized for ischemic heart disease. It accented for 40 percent of the total number of hospitalizations during the four year period, followed by hypertensive heart disease with 28 percent.

b. CEREBROVASCULAR DISEASE

Nationally, stroke or cerbrovascular disease is the third leading cause of death, however, it is the sixth leading cause of death on Guam. During the seven year period from 1971 to 1977, there was an average of 0.37 deaths per 1000 population on Guam. Nationally, the rate was .099 per 1000 (See Exhibit ___, page ___) In addition, per 100 total deaths, Guam had an average ratio of 6 per year due to cerbrovascular disease, whereas, the national average was 20 per year.

c. END-STAGE RENAL DISEASE

In 1978 there were 28 patients receiving maintenance dialysis for a rate of 0.34 per 1000. In Hawaii, the rate was 0.25 per 1000 and in the U.S. Mainland, 0.20 per 1000. The Guam rate is then 36 percent higher than the U.S. rate.

d. DIABETES MORTALITY

During the period of 1971-76 there was an average rate of 0.16 deaths per 1000 population on Guam Compared to an average rate of 0.18 per 1000 in the United State (See Exhibit ___ page ___). The national rate of deaths to diabetes appears to be decreasing; there is no similar detectable trend on Guam.

When all causes of death were taken into account, Guam had a lower ration of deaths due to diabetes than the U.S. per 100 total deaths. Guam had an average of 0.26 deaths attributed to diabetes whereas the U.S. had 3.7 deaths.

Both nationally and on Guam, femailes were slightly move inclined to die from diabetes (See Exhibits ___ and ___, page ___). On Guam there was an average of 0.12 male compared to 0.19 female

1971 - 1977

ARS	TOTAL	MALE	FEMALE	UNDER 14		15 - 24		25 - 44		45 - 64		65 - 74		75 - OV	
				M	F	M	F	M	F	M	F	M	F	M	
71	.45	.47	.42	0	.08	.14	0	.31	0	1.43	.33	9.75	10.60	10.87	19
72	.36	.27	.47	0	0	.14	.15	.20	.25	.69	1.28	0	1.74	21.28	23
73	.52	.50	.54	0	0	0	0	.38	.24	2.20	1.56	3.50	5.12	15.63	31
74	.35	.36	.35	0	.07	0	0	0	.12	1.70	1.22	3.33	3.36	20.41	15
75	.30	.27	.34	0	0	0	0	.09	0	1.02	.89	4.78	6.70	10.36	20
76	.27	.21	.32	0	0	0	0	.09	.11	.40	1.44	6.09	1.68	9.76	19
77	.32	.30	.34	0	0	0	0	.09	0	2.11	1.67	0	6.70	4.61	11
G. 1-77	.36	.33	.40	0	.02	.04	.02	.17	.10	1.36	1.20	3.92	5.13	13.27	20

RCE: STATISTICAL REPORTS 1971-77, OFFICE OF VITAL STATISTICS, DPHSS

TABLE IV.26

FREQUENCY DISTRIBUTION OF CEREBROVASCULAR MORTALITY
1971-1977

ARS	TOTAL	SEX		UNDER 14		15 - 24		25 - 44		45 - 64		65 - 74		75 - O
		M	F	M	F	M	F	M	F	M	F	M	F	M
971	30	17	13	0	1	1	0	3	0	6	1	5	6	2
972	25	10	15	0	0	1	1	2	2	3	4	0	1	4
973	37	19	18	0	0	0	0	4	2	10	5	2	3	3
974	26	14	12	0	1	0	0	0	1	8	4	2	2	4
975	23	11	12	0	0	0	0	1	0	5	3	3	4	2
976	21	9	12	0	0	0	0	1	1	2	5	4	1	2
977	26	13	13	0	0	0	0	1	0	11	6	0	4	1
G. 1-77	26.86	13.29	13.57	0	.29	.29	.14	1.71	.86	6.43	4.00	2.29	3.00	2.57	5

URCE: STATISTICAL REPORTS: 1971-1977, OFFICE OF VITAL STATISTICS, DPHSS

EXHIBIT III - 19
CEREBROVASCULAR MORTALITY
RATIO PER 100 TOTAL DEATHS:
1971-1977

YEARS	TOTAL DEATHS	MALE	FEMALE
1971	8.24	6.97	10.83
1972	6.11	4.12	9.04
1973	8.51	7.12	10.78
1974	5.79	5.20	6.67
1975	5.22	3.79	7.95
1976	5.01	3.24	8.51
1977	6.84	5.35	9.49
AVERAGES 1971 - 1977	6.53	5.11	9.04

SOURCE: STATISTICAL REPORTS 1971-77, OFFICE OF VITAL STATISTICS, DPHSS.

GUAM-U.S. DIABETES MORTALITY RATES:
1971-1975

YEAR	U.S.	GUAM
1971	.19	.10
1972	.19	.23
1973	.18	.22
1974	.18	.11
1975	.17	.08
YEARLY AVERAGES	.18	.15

SOURCE: STATISTICAL REPORTS 1971-75, OFFICE OF VITAL STATISTICS, DPHSS
"PROVISIONAL STATISTICS: ANNUAL SUMMARY FOR THE U.S. 1975"

EXHIBIT III - 21

DIABETES MORTALITY RATES
1971-1977

YEARS	TOTAL	SEX	
		MALE	FEMALE
1971	.10	.11	.10
1972	.23	.19	.28
1973	.22	.16	.30
1974	.11	.08	.15
1975	.08	.12	.03
1976	.23	.12	.35
1977	.09	.05	.13
		.12	.19

71-77; OFFICE OF VITAL STA

deaths per 1000 population.

i. MORBIDITY

During the period 1973-76, there was an average rate of 5.02 cases per 1000 population hospitalized for diabetes mellitus (See Exhibit ___, page ___). Generally, those individuals hospitalized tended to be between the ages of 45 to 74. However those individuals between the ages of 45 to 64 experienced almost twice as many hospitalizations than those between 65 to 74. From 1973 to 1976, there was an average of 191 hospitalizations per year in the age group 45 to 64.

4. INFECTIONS DISEASES

a. PNEUMONIA - MORTALITY

During the period of 1971-77, pneumonia has averaged 8th among the ten leading causes of death on Guam. For the same period, there was an average of 21 deaths yearly from pneumonia or an average rate of 0.28 per 1000 population (See Exhibit ___, page ___).

Although insignificant, Guam's average mortality rate for the four years presented in the table above is higher than the U.S. rate per 1000. U.S. rates show a consistent rate of decline, whereas Guam's rates seem sporadic especially when 1976 and 1977 rates are included; .291 and .208 per 1000 respectively.

Of the average 21 deaths yearly from 1970-77, 52% were males (See Exhibit ___, page ___). Sixty-six percent of the average yearly deaths from pneumonia were 45 years and older; 19

EXHIBIT III - 22

DIABETES MORTALITY RATIO

1971-1977

YEARS	TOTAL DEATHS	MALE	FEMALE
1971	1.92	1.64	2.50
1972	3.91	2.88	5.42
1973	3.68	2.25	5.99
1974	1.78	1.12	2.78
1975	1.36	1.72	.66
1976	4.30	1.80	9.22
1977	1.84	.82	3.65
YEARLY AVERAGES	2.6	1.7	4.3

SOURCE: STATISTICAL REPORTS, 1971-77; OFFICE OF VITAL STATISTICS, DPHSS.

EXHIBIT III - 23

GUAM AND U.S. PNEUMONIA MORTALITY RATE
1971—1977

	YEARS							YEARLY AVERAGES
	1971	1972	1973	1974	1975	1976	1977	
GUAM	0.36	0.32	0.28	0.28	0.26	0.29	0.21	0.28
U.S.	0.27	0.28	0.27	0.25	0.25	N. A.	N. A.	0.26

SOURCE: STATISTICAL REPORTS 1971-77 OFFICE OF VITAL STATISTICS, DPHSS.
STATISTICAL ABSTRACT OF THE U.S. 1977, U.S. DEPT. OF COMMERCE.

FREQUENCY DISTRIBUTION OF PNEUMONIA MORTALITY
1971–1977

YEARS	TOTAL	SEX		UNDER–1		1 — 4		5 — 14		15 — 24		25 — 44		45 — 64		65 — 74		75/OVER	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1971	24	13	11	2	3	1	1	0	0	0	0	1	0	3	1	4	4	2	2
1972	22	8	14	2	2	0	0	0	0	0	0	1	0	3	3	1	1	1	8
1973	20	11	9	3	1	0	1	0	0	1	0	1	0	1	2	3	1	2	4
1974	21	11	10	1	1	0	0	0	0	0	1	2	1	1	0	5	1	2	6
1975	20	10	10	0	4	0	0	0	0	0	0	1	0	3	0	4	2	2	4
1976	23	15	8	3	2	0	0	0	0	1	0	2	0	3	0	3	2	3	4
1977	17	10	7	1	2	0	0	1	0	1	0	2	0	1	1	1	1	3	3
YEARLY AVERAGES	21	11	10	2	2	0	0	0	0	0	0	1	0	2	1	3	2	2	4

URCE: [redacted] TISTICAL R[redacted] TATISTICS, DPHSS.

percent were infants less than a year old.

Between 1971-77, the pneumonia death rate for males has been fluctuating between .2 to .4 or an average yearly rate of .3 per 1000 male population. Female rates basically followed the same period, females in the 1975 and over age group had the highest average death rate; 17 per 1000 female population, followed by males in the same age group with an average of 11 per 1000 males.

On the average, there were 5 pneumonia deaths yearly per 100 total deaths between 1971 and 1977.

i. MORBIDITY

For the period 1972 to 1975, there was an average ~~in~~fection recorded, for an incidence rate of 2.97 per 1000.

5. LIFESTYLE INDICATORS

a. SUICIDE AND HOMICIDE

i. Suicide

The seven year average annual rate of suicide deaths for Guam between 1971 to 1977 was determined to be 0.10 per 1000 compared to 0.126 per 1000 in the United States in 1975. The incidence of deaths due to suicide has been increasing in recent years in the U.S., especially among young adults. Conversely, there is no demostrable increasing trend for Guam's suicide death rate. This is supported by the fact that the 1976 rate of 0.038 per 1000 was the lowest for the seven year period and the 1977 rate of 0.18 per 1000 was the highest.

ii. HOMICIDE

There is a general increase in the number of homi-

cide between 1971-77 was 0.12 per 1000 compared to 0.09 per 1000 in the U.S. for 1975. The male population has a significantly higher rate, .10 per 1000, the females at .02 per 1000. This differential is similar to that of the United States for 1975.

b. DRUG ABUSE

The Substance Abuse Treatment Services (commonly referred to as the methodone clinic) of the Guam Community Mental Health Center is the main provider of federally assisted substance abuse treatment. A total of 128 admissions and 197 discharges were recorded by the clinic during Fiscal Year 1978. A majority of the clients treated for drug abuse in Guam and the U.S. were for heroin addiction. It appears, though, that the percentage of admissions for heroin addition on Guam are higher, because other commonly abused drugs are not readily available, except for alchol which is legally dispensed. Both Guam and the United States reported a majority of admissions for heroin addiction as being males. In Guam the 21-25 age group reported the highest percent of admissions followed by the group aged 26-30. This is in contrast with the United States where the 26-30 age group showed the highest percentage of admission, followed by the 21-25 group.

During Fiscal Year 1978, 98 percent of the clients seen on Guam were heroin addicts in comparison to 51 percent of clients seen in the U.S. A high proportion of clients (76%) were male; with 69 percent of them between the ages of 21-30. Forty-one percent of methodone clince clients began using heerin between the ages of 18 and 21. Both Guam and the U.S. reported a majority of admissions

as being self-referral, with Guam's percentage of self-referrals higher than the U.S.

Local admissions showed a substantially higher percentage of addicts using heroin more than three times a day. Due to the purity of the drug on Guam, local addicts would experience more severe withdrawal symptoms.

Comparative data based on the Heroin Problem Index (HPI) between Guam and 24 major U.S. Cities, ranks Guam sixth highest in drug treatment with a rate of 139.8 admissions per 100,000 population for 1976. In terms of emergency room drug-related cases, Guam outranks all 24 cities in the sample with an estimated 325.8 cases per 100,000. Guam's drug related death rate for 1976 was 7.3 per 100,000 population, or the third highest rate of the 24 cities.

c. ~~ALCOHOL~~ ABUSE

Although statistics relating to alcohol abuse on the island are sources, an analysis of alcohol related traffic fatalities will provide, to some degree, a sense of the extent of alcohol abuse related mortality on Guam. Between 1968 and 1972, Laennec's cirrhosis, a form of cirrhosis almost always caused by extended alcohol abuse, was found to be responsible for 10.2 percent of all Cirrhosis deaths in the age group 45 to 54 years during this period. The proportionate mortality from this disease was highest among caucasions accounting for 23.7 percent of all caucasion deaths in the 45-54 year age group during this five year period. Cirrhosis of the liver was reported as the tenth leading cause of death on

Guam in 1976. Cirrhosis accounted for 3.9 percent of all deaths that year, the highest proportionate mortality from this cause recorded by any state in the U.S. Another indicator of alchol abuse is alcohol related traffic deaths. Department of Public Safety statistics indicate that 15.3 percent of all traffic fatalities during the period January 1, 1976 to July 1, 1978 were the direct result of drunken driving.

CURRENT EMS SYSTEM CAPABILITIES

A. EMERGENCY TRANSPORT

The only types of ground emergency vehicles available are ambulances. Currently ____ are operated by the Department of Public Safety's Fire Division. All of these vehicles meet Federal specifications. In addition, DPS has purchased___used military ambulances, it is intended that these vehicles be used for _____.

The military (Navy and Airforce) operated ____ ambulances which assist the Civilian Community as necessary.

The Armed Forces also use their helicopters for emergency air transportation, particularly when accidents occur in areas that are not readily accessible by land. Air vehicles are fundamental to inter-island transport, and necessary for the evacuation of critical care patients.

The Department of Public Safety owns a harbor patrol boat which is utilized in emergencies at sea. The crew (is/is not) trained in First Aid. Supporting the harbor patrol boat is a Navy crash boat used for sea rescue.

The Armed Forces are or have the ptotential to play a significant role in the island's ability to handle emergencies at sea, to service water recreation areas, and to reach areas inaccessable by conventional ground vehicles.

2. AMBULANCE COVERAGE

LOCATION AND COVERAGE OF MILTARY AMBULANCES

Military ambulances are operated by the various Naval and Air Force commands throughout the island. Even though presently there is no formal procedure, the ambulances still respond to calls where needed, and it is usually somewhat in close proximity to where they are stationed. Exhibit____, page____, shows the location of military ambulances and their travel times to Guam Memorial Hospital. The military ambulances provide emergency service to military personnel and their dependents on the base and surrounding areas. Military ambulances also respond to calls where civilians are in need of emergency transportation. It is difficult to accurately estimate the total population served by each command. However, the ____ ambulances are responsible for serving approximately_____ persons. This would include military personnel and their dependents, and certain eligible civilian. Of course, since the ambulances respond to all calls, the actual number that they serve is greater.

3. LOCATION AND COVERAGE OF PUBLIC AMBULANCES

There are _____ operational fire stations, _____ more than there were when this plan was first written. All these stations offer 24 hour fire-fighting services. Ambulance service is operated out of _____ of the _____ fire stations. Exhibit_____, page_____, shows these _____ stations and their areas of responsibility. There is _____ back up ambulance.

Ambulance service is provided by the Government of Guam to anyone who asks. Patients are sometimes later billed a normal fee by the hospital. The ambulance service is operated by the Fire Operations

Bureau of the Department of Public Safety.

4. AMBULANCE UTILIZATION

Utilization of the ambulance falls under two broad categories emergency runs and non-emergency runs. Non-emergency runs can be defined as those requiring no treatment by ambulance personnel. The greater percentage of non-emergency runs include transportation service for routine medical appointment. The fact that a large percentage of ambulance runs are still of this type shows a need for some alternate system of nom-emergent transport. The Family Health Program (FHP) and a Rural Health Initiative Project of the Department of Public Health and Social Services have or plan to provide transportation services to clients in the Southern Part of the island. The Division of Senior Citizens also provides schedule transportation for many of the island's Senior Citizens. Department of Public Safety figures for the years 1978 and 1979 show that 44% and 45%[4] of the total ambulance runs were for non-emergencies.

As a percentage of population, the villages that show the highest utilization of non-emergent transportation for 1978 are:

1.	Tamuning	1214 or 8.97%
2.	Agana	74 or 8.39%
3.	Agana Heights	77 or 2.34%
4.	Talofofo	42 or 2.08%
5.	Inarajan	39 or 1.85%
6.	Umatac	12 or 1.63%
7.	Merizo	25 or 1.50%

The remainder of the villages were at less than 1.5% of their popula-

tions. It is interesting to note that the Tamuning area had 79% of its total ambulance runs listed as non-emergency runs. Agana Heights was second with 50% of its runs listed as non-emergency. There is no data available to determine why these two villages have such high percentages of non-emergent runs. However it is generally known that in the Tamuning area, clinics and private physicians request transport for theier patients to GMH for treatment (as in hemodialysis) and further diagnostic work ups. It may also be that many of the Agana Heighs runs are for transfer of patients from the Naval Regional Medical Center to home or to GMH.

A clearer picture of ambulance utilization will be achieved if a standard ambulance reporting from is used by DPS.

The total number of ambulance runs inclusive of non-emergent runs continues to increase. DPS reports show the following for the period 1975-79:

	TOTAL RUNS
1975	3,146
1976	3,461
1977	3,712
1978	4,938
1979	1,825 (as of 4/3/79)

Studies of the logs of the emergency room at Guam Memorial Hospital showed variance with DPS figures. There is no emergency room record per se and it is impossible to trace a patient through prehospital to emergency room. Given the information in the logs, the following is a summary of the ambulance system's impact on the E.R.

We were in which ambulance transport was used, such cases being determined by the GMH E.R to be emergencies. There are two categories:

1. E-DPS- Emergency-Brought in by Ambulance - Not Admitted.

2. E-DPS-ADM- Emergency-Brought in by Ambulance - Admitted. Some of the Data is incomplete due to the fact that some E.R. Log Books were missing. The following is a listing of ambulance transported emergencies:

1975

October 1, 1975 - December 31, 1975

E-DPS	155
E-DPS-ADM	60
	215

1976

November 23, 1976 - December 30, 1976

E-DPS	54
E-DPS-ADM	10
	64

1977

January 1, 1977 - December 6, 1977

E-DPS	646
E-DPS-ADM	269
	915

1978

April 4, 1978 - November 2, 1978

E-DPS	499

NON EMERGENCY RUNS AS PERCENTAGES OF TOTAL RUNS AND AS PERCENTAGES OF POPULATION

	1979	%TOTAL	POP.*	NON EMERGENT AS % POP.
AGANA	74	21	881	0.0839
AGANA HEIGHTS	77	60	3,284	0.0234
AGAT	53	19	3,979	0.0133
ASAN	13	27	2,012	0.0064
APRA HEIGHTS	6	35	-----	
BARRIGADA	44	22	7,762	0.0056
CHALAN PAGO	7	12	3,135**	0.0038
DEDEDO	108	23	23,659	0.0045
HARMON	26	25		
INARAJAN	39	29	2,062	0.0185
MAINA	6	46		
MAITE	16	26	(5,230)***	
MANGILAO	45	23	6,822	0.0065
MERIZO	25	30	1,658	0.0158
MONGMONG	18	34	5,230***	0.0101
NIMITZ HILL	4	40		
ORDOT	5	17	(3,135)	
PITI	15	19	1,521	0.0098
SANTA RITA	34	35	10,408	0.0032
SINAJANA	38	31	2,471	0.0153
TALOFOFO	42	35	2,016	0.0208
TAMUNING	1214	79	13,527	0.0897
TOTO	19	25	(5,230)***	
TUMON	54	27		
UMATAC	12	19	732	0.0163
YIGO	24	24	10,424	0.0023
YONA	47	21	4,233	0.0111

* U.S. BUREAU OF THE CENSUS - PRELIMINARY ESTIMATES
** CHALAN PAGO - ORDOT ARE COMBINED AS A SINGLE POLITICAL UNIT
*** MONGMONG-TOTO-MAITE ARE COMBINED AS A SINGLE POLITICAL UNIT

E-DPS-ADM 178

677

1979

January 1, 1979 - July 24, 1979

E-DPS 401

E-DPS-ADM 213

614

The difference between what is reported by DPS and the GMH E.R. log books is readily apparent. This will continue until a standardized report form for the ambulance is developed. (For more specifics on ambulance runs see exhibits III-26 through III-27, pp. [illegible]).

5. RESPONSE TIME

For purposes of this plan, a rapid response time is defined as five minutes or less from the time the ambulance is called until it arrives on the scene.

Except for those emergency cases which occur at or near stations with ambulances, response time is estimated to be well beyond ten to fifteen minutes if transport to the hospital is included. It should be kept in mind that the areas of rapid response have been drawn assuming normal conditions. This time is dramatically increased during rain and rush hours.

6. BEYOND RAPID RESPONSE

There are an estimated 32,378 people or 36% of the projected in 1980, 89,938 civilian population that live outside the areas of rapid response. Recent placement of ambulances in Umatach and Yona have allieviated somewhat the response time problems.

CALENDAR YEAR

AMBULANCE RESPONSES BY DISTRICT

	JANUARY					FEBRUARY					MARCH					APRIL				
	Traffic Accidents	Sick Person	Injured Person	Non-Emergency	TOTAL	Traffic Accidents	Sick Person	Injured Person	Non-Emergency	TOTAL	Traffic Accidents	Sick Person	Injured Person	Non-Emergency	TOTAL	Traffic Accidents	Sick Person	Injured Person	Non-Emergency	TOTAL
AGANA	9	8	4	9	30	3	4	3	5	15	8	6	4	7	25	11	14	8	12	45
AGANA HGTS.	2	1	0	6	9	0	1	0	6	7	0	5	1	6	12	0	11	4	1	16
AGAT	3	8	5	0	16	2	18	1	1	22	1	9	0	0	10	2	9	5	11	27
ASAN	3	2	0	2	7	0	1	0	0	1	0	2	0	3	5	1	3	0	4	8
APRA HGTS.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
BARRIGADA	0	9	2	3	14	1	6	0	11	18	2	10	2	10	24	2	12	2	8	24
CHALAN PAGO	0	0	0	2	2	1	0	0	0	1	2	0	1	0	3	4	1	0	4	9
DEDEDO	4	10	3	6	23	8	10	1	10	29	8	13	5	28	54	4	14	3	14	35
HARMON	0	0	0	0	0	2	0	0	0	2	1	4	2	3	10	2	5	2	6	15
INARAJAN	0	3	1	6	10	0	0	2	6	8	1	10	1	6	18	0	6	2	9	17
MAINA	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
MAITE	2	3	2	0	7	0	4	0	2	6	0	2	0	1	3	2	1	1	2	6
MANGILAO	3	7	3	7	20	4	7	1	0	12	1	7	1	0	9	0	8	3	5	16
MERIZO	0	6	2	0	8	0	3	0	3	6	1	4	0	2	7	2	3	0	0	5
MONGMONG	0	1	1	0	2	2	0	0	0	2	0	2	0	1	3	1	1	0	0	2
NIMITZ HILL	0	1	0	1	2	0	0	0	0	0	0	0	2	1	3	0	0	1	0	1
ORDOT	3	4	0	0	7	0	1	0	2	3	0	0	2	0	2	1	0	1	0	2
PITI	1	0	0	0	1	3	0	0	0	3	2	0	0	0	2	2	2	3	0	7
SANTA RITA	0	7	2	5	14	0	6	0	9	15	0	9	1	2	12	1	5	2	0	8
SINAJANA	2	0	0	0	2	0	1	0	7	8	0	5	0	2	7	0	3	2	4	9
TALOFOFO	3	2	2	7	14	2	4	3	12	21	2	8	6	2	18	1	12	2	5	20
TAMUNING	8	29	6	71	113	8	11	3	33	55	8	8	6	47	69	6	14	18	66	104
TOTO	1	1	1	0	3	0	2	0	0	2	0	4	0	2	6	2	7	2	0	11
TUMON	8	3	0	0	11	2	6	0	1	9	3	6	1	0	10	5	14	1	6	26
UMATAC	0	1	0	5	6	1	0	1	8	10	2	3	0	2	7	0	2	0	2	4
YIGO	0	0	0	0	0	1	0	0	0	1	1	1	0	2	4	2	2	2	3	9
YONA	0	18	1	0	19	0	11	3	5	19	3	10	5	9	27	0	15	2	9	26
TOTAL	52	124	35	133	344	40	96	18	121	275	46	128	40	136	350	51	165	67	171	535

EXHIBIT IV.1 - 1 Continued

	MAY					JUNE					JULY					AUGUST				
	Traffic Accidents	Sick Person	Injured Person	Non-Emergency	TOTAL	Traffic Accidents	Sick Person	Injured Person	Non-Emergency	TOTAL	Traffic Accidents	Sick Person	Injured Person	Non-Emergency	TOTAL	Traffic Accidents	Sick Person	Injured Person	Non-Emergency	TOTAL
NA	10	20	14	16	60	9	13	5	6	33	7	5	6	8	26	2	10	5	15	32
NA HGTS.	2	10	2	6	20	0	5	3	2	10	0	4	1	3	8	0	1	0	7	8
T	2	17	3	19	41	3	15	3	6	27	2	5	0	15	22	3	8	7	17	35
N	1	0	1	0	2	0	1	3	0	4	0	3	0	2	5	0	4	1	1	6
HGTS.	0	0	4	4	8	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1
RIGADA	2	10	6	14	32	2	8	2	2	14	3	7	3	8	21	1	5	0	4	10
LAN PAGO	2	1	0	1	4	1	1	4	0	6	1	10	2	2	15	0	5	1	15	21
EDO	5	17	6	15	43	2	23	8	14	47	2	11	3	12	28	3	12	2	35	52
MON	2	4	1	6	13	1	8	1	2	12	1	9	3	2	15	0	5	4	2	11
RAJAN	3	7	2	8	20	0	7	2	2	11	0	7	3	0	10	1	1	0	2	4
NA	0	0	0	0	0	1	1	0	0	2	0	1	0	0	1	0	0	0	0	0
TE	1	2	2	0	5	0	2	4	1	7	1	3	0	0	4	1	2	0	1	4
GILAO	6	5	2	6	19	0	8	3	5	16	2	7	0	9	18	1	7	0	8	16
IZO	1	4	0	3	8	1	12	3	6	22	0	8	2	4	14	0	3	2	4	9
GMONG	2	1	3	0	6	0	3	1	2	6	0	2	0	0	2	1	3	0	1	5
TZ HILL	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3
OT	1	0	2	0	3	0	1	2	2	5	1	1	0	0	2	1	0	0	0	1
I	2	5	2	3	12	4	3	1	2	10	0	3	2	3	8	2	1	3	8	14
ITA RITA	0	14	8	4	26	0	3	1	1	5	1	6	0	0	7	1	3	0	0	4
AJANA	8	4	2	7	21	1	4	1	3	9	2	2	0	3	7	0	3	0	3	6
OFOFO	4	8	1	16	29	1	3	2	2	8	0	4	0	2	6	3	9	1	12	25
UNING	9	16	8	73	106	11	13	10	54	88	9	12	4	122	147	5	29	19	116	169
O	0	4	0	0	4	0	1	1	0	2	0	1	1	0	2	0	3	1	0	4
ON	7	5	2	8	22	1	6	1	17	25	8	2	0	11	21	4	6	1	9	20
ATAC	1	2	0	0	3	3	2	1	0	6	0	0	0	1	1	0	1	0	0	1
GO	3	1	1	0	5	2	2	1	0	5	0	3	0	4	7	0	2	0	0	2
NA	4	6	4	7	21	0	12	4	6	22	0	20	3	4	27	6	2	0	5	13
TAL	80	163	76	216	535	43	157	67	135	402	40	136	34	215	425	35	126	50	265	476

	SEPTEMBER					OCTOBER					NOVEMBER					DECEMBER					GRA TOT.
	Traffic Accidents	Sick Person	Injured Person	Non-Emergency	TOTAL	Traffic Accidents	Sick Person	Injured Person	Non-Emergency	TOTAL	Traffic Accidents	Sick Person	Injured Person	Non-Emergency	TOTAL	Traffic Accidents	Sick Person	Injured Person	Non-Emergency	TOTAL	
AGANA	11	6	2	9	28	11	6	5	12	34	15	0	2	1	18	14	9	2	5	30	37
AGANA HGTS.	0	4	1	2	7	1	16	1	1	19	0	0	0	3	3	0	2	1	7	10	12
AGAT	3	12	1	9	25	5	4	8	8	25	1	4	1	9	15	6	8	5	13	32	29
ASAN	1	2	0	2	5	2	1	2	0	5	0	1	1	2	4	1	2	0	0	3	5
APRA HGTS.	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	3	0	2	0	5	1
BARRIGADA	4	9	2	5	20	3	12	3	3	21	5	2	0	0	7	0	9	3	3	14	2
CHALAN PAGO	0	2	0	0	2	1	0	0	1	2	1	1	0	1	3	0	2	0	3	5	
DEDEDO	9	15	4	12	40	2	24	10	14	50	7	5	0	9	21	8	10	10	8	36	4
HARMON	2	4	0	5	11	3	4	3	12	22	0	3	2	2	7	3	6	0	4	13	1
INARAJAN	0	2	0	1	3	1	2	1	8	12	0	2	0	5	7	0	1	6	2	9	1
MAINA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	
MAITE	0	5	0	1	6	1	3	0	0	4	0	3	1	0	4	3	4	1	0	8	
MANGILAO	8	4	2	8	22	6	7	0	4	17	2	1	0	1	4	6	5	3	12	26	1
MERIZO	0	9	1	4	14	0	4	0	0	4	0	2	1	0	3	1	4	0	1	6	1
MONGMONG	0	2	0	1	3	2	6	0	0	8	0	2	2	0	4	2	2	0	2	6	
NIMITZ HILL	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	
ORDOT	1	1	0	0	2	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	
PITI	3	3	1	7	14	4	0	3	6	13	2	3	0	2	7	2	5	3	7	17	1
SANTA RITA	0	1	0	0	1	0	6	0	1	7	0	2	0	0	2	1	1	0	1	3	1
SINAJANA	0	4	1	3	8	0	11	3	11	25	0	2	2	5	9	1	2	2	3	8	
TALOFOFO	2	4	0	11	17	0	5	1	1	7	0	1	0	1	2	0	3	0	2	5	
TAMUNING	4	15	4	126	149	4	18	5	105	132	8	7	4	53	72	7	21	14	134	176	1,
TOTO	0	2	1	1	4	0	5	2	1	8	0	0	0	2	2	1	0	0	1	2	
TUMON	10	7	0	9	26	6	7	5	12	30	8	1	0	3	12	9	5	9	8	31	
UMATAC	1	4	0	5	10	2	6	2	2	12	0	3	0	4	7	2	4	0	0	6	
YIGO	1	4	6	4	15	2	12	0	6	20	1	4	0	5	10	2	2	4	0	8	
YONA	2	7	1	13	23	1	5	3	16	25	1	3	1	9	13	1	6	7	4	18	
TOTAL	62	128	28	238	456	57	166	58	224	504	52	51	17	117	237	73	113	73	221	480	4,

CALENDAR YEAR

AMBULANCE RESPONSES BY DISTRICT

EXHIBIT III - 27

	JANUARY					FEBRUARY					MARCH					APRIL				
	TRAFFIC ACCIDENTS	SICK PERSON	INJURED PERSON	NON-EMERGENCY	TOTAL	TRAFFIC ACCIDENTS	SICK PERSON	INJURED PERSON	NON-EMERGENCY	TOTAL	TRAFFIC ACCIDENTS	SICK PERSON	INJURED PERSON	NON-EMERGENCY	TOTAL	TRAFFIC ACCIDENTS	SICK PERSON	INJURED PERSON	NON-EMERGENCY	TOTAL
NA	8	6	8	1	23	4	10	11	11	36	8	9	8	4	29	4	8	10	2	24
NA HGTS.	0	1	1	10	12	3	3	2	7	15	0	2	0	6	8	0	7	2	16	25
T	4	6	4	9	23	1	14	7	4	26	2	16	3	8	29	1	16	0	1	18
N	4	1	0	1	6	1	3	0	0	4	2	2	0	1	5	2	0	0	1	3
A HGTS.	0	0	2	2	4	0	1	4	0	5	1	0	0	0	1	0	0	2	0	2
RIGADA	1	11	2	4	18	0	9	2	4	15	5	9	5	1	20	0	10	4	5	19
SAN PACO	3	3	0	0	6	4	0	0	0	4	5	2	0	1	8	1	3	0	0	4
EDO	5	18	6	12	41	3	21	7	11	42	5	20	1	14	40	4	23	5	14	46
MON	2	2	1	7	12	1	3	2	4	10	1	3	0	2	6	3	3	0	2	8
RAJAN	1	1	3	6	11	0	7	3	3	13	0	10	1	7	18	2	8	0	3	13
NA	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0
TE	3	1	1	0	5	1	4	1	0	6	0	0	2	4	6	0	3	2	6	11
GILAO	6	5	4	5	20	3	6	5	4	18	2	14	8	10	34	4	3	3	6	16
IZO	0	2	0	2	4	0	5	0	3	8	1	3	2	3	9	3	1	1	4	9
GMONG	1	2	1	2	6	2	2	0	2	6	0	2	1	4	7	0	2	0	0	2
ITZ HILL	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1
T	1	0	0	0	1	0	0	2	0	2	0	2	0	1	3	0	4	0	3	7
I	4	2	0	3	9	4	3	2	0	9	3	4	2	0	9	4	2	2	0	8
TA RITA	0	2	1	11	14	0	6	0	3	9	0	3	1	2	6	0	4	0	2	6
AJANA	1	4	4	7	16	1	9	3	5	18	1	9	2	7	19	0	3	0	5	8
OFOTO	1	1	1	3	6	2	4	1	0	7	3	2	1	2	8	2	2	0	5	9
UNING	3	15	4	107	129	11	11	3	129	154	6	13	4	116	141	4	16	5	103	128
O	0	3	2	1	6	1	3	0	2	6	0	6	0	3	9	1	5	2	2	10
ON	4	6	2	6	18	7	7	1	7	22	7	10	7	1	25	5	5	2	13	25
TAC	2	4	3	0	9	1	3	0	2	6	3	3	2	4	12	3	3	0	2	8
O	0	5	1	4	10	3	2	0	3	8	4	4	0	4	12	3	2	2	4	11
A	0	9	2	3	14	3	13	5	12	33	2	11	5	0	18	4	7	2	3	16
AL	54	110	53	206	423	56	149	62	216	483	61	159	55	207	482	50	141	44	202	437

	MAY					JUNE					JULY					AUGUST				
	TRAFFIC ACCIDENTS	SICK PERSON	INJURED PERSON	BOAT-EMERGENCY	TOTAL	TRAFFIC ACCIDENTS	SICK PERSON	INJURED PERSON	BOAT-EMERGENCY	TOTAL	TRAFFIC ACCIDENTS	SICK PERSON	INJURED PERSON	BOAT-EMERGENCY	TOTAL	TRAFFIC ACCIDENTS	SICK PERSON	INJURED PERSON	BOAT-EMERGENCY	TOTAL
[illegible]	6	14	9	5	34	11	5	4	10	30	7	15	5	8	35	10	10	10	6	36
[illegible]	0	3	0	4	7	1	3	0	2	6	1	3	1	3	8	1	3	1	4	9
[illegible]	4	8	6	9	27	3	9	8	2	22	2	19	9	4	34	1	10	7	0	18
[illegible]	1	1	0	1	3	2	0	0	2	4	2	0	1	1	4	4	1	0	0	5
[illegible]	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
[illegible]	0	10	5	5	20	3	12	3	2	20	3	11	0	5	19	1	10	5	4	20
[illegible]	2	0	0	2	4	0	1	0	0	1	2	1	0	0	3	2	3	1	1	7
[illegible]	3	32	5	2	42	7	24	6	7	44	4	31	7	9	51	3	15	4	7	29
[illegible]	3	1	2	0	6	5	3	1	3	12	9	4	1	1	15	6	2	1	0	9
[illegible]	2	3	5	2	12	1	2	1	3	7	2	4	2	2	10	0	5	3	5	13
[illegible]	1	0	0	1	2	0	0	0	1	1	0	1	1	0	2	0	1	0	0	1
[illegible]	0	0	4	2	6	0	2	0	1	3	0	1	1	1	5	0	2	0	0	2
[illegible]	1	7	2	1	11	0	6	0	2	8	3	3	0	3	9	3	5	4	3	15
[illegible]	0	3	1	0	4	0	3	3	0	6	0	5	0	2	7	1	2	2	5	10
[illegible]	1	4	0	1	6	0	2	0	1	3	1	0	0	0	1	1	5	0	2	8
[illegible]	0	0	0	0	0	0	1	0	1	2	0	0	0	0	0	1	0	0	1	2
[illegible]	2	1	0	0	3	0	0	1	0	1	0	0	1	0	1	2	0	0	0	2
[illegible]	1	1	2	1	5	2	2	1	2	7	0	2	1	2	5	3	3	1	2	9
[illegible]	0	5	0	4	9	1	3	0	2	6	0	3	1	1	5	1	5	1	2	9
[illegible]	0	6	1	0	7	0	2	1	4	7	1	1	0	2	4	1	5	4	1	11
[illegible]	1	3	0	5	9	2	2	3	8	15	1	7	2	4	14	2	5	5	5	17
[illegible]	5	12	5	111	133	3	36	9	113	161	4	27	3	89	123	5	10	6	124	145
[illegible]	0	4	0	3	7	1	5	0	1	7	0	2	2	0	4	0	5	2	2	9
[illegible]	5	5	4	5	19	1	7	2	3	13	5	6	1	5	17	2	3	4	4	13
[illegible]	0	5	0	1	6	1	2	1	0	4	0	1	0	1	2	1	4	1	0	6
[illegible]	6	2	1	2	11	1	3	0	1	5	0	5	0	0	5	4	4	3	3	14
[illegible]	0	19	10	4	33	0	6	1	1	8	1	16	3	5	25	1	12	8	1	22
[illegible]	44	149	64 169		426	45	141	45 172		403	48	168	43 150		409	56	130	73 182		441

	SEPTEMBER					OCTOBER					NOVEMBER					DECEMBER					(As of 11/30/79
	TRAFFIC ACCIDENTS	SICK PERSON	INJURED PERSON	NON-EMERGENCY	TOTAL	TRAFFIC ACCIDENTS	SICK PERSON	INJURED PERSON	NON-EMERGENCY	TOTAL	TRAFFIC ACCIDENTS	SICK PERSON	INJURED PERSON	NON-EMERGENCY	TOTAL	TRAFFIC ACCIDENTS	SICK PERSON	INJURED PERSON	NON-EMERGENCY	TOTAL	GRAND TOTAL
NA	11	12	4	6	33	6	8	3	8	25	11	10	11	13	45						350
NA HGTS.	0	0	3	7	10	0	5	0	10	15	0	2	2	8	12						127
T	6	19	1	2	28	1	21	3	4	29	3	7	3	10	23						277
N	1	1	0	2	4	1	1	0	1	3	0	3	0	3	6						47
A HGTS.	0	0	1	1	2	0	0	0	1	1	0	0	0	1	1						17
RIGADA	2	5	1	4	12	4	8	1	5	18	0	13	1	6	20						201
EAN PAGO	2	0	0	0	2	2	4	0	1	7	4	5	1	2	12						58
EDO	3	20	5	8	36	3	28	10	14	55	6	16	3	10	35						461
MON	1	2	3	2	8	1	0	2	3	6	2	3	4	2	11						103
RAJAN	0	12	4	3	19	0	6	3	2	11	0	1	1	3	5						132
NA	0	1	0	1	2	0	1	0	0	1	0	1	0	1	2						13
TE	1	3	3	0	7	1	4	2	2	9	0	0	1	0	1						61
GILAO	1	12	5	3	21	7	5	6	3	21	4	8	3	5	20						193
IZO	0	13	0	0	13	1	6	0	2	9	0	1	0	4	5						84
GMONG	0	2	1	2	5	0	0	0	4	4	2	1	1	0	4						52
ITZ HILL	0	0	0	2	2	0	0	0	1	1	0	1	0	0	1						10
T	1	1	0	1	3	0	3	1	0	4	2	0	0	0	2						29
I	1	1	0	1	3	2	6	0	2	10	0	1	0	2	3						77
TA RITA	0	6	2	1	9	0	8	1	4	13	0	4	6	2	12						98
AJANA	1	4	1	1	7	0	5	3	3	11	3	6	1	4	14						122
OFOFO	0	5	1	1	7	0	8	3	4	15	0	5	2	5	12						119
UNING	7	27	8	110	152	8	15	2	104	129	8	22	5	108	143						1,536
O	3	2	0	0	5	1	3	0	2	6	0	2	0	3	5						74
ON	5	6	4	4	19	2	8	1	1	12	4	6	3	5	18						201
TAC	1	2	0	1	4	0	2	0	0	2	1	2	0	1	4						63
O	3	9	1	3	16	2	2	3	0	7	0	1	0	0	2						101
A	1	8	2	4	15	4	15	2	8	29	3	1	2	6	12						225
AL	51	173	50	170	444	46	172	46	189	453	54	122	50	204	430						4,831

7. MILITARY SERVICES

The population served by the Naval Regional Medical Center (NRMC) and its ambulances approximately _____ people. Not included are all transient personnel the new attached to the U.S.. Proteus, and other small detachments. Military population are:

AAFB _____

NCS _____

Wison Housing (Air Force) _____

NAS _____

Minitz Hill _____

NRMC _____

NAVSTA _____

NAVMAG _____

As can be seen in Exhibit___, page___, DPS ambulances average _____ deliveries/month to NRMC. There is an informal policy, that allows DPS to take a critically ill or injured patient to NRMC if it is closer than GMH.

EQUIPMENT ON VEHICHES

CIVILIAN SYSTEM

Presently, the Department of Public Safety operates_____ emergency vehicles. The ambulances were purchased in part with funds from the Office of Highway Safety under grants from DOT/NHTSA. All of the ambulances, when purchased met Federal Specifications for vehicle components, medical and extrocation equipment and supplies. All of the ambulances are Federal Type II van/conversions. An inspection conducted in 1978 on the then five ambulances revealed that many items

required per Federal Specifications were missing, not working or under repair. On the day of the inspection 3 of the 5 ambulances were being repaired. A recent report in 1980 showed that at least one ambulance locked necessary medical equipment to administer oxygen and to perform suction. Lack of proper maintenance, funding for equipment and supplies, weather and terrain at times render these emergency vehicles practically useless.

MILITARY SYSTEM

The Navy and Air Force use vehicles similar to the Federal KKK-A-1822 Type II vans. It is not known at this time whether the ambulances meet all of the Federal Specifications.

AMBULANCE COMMUNICATION CAPABILITIES

CIVILIAN SYSTEM - TELEPHONE

The Department of Public Safety utlizes the local telephone system. Citizens may access the system in several ways:

1. They may callthe stations using the individual station's telephone number.
2. They may utilize the five digit 22222 system or five divices. This number is generally used for fires, however, DPS has no objection to it being used for medical emergencies. The "five two's" system has limitations:
   - It does not ring in all fire stations.
   - It is a party type line and valuable time is lost in the sorting out of information as to the caller's location and the determination of which ambulance responds to the call;

. It is not generally known by the public that this system may be used for ambulance service.

. It is not generally known by the public that this system may be used for ambulance services.

3. They mail dial the Central Communications Center of the Police Division of DPS. The Center then will advise the Tamuning Central fire station which in turn dispatches the closest available ambulance. This system also has a drawback in that the call for assistance at the minimum is handled by two people.

RADIO

A grant from the Department of Transportation (DOT/NHSTA) through the Office of Highway Safety allowed for the installation of a separate UHF (Ultra High Frequency) EMS radio system. The system enables ambulances to directly communicate with the GMH Emergency Room. In addition, the system has a biotelemetry feature.

In order to better coordinate EMS activities, a second medical command Console is available from the Government of Guam for use by the NMRC. It also has the bioteletry feature.

MILITARY SYSTEM

The military utilizes a local phone system as well as two-way radio communication. All military ambulances and facilities are equipped for two-way radio communication. Although there is no Central Communication or dispatch center, the ambulances can communicate with one another and the NMRC.

SUMMARY

This section has described the transportation system, identifying those characteristics that will have an impact on the effectiveness of this plan and indeed this EMS System.

INVENTORY

Collectively, the military operates___ ambulances on Guam. There are_____ stationed at the NMRC, ____ at the Naval Station,_____ at the Naval Magazine, ____ located at the Naval Air Station, the Naval Communication Station has _____ and _____ ambulance is stationed at the Anderson Air Force Base.

There are _____ operational fire stations which offer 24 hour fire fights services. Ambulance services is operated out of _____ of the __ stations.

A new fire station was completed in _____, 19____ in Umatac. An ambulance service is planned for this station by _____.

HEALTH CARE DELIVERY SYSTEM CHARACTERISTICS

This section will describe the health care delivery system characteristics of Guam through a discussion of the island's two major health care systems, the civilian system and the military system. The areas in each system to be discussed include manpower, financing, facilities and services.

The objective is describing the current health care system is to understand the geographic distribution of the system's resources necessary to supplement existing deficiencies. This will assure an EMS capable of being effective when implemented.

OVERVIEW

Guam has a pluralistic health care delivery system containing public, private and military medical services. The public services are generally delivered by Guam Memorial Hospital, the Fire Division's ambulance service and the Department of Public Health and Social Services. The private services consist of physicians, dentist, optometorists, multi-speciality medical groups are pharmacies. The military services consist of the NMRC out patient facilities, ambulances, specialist services and clinic. Thus, Guam's health care is delivered by two distinguishable systems;

The civilian system, comprised of a public and private component; and

The United States military components.

These two components are designed to served two distinct population groups. The civilian system generally serving the civilian population, and the military system generally serving active duty personnel, dependents

and certain eligible civilians.

THE CIVILIAN SYSTEM

The civilian population is served by a public health system and a private health system. The two systems operates operate interdependently on several levels. However, for purposes of this plan only two levels will be reviewed from this interdependent perspective; manpower and financing. The services offered by the public agencies and the private practices are reviewed as two additional sub-sections of this section.

MANPOWER[5]

The 1980 survey of health manpower conducted by the Guam Health Planning and Development Agency (GHPDA) showed that Guam had 70 physicians. GMH has at least one staff physician on duty during the day at the emergency room. In addition to the on duty emergency room physician, the specialist 'on call' list provides the ER physician consultation when a specialist is needed. 'On Call' specialists are now linked to the EMS radio system, as each one is equipped with a two way handi-talkie radio. None of the physicians has specialized in emergency care.

According to the health manpower survey conducted in October, 1980, Guam had a total of 230 Registered Nurse (RN'S) and 58 Licensed Practical Nurses (LPN'S). Of a total of 288 RN'S and LPN'S, 10 are instructional nurses and 39 are Department of Education School Health Counselors, and administrators. The remainder are active in patient care. DOE school health counselors do provide limited patient care.

Naval Regional Medical Center Emergency Room is staffed after

hours by an on-call physician. There is a petty officer in charge, ambulance attendent and driver, and two emergency room technicians.

To support emergency services there are also technicians available for the laboratory, radiology, cast room, inhalation therapy, and operating. In addition to the normal watches, a nurse practitioner is on duty during weekends. The nurse practitioner has special training and performs diagnostic and definitive treatment of a level similar to that of a physician's assistant.

FINANCING

The Government of Guam finances medical services through revenue taxes, fees for service from patients or third party reimbursement arrangements.

There are many established programs that qualified patients may use to pay for health care services. These programs include:

- Private indemnity health insurance
- prepaid health program (HMO)
- Medicaid
- Medicare
- Workmen's Compensation
- special government programs providing care for Tuberculosis, Parkinson's disease and diabetes.

In addition, the government provides free services through the Department of Public Health and Social Services to those who cannot pay for their own health care, or do not qualify for any of the supplementary income programs.

FACILITIES AND SERVICES

FACILITIES AND SERVICES

The Government of Guam provides the necessary services to the civilian population through Guam Memorial Hospital. Acute and Intensive care services are provided in the recently purchased 148 bed facility (formerly Medical Center of the Marianas). Skilled Nursing, Hemodialysis and Long Term Care are provided in the old GMH facility nearby. These two facilities provides a full range of services in addition to inpatient and outpatient mental health services, medical outpatient services; and extended care services.

Through the Department of Public Health and Social Services, the Government ~~of Guam--~~ provides preventive medical and dental care, health education, large scale diognosis and treatment programs in the areas of communicable diseases, maternal and child health, chronic diseases and crippled children's services.

The Department conducts its programs through two diagnostic and treatment centers and four village health centers. An additional village service is operated out of the Central Diagnostic and Treatment Center in Mangilao.

Additionally, the University of Guam and the Department of Education operate a school nurse program and provide medical manpower training programs.

PRIVATE SECTOR

The private sector provides primary and specialty medical services typically through its outpatient medical practices and hospital services.

The private sector confines itself to the Agana, Tamuning, Harmon "medical care corridor". The result being that the relatively less

populated southern portion of the island remains isolated from the hub of medical care on Guam.

THE MILITARY SYSTEM

The military has stationed on Guam____ physicians, _____ of which ___ are Air Force physicians, while the remainder are affiliated with the Navy. They are located throughout the island at various outpatient facilities and at the U.S. Naval Hospital.

This figure highlights the fact that the majority of military physicians are located in the Northern and Central regions of the island, once again leaving the Southern region without physicians.

Specialists typically function at the Center of the system, i.e., the hospital, while the general practioners and supportive para-professional typically staff the outlying clinics. There are advantages to this types of arrangement in terms of reducing costs and improving effeciency and accessability.

Of the _____ Corpsmen available _____% are located at the NMRC, while the remainder are at other military sites throughout the island.

FINANCING

With few exceptions there is no charge for medical services within the military health care delivery system. The services rendered are paid for through the federal governments general revenue taxes. For those who must seek services outside of the military health care system, the military provides a medical insurance program (CHAMPUS), which reimburses the civilian providers for services utilized by eligible military personnel.

FACILITIES AND SERVICES

The military health care delivery system is centrally organized through

the Naval Regional Medical Center. The NMRC is an acute care facility providing a full range of inpatient services, outpatient services, ambulances, and air/sea rescue services. Unlike their civilian counterparts, the military components of the health care delivery system does not operate communitywide programs.

OTHER INFORMATION

Both the Guam Memorial Hospital and the NRMC are equipped to provide emergency care. However, with the exception of the existing ICU/CCU and Neonatal ICU, Guam Memorial Hospital does not have any specialized critical care units. Both hospitals will accept emergency cases regardless of the patient's financial status. If a civilian is admitted to NRMC for emergency care, treatment is rendered and when the patient is stabilized, he is tranferred to the GMH.

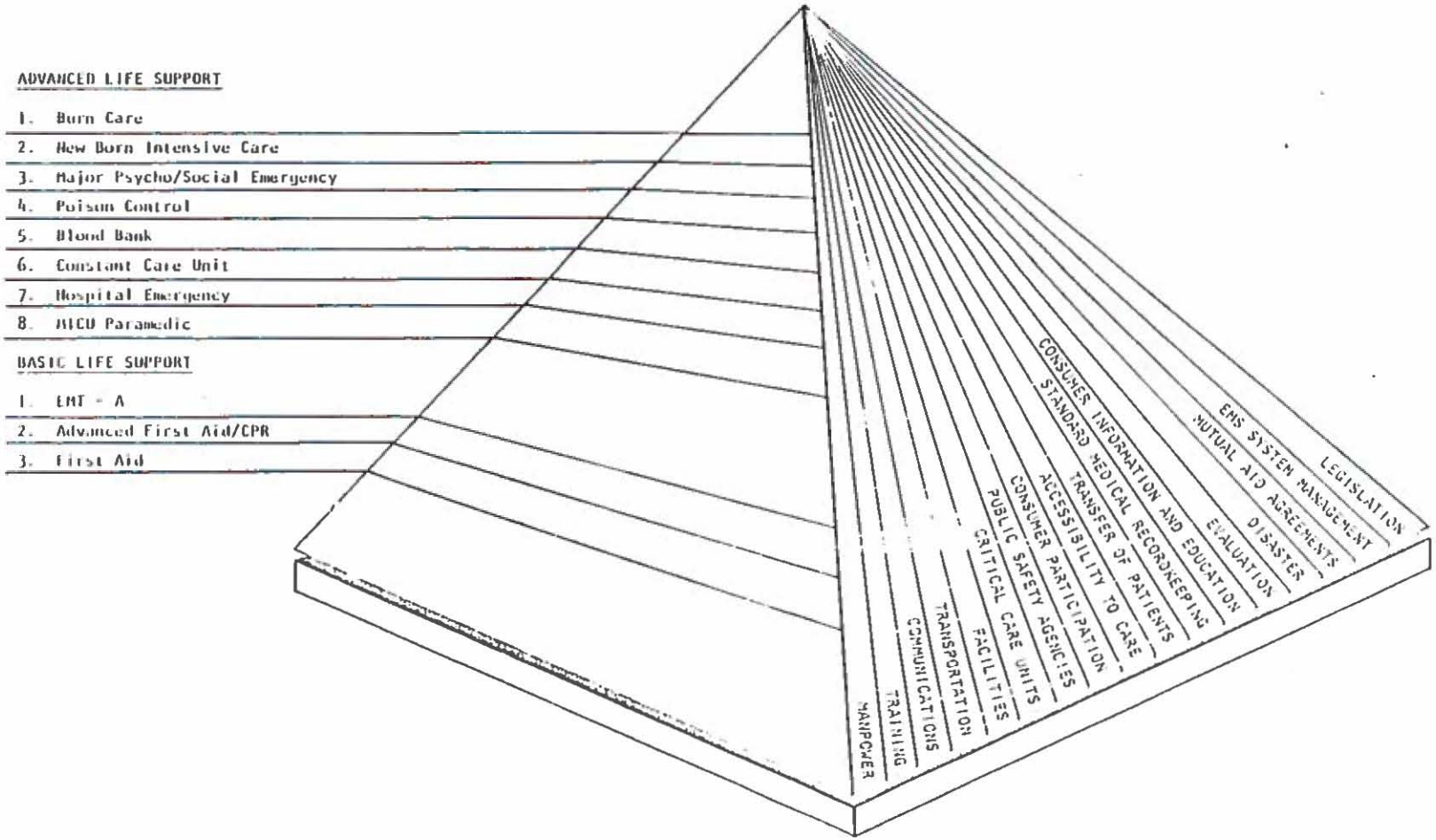
The Department of Defense and the Department of Interior have agreed that patients from the farmer Trust Territories will be provided medical services by the NRMC.

1. OVERVIEW OF THE EMS SYSTEM

The chapter is designed to give the reader a basic understanding and appreciation for the Emergency Medical Service (EMS) system as it is perceived from a planner's perspective. In this chapter the reader will review the basic characteristics of the EMS System and how these characteristics are intrrelated with other components of the health system. This will provide a common basis for a more specific discussion of the technical approach utilized in the Guam EMS plan. There are a variety of methods available for conceptualizing the system. One method is to view the system as a pyramid. Exhibit ____, page____ depicts this conceptualization. The left side of the pyramid represents the two levels of care (Advanced Life Support - ALS and Basic Life Support - BLS) defined in the federal EMS Guidelines.[6] The right side of the pyramid represents the fifteen components defined in the EMS Guidelines as well as two additional components (Legislation and EMS Systems Management) which affect both levels of care. For purposes of this plan, the seventeen components will provide a means by which their impact upon services can be described.

The Chapter is divided into three sections. The first section consists of a review of the organization of Emergency Medical Services. The third section deals with the organization of the EMS Plan.

THE EMERGENCY MEDICAL SERVICE SYSTEM



1. ORGANIZATION OF THE EMERGENCY MEDICAL SERVICES

Utlizing Exhibit 2.1 as the reference, the organization of Emergency Medical Services can be described as two levels of care: Advanced Life Support and Basic Life Support. These levels of care are defined in the federal EMS Guidelines. Each level of care represents a different range and complexity of services. Further, the technical support required to deliver Emergency Medical Services differs for each level. To clarify the point, Basic Life Support will be defined as:

> The entrance point into the EMS system. It is that care given at the patient's first contact with medical intervention. Emergency medical services given at the primary level represents preventive services such as awareness of commonly occuring medical emergencies, recognition of the need for emergency care; providing initial care until more highly trained personnel arrive, initiating EMS system response and administering basic life support and cardiopulmonary resuscitation. The basic life support level encompasses first aide procedures that consist of the recognition of airway obstruction, respiratory and cardiac arrest, and, for those trained, the proper application of cardiopulmonary resuscitation (CPR).

For the purpose of this plan Basic Lfie Support will consist of:

- EMT-A
- Advanced First Aid/CPR
- First Aid

Advanced Life Support is defined as:

- Health Care which represents a continuum of preventive, diagnotic,

treatment and rehabilitative services for the acutely ill patient as well as specialized services for with complicated and catostrophic injuries. A.L.S. includes highly sophisticated diagnostic and therapeutic procedures such as severe burn treatment, and major hospital trauma emergency department services. A.L.S. care facilities consist of university hospitals,county hospitals and large medical centers. This type of facility is capable of meeting special requirements to support training and teaching programs. Specialty services and technical equipment to attract professional manpower is also available.

Patients are usually referred for highly specialized services either because the injury is difficult to diagnose or treat, or the manpower and technical resources available to treat the injury are relatively scarce and or expensive.

Advanced Life Support includes:

- Burn Care
- New Born Intensive Care
- Major Psycho/Social Care
- Poison Centrol
- Blood Bank
- Constant Care Unit
- Trauma Center
- Hospital Emergency
- Mobile Intensive Care Unit (MICU) Paramedic

The two level of care appear to have discrete and separate medical purposes; however, some of the features of each are closely related to the

other and comprised full set of services necessary for the delivery of Comprehensive Care.

2. COMPONENTS AFFECTING EMERGENCY MEDICAL SERVICES

The fifteen components stated in the EMSS Guidelines and the two additional components also identified as impacting upon emergency medical services are defined below. The seventeen components affect the delivery, quantity and accessibility of emergency medical services. From a planning perspective these components are being defined as such to assist in the analysis of the EMS system.

.MANPOWER

For our purposes this factor means manpower utilized in the EMS SYSTEM. This would include emergency physicians, speciality nurses, emergency and critical care nurses, EMS ambulance personnel and EMT paramedics, central dispatchers, telephonic screeners, first aid respirators and EMS system coordinators. In this component the plan will explore the type, location, and utilization of manpower associated with each of the services.

.TRAINING

This factor relates to training and continuing education programs including all personnel within the EMS system. Programs will be identified as to whether they are continuing education, residency education training for critical care nurses, training for first responders or other associated personnel. Aspects to be considered are necessary resources, adequacy of evaluation and the reassessment process, cost and if possible, frequency and location of courses offered.

.COMMUNICATIONS

The communication system includes access, dispatch, medical consultation, linkages between ambulances, emergency medical technicians, hospitals and other public safety personnel. The communication system must be able to support the medical requirements of the EMS system as well as link the appropriate services for a disaster situation. The engineering aspect of this factor which is considered. The manpower required to meet the service needs of the system will also be considered.

.TRANSPORTATION

This factor consists of the different types of ground; air and water transportation available for primary and secondary response problems. Further, the various categories of emergency vehicles are to be coordinated within the total system. Other aspects to be considered are centralized command control, services to recreational and inaccessible areas and the replacement of vehicles.

.FACILITIES

Four our purposes this factor consists of an identification of health facilities in the area. This will include hospitals, clinics and mental health centers. A description of each facility including their services, patient volume, number of emergency cases and the staffing patterns of the emergency department.

.ACCESS TO CRITICAL CARE UNITS

This factor consists of an identification of the kinds, location,

numbers and service categories of the critical care units in the region. The critical care units to be considered will include trauma, burns, plastic surgery and blood. Although not all critical care facilities are available in the EMS planning area, this element does review those for which services are being provided.

.PUBLIC SAFETY AGENCIES

Public Safety agencies are involved at the Basic Life Support level in the EMS system. They are concerned with communication and transportation capbility which affect the emergent patient. A description of how interfacing occurs with these agencies is provided.

.CONSUMER PARTICIPATION

For our purposes this factor consists of describing those individuals who use or may have need of the EMS system. This section will describe how provision for consumer participation in determining system policy has been utilized in plan development and continued operation of the EMS system.

.ACCESSIBILITY TO CARE WITHOUT ABILITY TO PAY

This factor means does the system provide for emergent patient who is unable to pay. A review of how the Government of Guam assures coverage of its citizens is provided.

.PROVISION FOR TRANSFER OF PATIENTS OR CONTINUUM OF CARE

This factor means the flow or referral of the patient through the various phases of the treatment process. This will include

transportation and facilities. The location, capacity, types of patients, accessibility and criteria of care are elements of this factor.

.STANDARDIZED MEDICAL RECORD KEEPING

This factor means the specific information required and collected on emergency patients. What information is needed, such as, the time the emergency medical system was accessed, medical care dispatched and the treatment provided are examples of the information medical records can provide. Aside from the monitoring of the records and assuring their accuracy, the planner must maintain the confidentiality of the patient's medical information.

.CONSUMER INFORMATION AND EDUCATION

This factor includes information on how consumers can access the the emergency medical system. It is anticipated that further information will be provided on the availability of emergency services; their location and how to determine what to do for specific injuries or medical emergencies. The planner will be concerned with the content, relevancy and coordination of the information/educational programs provided.

.INDEPENDENT EVALUATION

By this factor we mean to determine whether the specific goals were acheived. This will include an assessment of the management of the implementation of the EMS plan. The evaluation will measure process as well as impact of the patient care system utilized. Baseline data (or data elements) will be determined for each of the measurement criteria which will assess change. Data collection

instruments will be developed based on the measurement criteria. Analysis of the data will be based on the measurement criteria and the purpose to which the information is to be used. Our evaluation will be designed to assess the system's impact upon the delivery of emergency medical services.

.DISASTER PLANNING

This factor addresses the emergency medical services available during a disaster. This aspect of the plan must consider a systematic method to deliver emergency medical services during a disaster as well as the necessary modifications of the EMS system's routine procedures during a disaster. To be fully effective this means adequate non-telephonic communications are available, disaster information is available and accessible, and that necessary changes can be effected immediately. Finally, the disaster plan must be tested once each planning year.

.MUTUAL AID AGREEMENTS

This factor means that this plan has been agreed upon; that capability, availability and location of the EMS resources have been determined; and that cooperative agreement has been established between military and off-island resources which assure jurisdiction and adequate financing.

.EMS SYSTEM MANAGEMENT

This component was identified at our discretion and relates to the coordination, implementation and operation of this EMS plan. It will identify who has management responsibility of the EMS system and its components.

.LEGISLATION

This factor has been included at our discretion because of the increased involvement of the federal state and local governments in legislating programs, guidelines, standards and procedures which directly affect the design, implementation and operation of this plan. Included are a number of local laws which impacte upon the plan's goals and expectations.

2. ORGANIZATION OF THE EMERGENCY MEDICAL SERVICES PLAN

The next two chapters consist of a description of Emergency Medical Services and an assessment of those services based on the seventeen components.

Chapter V has been structured to follow a uniform format to describe each services. The services are arranged according to their level of care. The description of each service follows this format:

- Definition
- Current capacity
- Trends
- Criteria
- Summary

Thus, Chapter V begins with:

1. Advanced Life Support - This is a level of care.

1. BURN CARE - This is a service.

.DEFINITION - This is one of the descriptive sections for this service.

The following is a brief discussion of each of the descriptive sections utilized in the format.

.DEFINITION

This contains a formal definition of each service. The definitions were developed from federal regulations, state laws and generally accepted professional concepts or terms descriptive of the service.

.CURRENT CAPACITY

This section will provide an inventory of services, and/or other significant information. Utilization levels are provided and where applicable these are related to the population of Guam. A description of the scope and type of service is also provided.

.TRENDS

The trends section describes the direction of future developments and functions that could affect the direction of services. This section will deal with national, state and local trends.

.CRITERIA

This element will generally be based upon state or federal requirements. Further, this element will establish parametics within which planning in the region should take place. It is anticipated that this element will change frequently as better criteria are developed.

.SUMMARY

This element will be a review of the main items considered above. The discussion in the summary will be based on the analysis of current capacity, trends and guidelines.

V DESCRIPTION OF EMERGENCY MEDICAL SERVICES

This chapter will describe each of the service elements of the emergency medical system. The service elements are divided into two broad categories. They are Advanced Life Support (ALS) which consists of:

- BURN CARE
- NEWBORN INTENSIVE CARE
- MAJOR PSYCHO/SOCIAL EMERGENCY
- POISON CONTROL
- BLOOD BANK
- CONSTANT CARE UNIT
- TRAUMA CENTER
- HOSPITAL EMERGENCY ROOM
- MICU PARAMEDIC

and Basic Life Support (BLS) which consists of:

- EMT-A
- ADVANCE FIRST AIDE/CPR
- FIRST AID

The service elements are arranged to reflect level of sophistication and the patient's point of entry. As indicated in Chapter IV, it is believed that the majority of patients will enter through the basic life support services or the hospital emergency room. Thus, services are arrayed according to frequency of utilization and level of sophistication in equipment and manpower. Level of sophistication is the primary factor separating advanced from basic life support; however entry into the system and utili-

zation are key factors in distributing the service components.

The services described in this Chapter are for the design of an Emergency Medical Services discussed are to satisfy the EMS plan development needs. The descriptions which follow will provide the reader with information concerning treatment and care of the emergent patients. The EMS plan is not intended to describe nor to assess the other aspects of these medical services which deal with the non-emegent patient.

A. ADVANCED LIFE SUPPORT

Advanced Life Support consists of a full range of emergency medical services which require highly trained technical manpower and sophisticated medical equipment typically found in a hospital or medical center. The components of the Advanced Life Support services are reviewed below.

1. BURN CARE

DEFINITION - Burn care is the treatment of severe burn patients typically in a specific area or room(s) of a hospital. Burn care can be classified as follows:

BURN PROGRAM - At this level, the hospital has no specialized facilities or areas for burn care. However, a consistent plan for management of burn patients is implemented by an interested and experienced physicians (or jointly by several physicians). It is assumed that at least 25 burns per year are treated. Fewer than 25 burns per year would not permit the

staff to develop and maintain sufficient expertise in burn care.

BURN UNIT - This devotes a burn program being conducted in a specialized facility used only for burn care that has at least four beds and that treats at least 35 burn patients per year. A limited amount of research and teaching may be present on an intermittent basis.

BURN CENTER - This devotes a larger burn unit, with special emphasis on research and teaching as well as patient care. The facility provides very intensive burn patient care which requires the support of the research and teaching staffs. It is assumed that the facility has at least 50 patients with burns are treated there per year. Generally, burn care facilities develop as a progression starting with a burn program.

. CURRENT CAPACITY

Burn cases are generally treated in the emergency room of Guam Memorial Hospital. Currently, there are no burn beds at GMH. If the burns are dianosed as serious and require hospitalization, the patient is admitted according to age and/or services i.e., pediatric or surgery. Generally, the burn patient is isolated in the specific service area.

Since there is only one plastic surgeon on Guam, the Navy

and Air Force, when necessary, transfer their burn patients to GMH for treatment and care.

.TRENDS

The national trend is toward more definitive analysis of burn cases so that categorization of facilities and services can allow for proper flow of burn patients to appropriate treatment. Through in-house training at GMH and NRMC burn patient treatment and triage is being reviewed with the staff. As this continues, it is felt that burn victims can be treated more effectively. Further as more effective procedures for the treatment of burn victims are acquired by public safety ambulance attendants, victims can be treated more effectively at the scene of the accident.

.CRITERIA

The development of burn care services should be considered and evaluated in light of the provider's responsiveness to the following:

- Patients should be able to obtain the necessary care they need.
- Physicians should be able to obtain consultative services whenever necessary.
- A burn center should have established communication patterns for consulatation, referral and transport of patients.
- Routine burn care should be available at the local level in emergency rooms and by ambulance attendants.
- Services should be coordinated between the hospital

physicians, consultants and emergency rooms.

- There should be an established procedure for consultation, referral and transfer of patients.
- Ability to pay should not determine one's eligiblity for service.

2. NEWBORN INTENSIVE CARE

. DEFINITION - An intensive care newborn nursery service means provision of comprehensive and intensive care for all contingencies of the newborn infant. A combination of specialized equipment and trained personnel provides maximum support of the newborn infant with major illness. Infant transport services are anindispensable part of a intensive care newborn nursery service.

. CURRENT CAPACITY - Guam Memorial Hospital opened a neo-natal intensive care unit in 1978. Current staffing to support this service are: (TO BE DEVELOPED)
The NRMC has two (2) isolation units. There are ____ pediatricians in the unit. The nursing staff have combined responsibilities for OB ward and the nursery. NRMC has pediatric ICU transport capacity. This unit is shared with the civilian population.

. TRENDS - TO BE DEVELOPED

. CRITERIA - The development of further newborn intensive care services should be considered in light of the provider's responsiveness to the following.

- There should be a communication pattern for consultation

referral and transport of patients.

- Mothers and infants identified to be at risk should have the services of a regional perinatal center either through consultation, transfer or direct services.
- Mothers and infants identified to be at risk and needing hospitalization should have this available to them with adequate arrangements for transportation.
- The services should meet established criteria of professional accreditation.
- All levels of care should take into consideration the Psycho/Social needs of the patient/family as well as their physical needs.
- There should be an established procedure for consultation, referral and transfer of patients.
- The written procedures should be further supplemented by regular 'dry runs' to keep personnel abreast of what to do.
- A standard classification of perinatal high risk should be established for Guam.

. SUMMARY - To be developed

3. MAJOR PHYSCHO/SOCIAL EMERGENCY

. DEFINITION - Major psycho-social emergency is a situation which involves an emotionally ill and/or mentally disturbed child, adult or family. This will include potential suicides and emergencies resulting from drug abuse and alcohol misuse.

. CURRENT CAPACITY - Psycho/social services are available through the

Emergency 'department' of GMH. Emergency treatment, however, is provided by the Community Mental Health Center, which is located near GMH. In addition, the Guam Mental Health and Substance Abuse Agency has the responsibility to assure that a coordinated system of Mental Health and Substance Abuse services are availabe on Guam. The following is a list of services and programs available to those diagnosed as having psycho/social emergency condition:

- Consultation and training for GMH, Outpatient Department and E.R. staff.
- Methadone maintenance program.
- Support and referral for Alcholics Anonymous.
- Long-range plans include developing and maintaining on going. Community education programs; in conjunction with the GMHSAA.
- Broadening the scope of substance abuse prevention to include prescription drugs, especially in combination with alcohol.

. CRITERIA - The development of future psycho/social emergency services shou be considered and evaluated in light of the provider's responsiness to the following:

- Patients should be able to obtain the care they need.
- A mental helath center should have established communication patterns for consultation, referral and transport of patient
- Pyscho/social emergency services should meet the established criterial for professional accrediation.

- Services should be available 24 hours a day and coordinated between the hospital, physicians, consultants and emergency rooms.
- There should be an established procedure for consultation, referral and transfer of patients.
- Ability to pay sould not determine one's eligibility for services.

. SUMMARY - Pycho/social emergencies are diagnosed and treated by the Community Mental Health Center after a physician has given medial clearance. This process is also followed in the case of residential treatment. The psycho-social situations are so varied the a variety of special skills are required and a broad range of professional services should be developed at the Community Mental Health Center.

The trend toward establishing more preventive services in close association with emergencies allows for continuity as well as access to mental health services.

4. POISON CONTROL

. DEFINITION - Poison Control typically refers to a center that includes ~~that includes~~ those facilities which provide for the medical profession, on a twenty-four (24) hour basis, information concerning the treatment and prevention of accidents involving ingestion of poisons and potentially poisonous sustances. There are two types of centers:

- Poison Information Centers (PIC) which provide information on the ingredients and recommended treatment.
- Poison Control Center (PCC) which provide information

as well as the facilities to treat poison victims.

. CURRENT CAPACITY - A poison control center does exist at GMH. Effectively the poison center provides information and referral service for treatment. In difficult cases consultation with the Honolulu Poison Control Center is the typical process used to avoid delays in treatment. The number of patients seen in GMH'S E.R. for poisoning were: TO BE DEVELOPED

- 1976
- 1977
- 1978
- 1979
- 1980

. TRENDS - TO BE DEVELOPED

. CRITERIA - Poison Control Services should include the following:

- Lay people and professionals should be able to get information on poison care immediately when the need arises.
- Hospitals E.R.'S and physician should be aware of the poison control information service on Guam and Hawaii to be able to provide the proper care.
- Poison information should be current.
- Information and education programs should be readily available to lay and professional groups.
- When language is a problem facilities should have multilingual services available.

. SUMMARY - TO BE DEVELOPED

5. BLOOD BANK

. DEFINITION - The blood bank is a specific facility or location which draws, samples, processes and stores whole blood and blood derivatives for use in surgery, emergencies or other life-threatening situations.

. CURRENT CAPACITY - Whole blood has an expiration time of 21 days. The average number of pints of whole blood available at GMH'S blood bank each month is:

O+ = 18 pints

A+ = 18 pints

B+ = 6 pints

AB+ = 2 or 3 pints

The supply of blood is dependent upon donations only. If the bank's supply is completely consumed, the patient's family is asked to secure a donor or donors. The Kiwanis Club of Guam, also, will provide donors during time of emergency or a special need.

A verbal agreement betwee the American Red Cross and GMH exists to secrue additional blood from the Hawaii Red Cross Blood Bank is cases of mass need.

The blood bank is manned twenty four hours a day. Personnel per shift are:

7:00 a.m. - 3:00 a.m. 4 Medical Lab. Technologist
4 Medical Lab. Technicians
1 Lab. Aide

3 p.m. - 11 p.m. 7 Medical Lab Technicians

11 p.m. - 7 p.m. 2 Medical Lab Technicians

. TRENDS - TO BE DEVELOPED

. CRITERIA - Future blood bank service should include and be evaluated in light of the provider's responsiveness to the following:

- Blood supplies should be kept at the two hospitals on the island.
- An on-going donor program should be conducted.
- The services should meet the professional standards of DHHS, Food and Drug Administration and the American Association of Blood Banks.
- Future criteria should relate to total medical care rather than segmented care.
- Blood banks should maintain a continuous supply of blood and its components for use in all phases of medical care.
- Providers should demonstrate their mangerial and financial capacities by a complete and proper audit on a regular basis of all service programs. Formal reports of the audit results should be made to their management, entitled third parties, sponsoring government groups, governing bodies and the public.
- Services should not be based on one's ability to pay. Blood replacement is strongly encouraged.
- The system should demonstrate ~~should demonstrate proficiency in hepatitis testing.~~ acceptable methods of collection, distribution and use.
- The Blood Bank should demonstrate proficiency in hepatitis testing.

. SUMMARY - The availability and utilization of the existing blood bank's stock is difficult to determine without data on the amount of total volume used. Information concerning future trends will have to be determined. More formal agreements should be established to assure the process and methods by which additional blood supplies are available massive needs.

6. CONSTANT CARE UNIT

.DEFINITION - A constant care unit is typically located in an acute care facility and provides intensive as well as cardiac services. The two components of the constant care unit are:

- Intensive Care - provides treatment of acutely ill patients who have a disease process for which intensive, highly skilled medical and nursing services are known to decrease morbidity and mortality.
- Cardiac Care provides advanced definitive care for the most critically ill cardiac patients.

. CURRENT CAPACITY - Guam Memorial Hospital has an ____ bed constant care unit.

TO BE DEVELOPED.

. TRENDS - TO BE DEVELOPED.

. CRITERIA - The development of future constant care services should be considered and evaluated in light of the provider's responsiveness to the following:

. Patients should be able to obtain medical services whenever necessary.

. Patients identified as requiring service should have

adequate transportation to the hospital.

. To assure adequate treatment, communication and transportation, as system should be established which accounts for these activities.

. The services should meet established criteria of professional accreditation.

. There should be an established procedure for consultation referral and transfer of patients.

. Providers should demostrate their managerial and financial capabilities by a complete and proper audit of all services.

. Services should be reviewed by internal utilization and quality ~~capabilities by a complete~~ care assurance groups. External review should be accomplished by a professional standards review organization.

. SUMMARY - TO BE DEVELOPED.

7. TRAUMA CENTER

. DEFINITION - A trauma center is a physically distinct part of a generally acute care hospital, equipped and staffed at all times to provide prompt, complete and advanced medical care both immediate and continuing services, to patients of all of all ages, including newborns, suffering from severe, life threatening or permanently disabling physical trauma. It is usually located within a hospital which has a comprehensive emergency medical services.

It receives patients by referral from the hospital's emergency service or transport service, or by transfer

agreement, from other hospitals within the region. As a highly specialized critical care service, it recieves most of its patients by referral, and should have the capacity to accomodate the patients referred from the entire region. The yearly case volume should be adequate to permit maintenance of the skills of the specially trained professional personnel and to make efficient use of that staff.

. CURRENT CAPACITY - At the present time neither GMH or NRMC have a 24 hour trauma center. The current utilization levels of both hospitals does not meet the minimum requirements to maintain a full time staff.

. TRENDS - The trend is toward organization of trauma treatment within a regionalized network based on the degree of severity. Futher, this trend includes ambulance services for the rapid transport of critically injured patients to more definitive treatment centers. This type of transport, in Guam's case would be via air to Hawaii or the mainland. Emergency to manpower must be capable of stabilizing the victim prior to transport, thus there is a need for more extensive training and experience for those involved in this expanded role. This regionalized network will require planning for the specific location of each type of trauma facility and the extent of services required.

. CRITERIA -

Staffing - A full time physician, fully qualified and experienced through residency training in the diagnosis

and treatment of the severely traumatized patient should direct the center. The Center should be staffed on a 24 hour basis with physicians, registered nurses, nurse practitioners and other personnel fully trained in trauma care including emergency life saving procedures. The center should have on call at all times the full range of intensive and critical care specialists who staff those units within the hospital. Staff should be in sufficient number to provide adequate patient care within the unit and consultation to other health care facilities within the region.

A full time registered nurse trained and experienced in the care of the severly traumatizaed patient and in emergency life saving procedures should direct the nursing care of the center, with trained nursing staff, registered nurses and other nursing personnel. A registered nurse with special training shall be present and in charge of the unit at all times.

In addition to its own staff, physicians, registered nurses and other allied health personnel shall be promptly available at all times to respond to the trauma center.

Fully qualified specialists in all speciality categories should be on call for consultation, and

be physically available to the trauma center within a short time.

. EQUIPMENT - The trauma center should have the same service capacity, the same equipment, and shall meet the same standards for physical plant as a comprehensive emergency medical services The same support services of the same quality should be immediately availabe to it on a twenty-four hour basis. For referral the same range of intensive and critical care units should be available to it as to the comprehensive emergency medical service. The trauma center should be tied into the hospital's communication equipment for coordination of emergency medical services for that locate and desginated area.

. SUMMARY - Trauma centers provide advanced medical services. The manpower and equipment required must be sustained by a volume of patients which may not be economically feasible for GMH. Further study and more specific information on potential utilization is necessary before any further activity is taken. The study should take into accounts transportation, transfer of patients to off island centers, available manpower, visitation of Paramedic training and the communication system.

8. HOSPITAL EMERGENCY ROOM

. DEFINITION - Emergency Medical Care is provided in a physically distinct part of a general acute care hospital. The emergency room is staffed and equipped to provide prompt

definitive medical care to all patients with urgent conditions.

A true emergency is any condition clinically determined to require immediate medical care... Such conditions range from those requiring extensive immediate care and admission to the hospital to those that are diagnostic problems and may or may not require admission after work-up and observation.

. CURRENT CAPACITY - The GMH employs one full time internist as Chief of the Outpatient Department and the Emergency Room. Physician service is available on the premises 24 hours a day. Specialists are on call. GMH has one emergency room; it is also used as an OPD. There is a trauma room, cost room, minor surgery and examination rooms.

Utilization of ER services by fiscal year are as follows:

	~~1975~~ 1975	1976	1977	1978	1979	1980
E. R. VISITS	4652	3951	4592	9456	6644	5919
EMERGENCIES	—	—	DATA NOT AVAILABLE FOR COMPARISON	"	"	— —
EMERGENCIES AS % OF VISITS	—	"	"	"	"	— —

The GMH Emergency Room is responsible for the treatment of all urgent medical conditions brought to the hospital. Specialty care and long term treatment are referred to specific units within the hospital or as in the case of psycho/social emergencies, to other service agencies. Ambulance service is provided by the Department of Public Safety and on some occasions by the military. 29 Public Safety Fire Bureau personnel have received training as EMT-A'S (EMERGENCY MEDICAL TECHNICIANS-AMBULANCE). At

this time the training consists of an 81-hour Department of Transportation approved course. There are plans to expand the course to at least 120 hours, initiate a refresher course that would also include a DOT approved I.V. application module. The new communication system will permit direct ambulance to hospital radio communication.

. TRENDS - The trend is toward categorization of services based on the degree of severity of the injury and the staff's capability to diagnose and treat the patient. Further, the population based has been made a major determinant in the location and extent of services provided for the treatment of emergency victims.

. CRITERIA

ORGANIZATION - The Emergency Department shall be under the medical direction of a full time emergency physician who should be the chairperson or member of the hospital emergency care committee. The department/service should have organizational status equivalent to that of other clinical departments in the hospital.

STAFFING - The emergency department should be staffed at all times by a full time physician, experienced in emergency medicine and who has completed on appropriate residency.

Physician staffing should include licensed physicians assigned to and located in the emergency department twenty-four hours a day. Such physicians should be experienced in emergency medical care.

In addition to an anestesiologist, specialists physicians medicine and surgery should be available on call twenty-four hours a day.

Board certified or Board eligible physicians in all recongized specialties, who are members of the active medical staff should be promptly available to the emergency department twenty four hours a day.

NURSING STAFF - Registered nurses identified as emergency nursing specialists should be regularly assigned to the emergency department 24 hours a day and in sufficient numbers to screen, evaluate, and administer emergency care and procedures to support the caseload and to supervise other allied health personnel. Emergency nurses should have available standardized emergency procedures approved by an appropriate committee of the medical staff. Each should have training and experience in emergency life saving and life support procedures.

EQUIPMENT - The equipment should include but need not be limited to airway central and ventilation equipment, suction devices cardiac monitor, defibrillators, pacemaker capability, appropriate apparatus to establish central venous monitoring and administrative devices.

BLOOD BANK - The hospital should have a licensed blood bank as defined by the American Hospital Association. Containing conventional types of blood and have ready access to a supplemental supply. In addition, blood storage facilities should be in or adjacent to the emergency department.

LABORATORY SERVICES - The clinical laboratory should be capable of

performing rapid analyses of blood gases, PH, serum electrolytes and other procedures appropriate for emergency medical care including analysis of body fluids for drugs and alcohol. This service should be staffed at all hours by qualified personnel and be promptly available.

. RADIOLOGICAL SERVICES - Radiological service should be in or adjacent to the emergency department and should be capable of providing routine studies with fixed or mobile equipment as needed. This service should be staffed at all hours by experienced physicians and qualified technicians within the hospital. Contrast studies including angiography should be available on short notice.

. OPERATING ROOM - Operating rooms should be ready and promptly available to patients from the E.R. at all hours for emergency medical procedures, and staffed by in hour O.R. personnel. For all surgical cases, a Board eligible or Board Certified physician should be in attendance.

. POSTOPERATIVE RECOVERY UNITS - A postoperative recovery unit should be in or adjacent to the O.R. suite and staffed by trained personnel. All essential personnel should be in house and promptly

available at all hours for post-operative emergency patients.

. INTENSIVE CARE UNITS - Intensive care units and cardiac care units with provisions for routine monitoring of the electrocardiagnosis and other physiological parameters is essential. The unit should be staffed at all hours by specially trained personnel experienced in respiratory crisis, multiple injuries, renal failures, extensive body burns, other medical and surgical emergencies, and the management of critical care cardiac patients. Patients admitted to these units should be seen by an appropriate Board eligible or Board certified specialist, usually within six hours of admission.

. COMMUNICATIONS - Communications equipment should be required for in-hospital coordination and for direct two-way communications between the emergency department and ambulances, dispatchers, law enforcement personnel, and other hospitals.

. HELICOPTER LANDING FACILITIES - Helicopter landing facilities are desirable and should be within close proximety of the entrance to the E.R.

. PUBLIC INFORMATION SERVICE

a. The hospital should post a sign clearly visible from public throughfares to clearly indicate the availability of emergency services.

b. The hospital should provide an information sheet and/or post signs

for the public which clearly explains;

The triage process--the provision of prompt, brief medical evaluation of all incoming patients to deter the native of the medical problem, the urgency of the condition, and the kind of services needed.

The concept of charges for emergency medical care, including laboratory, x-ray, physicians fees and hospital charges.

c. It is recommended that the above information also be provide in the language of any significant non-english speaking population that may reside in the immediate area served by the hospital.

. SUMMARY - The GMH emergency room is the focal point of the EMS system on Guam. The fact that it is physicially a part of the outpatient department should be studied to determine the impact this has had on patient care and the utilization of professional manpower. With the trend toward categorization of services based upon the degree of severity, the ER could become a triage and treatment center. The new EMS radio system which provides two way communication with ambulances and the hospital as well as telemetry should allow for more efficient and definitive patient care.

9. MOBIL INTENSIVE CARE UNIT (MICU)

.. DEFINITION - The MICU Paramedic functions as the patient's first link with the acute care system in an emergency situation. Therefore, MICU Paramedics are expected to be proficient in a specific range of emergency procedures. This means knowledge of rescue techniques including extrication and

movement of the criticall ill; first aid and resuscitation, including; Control of bleeding, airway maintenance, splinting and care of soft tissue injuries. Cardiopulmonary resuscitation in accordance with American Heart Association or American Red Cross standards, use of the esophageal airway (EOA) obtaining blood for laboratory analysis for medical purposes, application of rotating techniquets, complications and contraindications of specific drugs, administration of specific drugs, childburn and newborn care.

. CURRENT CAPACITY - There are no MICU Paramedics currently functioning on the island.

. TRENDS - Until a basic life support system is functioning effeciently and effectively, an MICU Paramedic service is not practical. Because of Guam's geographic location and distribution of primarily care physicians, the utilization of Paramedics would at first glance, appear attractive. More data needs to be gathered on the number of emergent situations needing a mobile response that would require the skills of a Paramedic.

. CRITERIA - The development of furture MICU Paramedic service should be considered and evaluated in light of the provider's responsiveness to the following:

- MICU Paramedics should have a response time of less than 10 minutes.
- Population or incidence based standards must be deter-

emergency medical care according to his level of training and experience. The EMT may peform from the basic care level and incrementally through the advance level.

. CURRENT CAPACITY - Since 1979, the Guam Community College, through the Police Academy has become a focal point for EMT-A training. Supported entirely through grant funds from the Office of Highway Safety (Department of Public Works), the GCC has offered at least one DOT approved EMT-A course. Beginning in January of 1981 two 20-hour DOT approved refresher training courses will be offered along with a 20-hour Intravenous fluid application module. First preference is given to DPS Fire Operations Bureau personnel assigned or volunteering for Ambulance Service. DPS Police and other fire personnel have the next preference. Class size is normally no larger than twenty students. The EMT's are responsible for emergency medical care from the time they arrive at the scene through delivery to the care of ER staff. They must operate the emergency vehicle safely and efficiently; ideally they are to maintain communication between the scene of the emergency and emergency rooms; render necessary care en route; and transmit records and reports to medical and other authorities.

. TRENDS - Once EMT-A's have been trained and certified, refresher training recertification for CPR and continuing education courses are

mined.

- MICU Paramedics facilities and equipment should be clearly identified by signs and markers.
- Notification, communication and service system should expeditures and of high quality to ensure access to the EMS system.
- Services should be available 24 hours a day, seven days a week.
- Medical and traning standards should meet the professional quality expected for the specific services rendered.

. SUMMARY - Although some thought has been given to the establishment of an MICU Paramedic program, it is not practical to consider such a move until: a training program can be established, continuing education assured, and it is determined that the skill levels of the Paramedic can be maintained by sufficient numbers of emergent cases requiring the special knowledged and capabilities that the Paramedic would have.

B. BASIC LIFE SUPPORT (B.L.S.)

Basic Life Support consists of a limited range of emergency medical services which require a minimal level of technical knowledge. Generally, manpower required for this skill render care at the scene of an accident.

(1) EMERGENCY MEDICAL TECHNICIAN - AMBULANCE (EMT-A)

. DEFINITION - EMT-A's are persons trained in emergency medical care in accordance with standards prescribed by the Department of Transportation (DOT), or an equivalent training program. This allied health professional provides

required to assure EMT proficiency. The Office of Highway Safety has earmarked funds for EMS system support through FY 1985. The GCC as the training center for EMT's is developing refresher training courses. An expanded EMT-A course is also being planned to assure that students have the necessary grasp of medical/anatonucal terminology.

. CRITERIA - The development of future EMT-A services should be considered and evaluated in light of the following:

- At a minimum the training of EMT-A's must meet the Department of Transportation and DHHS standards.
- The ambulance attendant and driver must be EMT-A Certified.
- EMT-A's must have an understanding of the basic health sciences and EMT-A training courses should be expanded to provide for this.
- EMT-A's should have a response time of less than 30 minutes.
- EMT-A services must be available 24 hours a day, seven days a week.

. SUMMARY - The EMT-A training program will have to be expanded to allow for upgrading the basic health science knowledge of the fire department's ambulance attendants. Once EMT-A's are recognized as more than firemen, a continuing education program should begin in accordance with the regulatory requirements of the Office of Emergency Medical Services. The content courses, and scheduling should be done in cooperation with GMH and NRMC staff, GCC, UOG and health programs on the island.

2. ADVANCED FIRST AID/CPR

. DEFINITION - Advanced first aid is the process that consists of recognizing respiratory, cardiac, trauma and other life threatening situations which require intervention and transportation to more sophisticated medical care.

. CURRENT CAPACITY - Specific information concerning the number of private citizens, public safety and military personnel who have received training and/or certification in advanced first aid/CPR is limited. The Guam Community College conducted four DOT approved First Responder Courses during 1980.[7] This 40-hour course was offered to all interested citizens on the island. There appears to be no plans to offer these courses to the community in the near future.

. TRENDS - OEMS regulations now require all EMT-A's to maintain certification in CPR. All training cycles at the Police Academy (Police and Fire) will contain the 40-hour First Responder module. OEMS will encourage further OHS funding for First Responder training for the community at large. OEMS will work with the Guam Chapter of the American Red Cross and Heart Association to maintain a register of CPR Certified residents.

. CRITERIA

- CPR courses must meet the requirements of ARC or the Guam Heart Association.
- Advanced First Aiders and CPR certified personnel should be available in every gover-ment facility.
- All DPS personnel should have successfully completed the DOT approved First Responder Course as:

1. A basis for completion of POLICE/FIRE Academy Training Cycles;
2. Continued employment as DPS Personnel.

. SUMMARY - Advanced First Aid/CPR is a basic requirement for DPS personnel. In addition, these courses should be readily available to the community at large. Successful completion of these courses should be part of the requirement for selected Government of Guam personnel (School Health Counselors, Physical Education Instructors, Atheletic Trainers, etc.).

3. FIRST AID

. DEFINITION - First Aid is the general knowledge needed to provide initial procedures in recognizing warning signs of closed or obstructed airways, heart attack, bleeding, etc. The first aider must have the fundamental skills necessary to attempt stabilization and prevent complications.

. CURRENT CAPACITY - There is limited information available on the number of private citizens who have completed a first aid course.

. TRENDS - Nationally, much effort has gone into providing first aid and CPR to members of communities. The availability of a large pool of ~~wit~~ people with life saving skills embrances the probability of an emergent patient receiving timely care.

. CRITERIA - The development of future first aid services should be considered and evaluated in light of the following:

- Certification records (a registry) should be maintained and reviewed annually to identify: the number of first aiders; the number requiring refresher courses; the location (if possible) of these first aiders.
- Training must meet minimum American Red Cross standards.
- The Community should be made aware of, and have access to training courses.

- Refresher courses should be a standard component of an annual training program.
- First Aid training should be planned on an annual basis, with participation in scheduling training dates and sites a community wide activity.
- Attendance at first aid courses should be a requirement for all Junior and Senior High School students.

. SUMMARY - The need for the general public to have basis first aid training has been endorsed by the American Red Cross, the American Heart Association, DOT and DHHS.

The total number of individuals on Guam who are certified first aiders is not available. A school health curriculum providing first aid, advanced first aid/CPR is seen as desirable and feasible.

ANALYSIS AND RECOMMENDATIONS

VI ANALYSIS AND RECOMMENDATIONS

This Chapter is a presentation of our analysis of the Emergency Medical Services System components and the recommendations based upon that analysis. To assist the reader, this Chapter has been structured to review the advanced life support and basis life support services from the perspective of each of the seventeen components of the EMS system as defined in Chapter V, Exhibit VI.1, page 98-A shows a matrix describing the seventeen components in place and the Emergency Medical Services described. Thus manpower, for example, includes a description of the hospital emergency room and has a check in the square across from manpower and down from hospital emergency room.

The intent is to graphically display what services are considered in the analysis of the seventeen components of Guam's EMS system. Each section of this Chapter has been designed to identify and analyze services as well as to define the component and review its current capacity. When a recommendation is made to either develop or establish a specific service or program, a final has been included which reviews implementation considerations.

A. MANPOWER

(1) DEFINITION

Emergency medical manpower includes: physicians, emergency and critical care nurses, ambulance attendants, mobile intensive care paramedics, central dispatchers and telephone screeners, first aid responders, public safety and military personnel. These key individuals provide services which directly affect the patient's health status in an emergency situation.

(2) CURRENT CAPACITY

Specialized medical personnel are available at both the Guam Memorial Hospital and the Naval Regional Medical Center. Nursing service

as well are also available at both facilities. A study will be conducted subsequent to the publishing of this plan to determine whether staffing levels are adequate across the existing spectrum of EMS manpower. The study will identify gaps in personnel needs and recommend actions to fill those gaps.

(3) ANALYSIS AND CONCLUSIONS

The manpower needs at the Advanced Life Support (ALS) level must be determined. It is difficult ~~to do so~~ at this time to assess need for or utilization levels of existing manpower at ALS levels because a uniform system of data collection does not exist to trace trends. While a study will be conducted to determine ALS needs, the focus of this plan revision will be on upgrading Basic Life Support services and personnel. At the BLS level, an ongoing program of inital EMT-A training, refresher and continuing education must be in place. Before attempting to expand pre-hospital care into the ALS level, a sound BLS system must be in place. OEMS regulations require CPR recertification and continuing education for all EMT-A's, but until ongoing training programs are available the regulations are effectively useless.

Changes in policy and classification of Public Safety EMT-A's are also necessary if a BLS system is to be effective. The following observation should be noted:

- Some Fire Bureau personnel sent for initial EMT-A training lack adequate preparation in the basic sciences.
- The Fire Fighter who successfully completes the DOT approved EMT-A course returns to the Fire Bureau as a Firefighter. There is no incentive to remain active or interested in Emergency care

EXHIBIT VI-1

DESCRIPTION OF WHERE EXISTING EMS ELEMENTS
IMPACT UPON SERVICE COMPONENTS

	EMERGENCY MEDICAL SERVICES											
	ADVANCED									BASIC		
COMPONENTS	BURNCARE	NEWBORN INTENSIVE CARE	MAJOR PSYCHO/SOCIAL EMERGENCY	POISON CONTROL	BLOOD BANK	CONSTANT CARE UNIT	TRAUMA CENTER	HOSPITAL EMERGENCY ROOM	MICU PARAMEDIC	EMT - A	ADVANCED FIRST AID	FIRST AID
1. MANPOWER	X	X	X	X	X	X		X		X	X	X
2. TRAINING	X	X	X	X	X	X		X		X	X	X
3. COMMUNICATION								X		X		
4. TRANSPORTATION										X		
5. FACILITIES	X	X	X		X	X		X				
6. CRITICAL CARE UNITS		X			X	X		X				
7. PUBLIC SAFETY AGENCIES										X	X	X
8. CONSUMER PARTICIPATION										X	X	X
9. ACCESSIBILITY TO CARE	X	X	X	X	X	X		X		X	X	X
10. TRANSFER OF PATIENT	X	X	X	X	X	X		X				
11. STANDARD MEDICAL RECORD KEEPING	X	X	X			X		X		X		
12. PUBLIC INFORMATION AND EDUCATION								X		X	X	X
13. EVALUATION	X	X	X	X	X	X		X		X	X	X
14. DISASTER LINKAGE	X	X	X	X	X	X		X		X	X	X
15. MUTUAL AID AGREEMENTS	X	X	X	X	X	X		X				
16. EMS SYSTEM MANAGEMENT								X		X		
17. LEGISLATION	X	X	X	X	X	X		X		X		

since promotions and career objectives can only be achieved as a firefighter. There is no EMT-A classification, no additional pay and no future in considering a career as an EMT-A or Paramedic.

. While most DPS personnel have had first aid courses, few have attended DOT approved First Responder Courses. While all future Police and Fire Academy training cycles will contain a First Responder module, this will affect new recruits only. A review of DPS personnel policies concerning, first aid, CPR, First Responder and Ambulance Attendants is necessary.

(4) RECOMMENDED GOALS AND OBJECTIVES

. GOAL - to improve the availability of manpower at the EMT-A, First Responder, CPR and Advanced First Aide within the Department of Public Safety.

. OBJECTIVE - To develop a module within the EMT-A course which will concentrate on the basic sciences. Preparation of this module is the responsibility of the Guam Community College and the Office of Emergency Medical Services.

. OBJECTIVE - To develop job specification and classification schemes for ambulance attendancts. This is the responsibility of DPS/Fire Bureau and OEMS.

B. TRAINING

(1) DEFINITION

This factor relates to training and continuing education programs including all personnel within the EMS system. Programs will be identified as to whether they are continuing education, residency education, training for critical care nurses training for all levels of EMT's, training for

First Responders and other associated personnel. Aspects to be considered are necessary resources, adequacy of evaluation and the reassessment process, cost and, if possible, frequency and location of courses offered.

(2) CURRENT CAPACITY

Training programs vary on Guam from in-service training for nurses assigned to the constant care unit, classroom courses for EMT-A's, First Responder Courses, CPR Courses, to ARC first aid.

Staff at the Guam Community College (GCC) under grants from the Office of Highway Safety conduct EMT-A, Refresher Training, Modules 1, 2 and 3 of EMT-P, and First Responder courses. All courses are offered to the Community at large with preference given to DPS personnel. However, since funding for these courses is dependent upon OHS assistance, there are no guarantees that this training will be available on a continuing basis. A plan must be developed to ensure that BLS training is available at GCC on a permanent basis.

The Red Cross, Guam Heart Association, and other organizations also provide training sessions in first aid, advance first aid, CPR and refresher /recertification courses upon request.

At present, there ~~is~~ ARE no ongoing training programs for physicians, nurses, and ~~ambulance~~ EMT-A's ~~is~~ currently acceptable medical techniques for emergency medical care. Critical care nurses are required to have continuing education.

Continuing emergency medical care instruction is sporadic at the BLS level and practically non existent at the ALS level.

(3) ANALYSIS AND CONCLUSIONS

There is no structured training program at GMH for either ER staff or ambulance attendants. The refresher course and modules 1,2,3 of the EMT-P. Course will serve some of the continuing education needs for the EMT-A.

Training is needed to maintain and upgrade the knowledge and skills of ER staff. Continuing education courses can be conducted at GMH, GCC and the fire stations.

An in-service trianing program that meets the needs of the EMT's and the hospital staff requires a qualified training director. A feasible arrangement needs to be developed between GCC, GMH and DPS to identify a person or persons who could direct the establishment of a permanent continuing education program.

- OBJECTIVE - To establish a training and continuing education program for all Public Safety employees. At a minimum initial training should be the DOT approved First Responder course.
- OBJECTIVE - To ensure that first aid, advanced first aid and CPR training is part of the school health curriculum to the Department of Education.

C. COMMUNICATION

(1) DEFINITION

The Communications system includes access, dispatch, medical consultation linkages between ambulances, EMT's, ~~has pitals~~ hospitals and other DPS personnel. The communications system must be able to support the medical requirements of the EMS system as well as link the appropriate services for a disaster situation. The engineering of the total communication system, and the manpower required to meet the services needs of the system will also be considered.

(2) CURRENT CAPACITY

A call for ambulance assistance normally ~~to~~ 15 received from the following sources:

(a) A direct telephone call to the DPS Central Communication Center. The communication center staff then relay the information to the Central

Fire Station in Tamuning, which then dispatches the appropriate MEDIC (Ambulance).

(b) A call is received by Central Tamuning Fire Station and MEDIC is dispatched accordingly.

(c) Individual fire stations receive calls and if there is ~~an~~ A MEDIC assigned to that station, it responds. If not, Tamuning Central is notified and a MEDIC is dispatched by Tamuning.

Prior to 1980, the Ambulance Service's radio communication were linked to the Department of Public Safety's radio system. Channel 2 was generally reserved for fire and ambulance operations, but depending upon the needs of the Police Division, that channel could be switched for police activities. Channel 2 did not have island wide coverage and MEDICS would not be able to transmit or receive in certain areas of the island, mainly in the Southern area and the Tumon area. There was no direct radio link with GMH Emergency Room.

In October of 1979, OEMS, with funds from a grant from the Office of Highway Safety contracted with Aircall Guam Inc. to install a 3-Channel UHF EMS system. This system provides 1 channel for MEDIC dispatch and two channels for voice/telemetry. One telemetry station is located at GMH ER. Plans are to locate the other telemetry station of the NRMC ER pending Navy approval. All DPS medics will be equipped with portable bio-phones which will enable the EMT's to maintain direct voice contact with the GMH ER. As soon as necessary training is available, EMT's will be transmitting EKG's via the telemetry feature.

The EMS transmitter and twoer (tower) is located at Mount Barrigada, island coverage is made available through a repeater at Mount Lebugon.

(B) ANALYSIS AND CONCLUSIONS

Guam's EMS system currently does not include a 911 access. Moreover, the system does not have a central dispatch organization or a network for Communication between GMH and the military ambulances or between NRMC and the DPS MEDICS. With the two telemetry/voice consoles placed at the hospitals, DPS MEDICS will have direct voice/telemetry linkage with GMH and NMRC physicians.

Estimated communications reliability with the new system is between 95 - 98%. Technical adjustments, 'fine tuning' should result in 100% reliability and coverage for the island.

A universal EMS access telephone number is not yet available, but capability for such a system should be available once the Guam Telephone Authority completes its reconstruction and upgrading project which was capitalized through an REA loan. System design and financing for a universal access have yet to be determined. A reliable telephone system is a prerequisite to any planning for an EMS telephone access system.

(4) RECOMMENDED GOALS AND OBJECTIVES

. GOAL - To improve the existing communication system by assuring interface with hospital E.R.'s and to simplify dispatch and access.

-OBJECTIVE - To identify one central dispatch for all Public Safety activities

-OBJECTIVE - To train DPS Communications Center personnel in EMS dispatch

-OBJECTIVE - To install compatable two-way radio communication equipment in military and civilian emergency vehicles with adequate access to GMH and NRMC E.R. Joint responsibility of Office of EMS, GMH, NRMC.

-OBJECTIVE - To establish one emergency telephone number for the island by 1982. This is the joint responsibility of GMH, GTA Public Safety and the military.

D. TRANSPORTATION

(1) DEFINITION

Transportation consists of the different type of ground, air and water transportation available for primary and secondary response situations. Further, the various categories of emergency vehicles are to be coordinated within the total system. Other aspects to be considered are centralized command control, service to recreational and inaccessible areas and the replacement of vehicles.

(2) CURRENT CAPACITY

There are ____ five stations operated by the Department of Public Safety _____ of these stations maintain an ambulance and attendants. All ambulances meet Federal specifications for body type and minimal equipment. Ambulance service is provided to anyone in medical need. The utilization falls into two broad categories: emgergent and non-emergent. The great percentage of non-emergent runs which require no first aid are typically for transport services to routine medical appointments. The Dededo, Tumon, Tamuning area show the highest percentage per population utilization of non-emergent transport.

The coverage response time (receipt of call to arrival at scene) in a rural community should be from 15 to 25 minutes. Transport to an E.R. facility should not exceed 30 minutes. It is estimated, given good conditions, weather and traffic load, the populations of Inarajan, Merizo, Umatac and their environs can be as much as 60 minutes from the GMH ER.

Military ambulances provide service to military personnel and their dependents. In an emergency a military ambulance will provide transport to civilians. There are _____ military ambulances on Guam. Because of their geographic location the response time of their vehicles is better than the Department of Public Safety. Medical equipment on the Government ambulances suffers from lack of adequate maintenance. Lack of medical supplies is a chronic problem.

(3) ANALYSIS AND CONCLUSIONS

The system operated by both the civilian and military communities provides a total of _____ ambulances for a combined estimated 1980 population of 110,000 people.

Some of the DPS ambulances need replacement and/or overhaul. Particularly chronic problems exist in the electrical systems. This is due in large part to the relatively short distance that the ambulances cover. This does not allow the ambulance batteries to be recharged. The estimated useful life of Type II ambulances is five years or 70,000 miles. Given Guam's climate and the apparent lock of a consistent maintenance program, its useful life of these ambulances is appreciably less. Lack of medical supplies also renders the ambulances at times practically useless.

No formal agreements currently exist in terms of who has responsibility at the scene when both military and civilian ambulances respond. Further, dispatching does not always identify the proper responder. Thus equipment, dispatch and coordination of on-scene responsibility needs to be improved.

(4) RECOMMENDED GOALS AND OBJECTIVES

-GOAL - To improve the coordination of air, land and sea transport services between the military and civilian organizations

-OBJECTIVE - To establish a central dispatch and communication net which will interface with the military system.

-OBJECTIVE - To improve the medical equipment and supplies on Public Safety ambulances to meet federal specifications and regulatory requirements of OEMS.

-OBJECTIVE - To identify a continuing source of funding for ambulance maintenance, repair and replacement.

-OBJECTIVE - To establish a formal agreement between the DPS and local military commands concerning the role and responsibility of their ambulance in responding treating and transporting of patients.

E. FACILITIES

(1) DEFINITION

Health facilities include hospitals, clinics and mental health centers; A description of each facility including their services. patient volume, number of emergency cases and the staffing patterns of the facilities.

(2) CURRENT CAPACITY

The only civilian hospital, Guam Memorial Hospital, operated by the Government of Guam is located in Tamuning which is within the

major population center. GMH and NRMC are equipped to provide emergency care. Except for constant care units and neonatal intensive care (at GMH), Guam does not have "specialized critical care units"*

(3) ANALYSIS AND RECOMMENDATIONS

It was difficult to obtain data relative to the volume and workload of staff in each of the hospitals. In cases where data were available and from the population statistics, it is clear that the number of patients is not adequate to either expand highly sophisticate programs (e.g., burn care), or develop sophisticated care units (e.g., spiral cord injury. Patient volume is insufficient to justify expenditures for services of this nature.

Because of the limited types of medical services available in both hospitals, the service mix and access to care is critical. At this time there are no formal arrangements between GMH and NRMC. Duplicate services exist and are understandable given the differences in service populations. However, gaps in either GMH or NRMC's medical services should be identified and where possible mutual aid agreements established with hospitals off island to meet the emergent patients needs.

All medical clinics with the exception of FHP are not designed to handle extensive emergency situations.

(4) RECOMMENDED GOALS AND OBJECTIVES

-GOAL - To establish the necessary mechinisms to assure efficient utilization of ER facilities.

-OBJECTIVE - To develop a categorization plan for services offered at GMH and to assess the feasibility of inclusion of services listed in federal EMSS program guidelines (spiral cord, burn care, posion, trauma, behavioral emergencies.) Such a categorization scheme will take into account services presently offered by GMH and NRMC, level of sophistication and capability for expansion.

F. CRITICAL CARE UNITS

(1) DEFINITION

The critical care units to be considered will include trauma, burns constant care, neonatal intensive care and blood BANKING.

(2) CURRENT CAPACITY

There are five service areas described in this section.

*Other critical care Units would include:
TRAUMA, BURNS, SPINAL CORD INJURY, POISONING BEHAVIORAL EMERGENCIES

BURN CARE - Generally treated in the emergency room of GMH. There are no burns beds at GMH. If the burns are diagnosed as serious and require hospitalization, the patient is admitted according to age and/or service. There is only one plastic surgeon on Guam. The Navy and Air Force, when necessary, transfer their burn patients to GMH for treatment and care.

BLOOD BANK - GMH maintains a blood bank which has whole blood available for emergency use. The supply of blood is dependent upon durations only. If the bank's supply is completely consumed, the patient's family is asked to secure a donor or donors. Various Civic organizations on Guam will provide donors during times of emergency or a special need. The blood bank is staffed 24 hours a day.

A verbal agreement between the American Red Cross and GMH exists to secure additional blood from the Hawaii Red Cross Blood Bank in cases of massive need.

CONSTANT CARE UNIT - GMH has a (10) bed constant care unit. Based upon reports of the Medical Records section of GMH the monthly occupancy rate has averaged 41.23, 55.01, 62.30, 70.58, 50.99, 59.14 per cent for the periods July 1 - June 30, 1975-1980.

The NRMC has _____ bed Intensive Care Unit of which _____ beds are for Cardiac Care.

HOSPITAL EMERGENCY ROOM - There are PHYSICIANS who are assigned to the GMH ER. Specialists are on call. The ER and Outpatient Department are one unit. Utilization of the ER is as follows:

FISCAL YEARS

	1975	1976	1977	1978	1979	1980
E.R. VISITS	4,652	3,951	4,892	7,456	6,644	5,919
OPD VISITS	44,939	42,008	34,206	30,847	32,854	33,344
E.R. VISITS AS A % of OPD	10.35	9.40	14.30	24.17	20.22	17.75

NEONATAL INTENSIVE CARE

GMH data shows that a Neonatal ICU began operation in Fiscal Year 1978. At present there is no Neonatologist on Guam. When the unit was first opened, a staff physician of Family Health Program was trained in Neonatology and provided the supervision for the NICU. There are _____ Nurses assigned to this unit. Utilization is as follows:

NICU	FY 1978	FY 1979	FY 1980
ADMISSIONS	14	30	31
AV LENGTH OF STAY	5	16	25
AV OCCUPANCY	7.93	11.92	5.48

(3) ANALYSIS AND RECOMMENDATIONS

An incomplete data base precludes an analysis of the critical care units. Standards of care, staffing patterns and comparable data (utilization, incidence/population etc.) needs to be gathered before an assessment of present capabilities can be done.

(4) RECOMMENDED GOALS AND OBJECTIVES

GOAL - To assure that critical care service in place is adequate and available to meet the emergent needs of patients requiring them.

-OBJECTIVE - To evaluate present critical care services against professionaly accepted standards. A margin must be allowed for the unique situation on Guam (in terms of distance, manpower 'morbidity')

-OBJECTIVE - To establish formal mutual aid agreements between GMH, NRMC and Pacific Basin Facilities to assume critical patient care during disasters or to fill in identified gaps in care where they cannot reasonably be provided on island.

G. PUBLIC SAFETY AGENCIES

(1) DEFINITION

Public Safety agencies are involved at the Basic Life Support level of the EMS system. A description of how interfacing occurs with these agencies is provided.

(2) CURRENT CAPACITY

The Department of Public Safety's role in the EMS system lies in ~~the~~ its central disptach/communications center and its ambulance attendants (EMT's who are part of the Fire Bureau). Beyond this, Police Officers often find themselves in the role of ~~first~~ FIRST respondent and have frequent contact with EMT's especially at vehicles accident sites.

The Police and Fire Divisions are within the Department of Public Safety and Coordinate their efforts through the Department. However the ambulance service is often treated as a step-child that no one seems to ~~what~~ WANT. In the eyes of many DPS managers the ambulance service is nothing more than a transporation system. Furthermore, interface with the medical system is not well defined. The new radio communication system may go a long way towards achieving the much needed ER - ambulance interface.

No formal method exists for ambulance attendants and ER staff to meet and exchange information concerning their patient's treatment and outcome. No method exists whereby EMT's can be evaluated on a retrospective basis on their management of emergent patients.

(3) ANALYSIS AND RECOMMENDATIONS

The interfacing of Public Safety and Medical Services must be improved. Areas where improvement is recommended are:

-Hold formal meetings with ambulance attendants and hospital staff to secure a better understanding of their respective roles, duties and responsibilities; and

-A patient review committee should be established to review patient care utilizing recent cases in which EMT's were involved. Such an evaluation process will require the development of a report/patient care form which will record the pre-hospital care rendered by the EMT's.

(4) RECOMMENDED GOALS AND OBJECTIVES

.GOAL - To establish a more effective interface between the Department of Public Safety and Guam Memorial Hospital.

-OBJECTIVE - To establish a formal agreement between GMH and DPS (Fire Bureau) to meet regularly to coordinate medical transportation issues. This is the responsibility of GMH, DPS, and OEMS.

-OBJECTIVE - To begin a system for reviewing care of patients transported by ambulance. Such review should be conducted by a physician with impact from other ER staff. This is the responsibility of OEMS, GMH, and DPS (Fire Division)

H. CONSUMER PARTICIPATION

(1) DEFINITION

This section will describe how provisions for consumer participation in determining system policy has been utilized in plan development and continued operation of the EMS system.

(2) CURRENT CAPACITY

To assist in the design and inplementation of this EMS plan the EMS Commission will review and approve/disapprove this current revision.

The Commission membership is as follows:

.Department of Public Safety (Police)
.Department of Public Safety (Fire)
.Guam Memorial Hospital
.Department of Public Works (Highway safety)
.Department of Education (School Health Counselor Coordinator)
.Department of Public Health and Social Services
.Civil Defense
.Guam Telephone Authority
.Physician Licensed to practice on Guam
.Nurse, EMT or other allied Health Professional
.Two members of the community
.One Representative each from Navy and Air Force.

In addition, the plan was reviewed by the Guam Health Planning and Development Agency for consistency with the Guam Health Plan. Various government and civic groups were also given copies to review. Prior to the final draft a public hearing was held (see copy of proceedings in Appendix _____). A list of the Government Agencies is available in Appendix C).

(3) ANALYSIS AND RECOMMENDATIONS

The EMS Commission will play a major role in the development of Guam's EMS system. In addition to the review and approval of this plan the Commission reviews and approves the OEMS budget and all grant applications prepared by OEMS.

(4) RECOMMENDED GOALS AND OBJECTIVES

.GOAL - To assure consumer input into the development of the EMS system.

-OBJECTIVE - To utilize the review proceedures of the Guam Health Planning and Development Agency for subsequent Revisions of this plan.

-OBJECTIVE - To hold public hearings on any proposed use of federal or other grant funds for EMS development.

I. ACCESSIBILITY TO CARE

(1) DEFINITION - This means does the EMS system provide for the patient who is unable to pay? A review of how the Government of Guam assures coverage of its citizens is provided.

(2) CURRENT CAPACITY

At the present time the Government of Guam underwrites the cost of health care for the indigent patient who is unable to pay. This includes ambulance transport to the hospital. The cost is borne through a greatly underfunded (in terms of Federal share) Medicaid program. Ambulance fees, while set at a minimal

$12 have not been billed for or collected in recent years. Guam Memorial charges for care in general are well below their actual costs. Other third party payment, prepaid health care plans and out of pocket payments 'finance' the remainder of care. It is estimated that as much as 75% of population has some type of health care payment coverage.

(3) ANALYSIS AND RECOMMENDATIONS

Ability to pay for emergency care is not a barrier to access. An unreliable telephone system, poorly maintained ambulances and equipment are more serious access problems. A person's ability to pay is not a consideration when emergency care is provided.

(4) GOALS AND OBJECTIVES

NONE

J. TRANSFER OF PATIENTS

(1) DEFINITION

This means the flow or referral of the patient through the various phases of the treatment process. This will include transportation and facilities. The location capacity, type of patients, accessibility and criteria of care are elements of this factor.

(2) CURRENT CAPACITY

Because Guam has only two hospitals with similar emergent patient care capabilities, transfer between facilities usually is a result of jurisdictional rather than medical need considerations. GMH has arrangements with several off-island care facilities.

(3) ANALYSIS AND RECOMMENDATIONS

As noted earlier, it may be useful to assess critical care capabilities of the two island hospitals, using categorization schemes developed by the appropriate specialty associations (e.g., burn care, spinal cord injury). Once this is done perhaps the two facilities could agree to concentrate on specific areas of critical care, rather than to duplicate those services. In those critical care areas where it is impractical to provide services locally, agreements must be made with off-island facilities to handle patients requiring care.

.GOAL - To assure proper transfer of all patients through the treatment process.

-OBJECTIVE - To assess the critical care capabilities of each hospital using categorization criteria developed by appropriate specialty associations.

-OBJECTIVE - To eliminate duplication of critical care services by determining which facility has the best capability relative to the services provided.

-OBJECTIVE - To enter into transfer agreements with off-island facilities where it is determined that local critical care capability is unavailable or impractical.

K. STANDARD MEDICAL RECORD KEEPING

(1) DEFINITION

This means the specific information required and collected on emergency patients. What information is needed, such as, the time the emergency medical system was accessed medical care dispatched and the treatment provided are examples of the minimum information medical records can provide. Aside from the monitoring of the records and assuring this accuracy, the planned must maintain the confidentiality of the patient's medical information.

(2) CURRENT CAPACITY

The Emergency Room at GMH does maintain an emergency treatment report on each patient; summary data on each patient is tabulated and identifies the patient's primary and secondary diagnosis as well as date of discharge. It is not known at this time whether medical care or "quality of care" audits on emergent patients are conducted regularly. There is no systematic analysis of emergency care doen by the hospital. Medical Records reports only aggregate information. This is shown as "ER VISITS".

The Fire Bureau maintains logs on abmulance runs which provide sex, approximate age, time of dispatch and return and on occasion initial vital signs (Blood pressure, Pulse, Respiration) However, no information is provided consistently regarding patient status, treatment, or disposition.

(3) ANALYSIS AND RECOMMENDATIONS

The existing medical record system is less than adequate. A more detailed record of ambulance runs is necessary. A system whereby prehospital and Emergency Room Care can be assessed must be established. Any Emergent patient admitted to GMH via the Ambulance-ER should be identified and followed through his/her course of treatment so that the emergency care system may be assessed in terms of both process and outcome.

Agreements will have to be reached regarding the specific information required on ambulance runs, patient volume, patient condition, care given, time of access, arrival on scene, arrival at the E.R.

A method will have to be designed to assure accuracy of the data collected.

(4) RECOMMENDED GOALS AND OBJECTIVES

.GOAL - To establish on Emergency Care information system that meets minimal federal requirements[9] and the needs of its users.

-OBJECTIVE - To develop a uniform ambulance report form containing the minimum data sets recommended by DHHS.

-OBJECTIVE - To have the ambulance report form included in the treatment records of the GMH E.R.

-OBJECTIVE - To evaluate and upgrade if necessary ER patient care audits

L. CONSUMER INFORMATION AND EDUCATION

(1) DEFINITION

This includes information on how consumers can access the emergency medical system. It is anticipated that further information will be provided on available emergency services; their location and how to determine what to do for specific injuries or medical emergencies. The planner will be concerned with the content, relevancy and coordination of the information programs presented.

(2) CURRENT CAPACITY

Aside from radio and public service television spots describing heart conditions and how to take action in cases of emergency, there is little else being provided concerning health information to consumers.

The Guam Community College conduts EMT-A Courses which are available to the public if there are vacancies. However, the scope of the EMT-A course is generally beyond the needs of the typical consumer. The EMT-A course assumes students have access to equipment and supplies rarely found in anyone's home.

First responder, Advanced First Aid and CPR training would appear to have more benefit for consumers.

(3) ANALYSIS AND RECOMMENDATIONS

Because of the limited amount of information being developed for the public concerning the EMS system, a major focus should be the establishment of information programs on what the EMS system is and how it can be accessed. In addition, self help programs such as those listed in L (2) above, should be established.

(4) RECOMMENDED GOALS AND OBJECTIVES

.GOAL - To establish a public information and education program for all the people of Guam so that they know about the EMS system and how to access it.

-OBJECTIVE - To develop information for visitors and residents which describes the EMS system. This information should, at a minimum, list or describe access points, procedures for requesing assistance and selected signs and symptons which would require EMS system response.

M. EVALUATION

(1) DEFINITION

This is to determine whether the specific goals were achieved. This will include an assessment of the management of the implementation of the EMS plan. The evaluation will measure process as well as impact of the patient care system. Baseline data (or data elements) will be determined for each measurement criteria which will be determined for each of the measurement criteria which will assess change improvement.

(2) CURRENT CAPACITY

To be developed

(3) ANALYSIS AND RECOMMENDATIONS

The existing data 'system' does not provide information which will measure the effectiveness of the EMSS. Further, measurement criteria and evaluation objectives have not been identified thus the first priority of the EMS Commission should be to define the evaluation objectives. The areas which need immediate assessment are the transporation system and GMH's Emergency Room. Within transportation some of the elements that need to be defined as evaluation objectives include time factors, manpower utilized, patient condition, equipment used and procedures followed. Within the emergency room the issues are the treatment process, manpower utilized, patient volume, and transfer.

(4) RECOMMENDED GOALS AND OBJECTIVES

.GOAL - To establish evaluation objectives which measure the effectiveness of the EMS system.

-OBJECTIVE - To form an evaluation committee composed of consumers, providers and planners to design objectives and measurement criteria.

-OBJECTIVE - To develop measurement instruments based upon the objective to assess the ambulance services, and the GMH E.R.

N. DISASTER LINKAGE

(1) DEFINITION

This addresses the emergency medical services available during a disaster. This aspect of the plan must consider a systematic method to deliver emergency medical services during a disaster as well as the necessary modifications of the EMS system's routine procedures during a disaster to be fully effective this means adequate now - telephonic communicators are available and accessible, and that necessary changes can be effected immediately. Finally, the disaster plan must be tested once each planning year.

(2) CURRENT CAPACITY

The Office of Civil Defense has prepared a disaster plan for Guam. Incorporated into the disaster plan are the responsibilities and duties of the different governmental agencies are departments. The military is included in the plan for back-up services which the public agencies cannot provide although no formal agreements exist detailing the procedures and methods by which this assistance will be provided.

(3) ANALYSIS AND RECOMMENDATIONS

A major difficulty with the Disaster Plan is an adequate statement of how medical services will be coordinated in time of a disaster. To a very large degree each disaster must be dealt with individually. However, basic criteria can be established which designates which agencies have responsibility and how they will carry out their tasks during a disaster. The Office of Civil Defense is the lead agency during time of disaster. Direction for the development of a medical service plan should come from Civil Defense. Further system wide practice is critical and should include a proper assessment of the efforts and activities of the participants.

(4) RECOMMENDED GOALS AND OBJECTIVES

.GOAL - To establish an emergency medical service system which has a linkage with other agencies in case of disaster.

-OBJECTIVE - To determine roles and responsibilities for each medical service with linkage to the Office of Civil Defense. A medical care plan should be developed which details ~~to age~~ training and care procedures, medical control, manpower required and military involvement.

O. MUTUAL AID AGREEMENTS

(1) DEFINITION

This means that the area wide EMS plan has been agree upon; that the capability, availability, and location of the EMS resources have been determined; and that cooperative agreement has been established between the military and public jurisdictions to assure adequate financing.

(2) CURRENT CAPACITY

Guam Memorial Hospital refers patients to mainly two hospitals in the United States. GMH, however, is not restricted from referring its patients to other hospitals off-island. There are no written agreements for patient transfer.

There is written agreement that the NRMC will provide medical services to the former Trust Territories, whether emergency or non-emergency, for services that otherwise cannot be provided by the localities.

Many of the former Trust Territories are at various levels of EMSS development. An assessment of their respective capabilities is not available.

(3) ANALYSIS AND RECOMMENDATIONS

The lack of formal agreements as well as a complete survey of resources indicates that the need for initial identification and allocation is required before mutual aid agreements are possible. Several areas have advanced to the point where mutual aid agreements can be established. However, the vast majority of services and programs will have to be surveyed and problems identified before mutual aid agreements can be established.

(4) RECOMMENDED GOALS AND OBJECTIVES

.GOALS - To establish mutual aid agreements where necessary for every medical program which impacts upon the Emergency Medical Services System.

-OBJECTIVE - To survey the existing resources to determine program gaps which can be met by other agencies or programs.

-OBJECTIVE - To assist GMH and other medical service providers to establish mutual aid agreements which meet the goals set forth in this EMS plan. This will be a continuous process.

-OBJECTIVE - To develop a written mutual aid agreement between Guam, the former Trust Territories and NRMC for a coordinated emergency care delivery service dealing with the exchange of services, communication linkages, licensure, certification training, and reimbursement, where necessary.

P. EMS SYSTEM MANAGEMENT

(1) DEFINITION

This relates to the coordination, implementation and operation of the EMS plan. It will identify who has management responsibility of the EMS system and its components.

(2) CURRENT CAPACITY

Passage of Public Law 14-11 established the Office of Emergency Medical Services within the Department of Public Health and Social Services. The OEMS is responsible for coordinating of the EMS system. Some of the Responsibilities of OEMS ARE:

.DEVELOPMENT for Regulations for the licensure of ambulances
.Development of regulartions for certifivation of EMT's
.Regulations for the categorization of critical care facilities
.Development of standards for EMSS Communications

OEMS, through the use of grants from the Office of Highway Safety, has accomplished the following.

.Establishment of a UHF EMS radio communication system.
.Establishment of EMT-A, First responder and EMT Refresher training at the Guam Community College
.Funding for EMT Dispatcher and Dispatcher instruction Training
.Organization and operation of the Guam Emergency Medical Services Commission.

The OEMS is staffed by an Administrator and Administrative Secretary. Expansion of staff is not planned in the immediate future.

(3) ANALYSIS AND RECOMMENDATIONS

The OEMS should continue to play its role as facilitator and coordinator. Use of federal funds for EMS development, where practical, should continue. In addition a financial plan for ongoing EMSS support needs to be developed. Such financial plan should identify possible sources of local funds for operations, expansion and development of EMSS components.

(4) RECOMMENDED GOALS AND OBJECTIVES

.GOAL - To assure that OEMS has necessary authority and funding to achieve optimum EMSS development.

-OBJECTIVE - Upon recommendation of the EMS Commission apply for federal funding for EMSS development.

-OBJECTIVE - To determine local sources of EMS funding to assure that the Emergency Medical Service System will continue to attain optimum development and continued operation.

Q. LEGISLATION

(1) DEFINITION

This section has been included because of the increased involvement by federal, state and local governments in legislating programs guidelines, standards and procedures which directly affect the design, implementation and operation of this plan. Included are a number of local laws which impact upon EMSS development.

(2) CURRENT CAPACITY

DECLARATION OF POLICY

Declares that it is the Territory's plicy to promote safety for persons and properties with the use operation, and equipment of vessels.	TITLE IX Department of Public Safety Chaper XVI, Territorial Boating Act Section 8995.1

COLLISIONS, ACCIDENTS AND CASUALITIES

Require the operator of a vessel involved in an accident, collision, or other casualty to assist those injured in the accident, collision or other casualty, and to provide in writing to th person injured and to the owner of any property damaged his name, address and identification of his vessel.

TITLE IX Department of Public Safety, Chapter XVI Territorial Boating Act, Section 8995.10

COMPREHENSIVE SAFETY AND EDUCATIONAL PROGRAM

Authorizes the Department of Public Safety to commence a comprehensive boating safety and educational program, to establish appropriate advisory groups, and to seek the cooperation of boat , the Federal government, etc.

TITLE IX Department of Public Safety, Chapter XVI Territorial Boating Act, Section 8995.15

IN-SERVICE TRAINING FOR RESIDENT NURSES

Provides in-service training to permanent resident professional or practical nurses for two years to obtain a degree in nursing.

TITLE XII Department of Education, Chapter XI-A. Nurse training, Section 11889.

CONDUCT OF OPERATORS AND PEDESTRAINS ON APPROACH OF AUTHORIZED EMERGENCY VEHICLES

Requires the operators of all vehicles to yield the right of way and to remain as close as possible to the right hand edge or curb of the highway upon approach of an authorized emergency vehicle sounding a siren or exhibiting a red or blue light.

TITLE XXIV, Vehicle Code, Chapter II General Provisions Section 23128

ACKNOWLEDGEMENT AND DECLARATION OF INTENT	
States that the Government of Guam acknowledges that the provisions of the Williams -Steiger Occupational Safety Act of 1970 are applicable to the island and will comply with and observe such requirements.	TITLE XLVI Department of Labor, Chapter II Occupational Safety and Health Act of Guam Section 48201
Agency responsible for occupational safety and health	
Designates the Department of Labor as the agency responsible for developing and administering a plan in accordance with the provisions of 18 (C) of the Occupational Safety Act of 1970.	TITLE XLVI Department of Labor, Chapter II Occupational Safety and Health Act of Guam Section 48203
Authority of Agency with respect to occupational safety and health	
Authorizes the Department of Labor to make and publish occupational and health standards for Guam which meet the indices of equal effectiveness as published by the federal Department of Labor.	TITLE XLVI, Department of Labor, Chapter II Occupational Safety and Health Act of Guam, Section 48203
Division of Occupational Safety and Health	
Establishes within the Department of Labor a Division of Occupational Safety and Health responsible for investigating and inquiring into the causes of injuries or sickness arising out of and in the course of eimployment and to assist in the preporations of such occupational safety and health as needed to aid in the prevention of such injuries or sickness.	TITLE XLVI, Department of Labor, Chapter II Occupational Safety and Healt Act of Guam, Section 48204

Civil Defense, Purpose	
Provides for the creation of an office of Civil Defense for the Territory to assure that the Territory will be adequately prepared to deal with disasters or emergencies of unprecendented size and destructiveness resulting from enemy attack sabotage, etc. as well as from the vicissitues of nature, to protect the peace, health and safety of the public and to preserve their lives and their property.	TITLE IX Department of Public Safety, Chapter VI, Civil Defense Sections 8500, 8519 Governor's Executive Order 78-10
Accidents	
Requires the operator of any vechile in any accident causing injury or death to any person or causing damage to any real or personal property to stop such vehicle immediately at the scene of such accident.	TITLE XXIV, Vehicle Code Chapter II, General Provisions, Section 23136
COMMISION ON LICENSURE	
Provides for the creation of a "Commision on Licensure to Practice the Healing Act in Guam" consisting of five members appointed by the Government of Guam. "The Commission shall appoint boards of examiners in basic service, in medicine and osteopathy, in chiropractic, in dentistry in midwifery and such others... as are necessary."	TITLE XXVIII, Medical Practices, Chapter II, General Provisions, Section 27101
NURSE PRACTICE ACT	
Requires that any person practicing professional or practical nursing shall be licensed under the provisions of this Act.	TITLE XXVIII Chapter III

POLICY STATEMENT

No person shall be denied complete medical care and services by reason of his availablity to pay therefore. People shall be required to pay in accordance with their means. Abatements and discounts will be allowed from the established schedule under rules and policies established by the GMH Administrator and approved by the Board of Trustees.

TITLE XLVII
Guam Memorial Hospital
Chapter I, Section 49008

CHIEF MEDICAL EXAMINER

He shall examine circumstances of death resulting from criminal violence, casualty, suicide, suddenly when in apparent good health, in poison, or in any unusual or suspicious manner. He is authorized when considered necessary to exhume interred bodies and to perform autopsies.

TITLE XLVII
Chapter II,
Section 49102

MENTALLY ILL

Provides for hospitalization on medical certification in an emergency situation and provides for hospitalization without endorsement on medical certification in on emergency situation.

TITLE XLVII
Chapter III
Section 49206
Section 49207

LIABILITY FOR RENDERING EMERGENCY CARE

An Act to amend Section 3284 of the Civil Code of Guam to provide that any person who renders emergency care shall only be liable for damages resulting from his gross negligence or wanton Act or wanton omissions

Guam P.L. 12-92

EMERGENCY MEDICAL SERVICES COMMISION

Establishes the Guam Emergency Medical Services Commission to provide technical and advisory support to the Administrator (OEMS)

TITLE XLVII
Chapter 6
Section
49253 - 49253.3

GUAM EMERGENCY MEDICAL SERVICES ADMINISTRATIVE OFFICE

Established within the Department of Public Health and Social Services an Administrative Office for Emergency Medical Services. The Office has regulatory and certification responsibility for EMSS development to include manpower facilities, communications and equipment.

TITLE XLVII
Chapter 6
Section 49252.0
49252.2

ACCESS TO CARE/PROTECTION FROM LIABILITY

No persons shall be denied treatment at any designated emergency medical services facility. "....A hospital its employees or any physician or dentist providing emergency medical services shall not be held liable in any action arising out of a refusal to render such treatment if reasonable care is exevised in determing the appropriateness the facilities ...availability of personnel to render sick care.

TITLE XLVII
Chapter 6
Section 49255.0

CONSENT TO CARE

No providers of emergency medical services ...shall be subject to civil liability, based solely upon failure to obtain consent in rendering ---services--- when the patient is unable to give his consent for any reason and there is no other person reasonably available...authorized to consent to the providing of such care.

TITLE XLVII
Chapter 6
Section 49255.1

(3) ANALYSIS AND RECOMMENDATIONS

The passage of P.L. 14-11, the EMS Act of Guam focuses development of the EMS system within the Department of Public Health and Social Services. The effectiveness of the standards and regulations will be evaluated in light of voluntary rather than mandatory compliance, since effectively the major pants of the EMS system are the responsibility of Government of Guam Agencies. Since most EMS services are provided by single sources, voluntary compliance with standards and regulations is theonly feasible avenue to enforcement.

Still to be addressed in future legislation will be the roles and limits of practice for EMT-P's (Paramedics), medical control (supervision) of EMT's in the field, authorization for administration of drugs and sophisticated equipment in the field, local sources of financial support for the system.

(4) RECOMMENDED GOALS AND OBJECTIVES

To be developed

VII CARE OF SPECIFIC EMERGENCY PATIENTS

Federal Guidelines (DHHS) require that certain specific emergency care services be considered in EMS system development.

Within the entire 'pool' of critical care patients, there are seven groups which can be clearly identified for systems development because they repsent real and significant medical problems. They are easily identified and can be utilized for planning, operations and evaluation. They have distinct and different medical needs. Being the most critically ill or injured, they will benefit from the systems approach.

The critical clinical groups are:

1. Trauma Victims
2. Burn Victims
3. Spinal Cord injury victims
4. poisoning victims
5. acute cardiac victims
6. high risk infant
7. behavioral emergencies (alcohol, drug, psychiatric, related victims)

EMS systems during the planning phase should, for each clinical area, develop a conceptualization and design for pre-hospital, hospital, and critical care were practical. Hospital facilities should be categorized vertically using national professional organizations criteriam and there should be planning for the integration of the 15 basic system components (including P and Q where applicable) to meet the needs of each of the patient groups.

During Basic Life Support, treatment and triage protocols for the prehospital and critical care phases should be developed utilizing technological advances and adoptations for emergency care.

A. Trauma

Trauma is the most common and complex emergent condition to which any EMS system will respond. Based upon an identification of patients by trauma diagnosis, special needs and magnitude of injury or illness, each EMS region should conceptualize and design a system of emergent care for prehospital, hospital and interhospital and critical care phases. Facilities should be vertically designated according to the American College of Surgeons Criteria for initial and definitive care.

The trauma center concept utilizes small community hospitals as well as large medical centers. At local trauma centers, basic resuscitation and life support procedures may be performed in local trauma center hospitals having competent medical and nursing staff on a 24 hour staffing basis, before the patient is transferred to a regional (off-island trauma center.

B. BURN

Each EMS region should conceptualize and design a system of emergent care for the prehospital, hospital, interhospital, and critical care phases for major burn injury. Facilities should be designated for initial and definitive care based upon American Burn Association criteria.

Treatment protocals should be developed for the prehospital and critical care phase, programs for burn paraprofessional and professionals should be completed.

A regional (Pacific Basin) Critical burn care plan should include not only the designation of specialized burn hospitals within the region or in an adjacent region, but should also take into account the feasibility and/or need for hospital emergency departmental care that is based upon special professional services for initial burn care and triage through an established referral system.

C. SPINAL CORD INJURY

Although a relatively uncommon injury, the permanent morbidity; long term hospitalization, emotional impact and extensive cost of care make this condition one of the most important EMS target patient categories. Experience to date indicates that systems of care for the spinal cord injured has brought substantial improvement in the process of care, its outcome, and in reduced costs. Because of ease of diagnosis, spinal cord injury makes a satisfactory races population for purposes of evaluation.

Because of the relatively low incidence and the high care requirements, spinal cord injury regions, like burn and poinson are usually much larger than typical EMS regions. A patient initially triaged through a trauma center should be transferred to a higher level Spinal Cord Injury (SCI) Center for definitive and rehabilitative care. These patients can be transferred safely by air using state-of-the-act stabilization equipment. Prehospital and interhospital treatment and triage protocols unique to the SCI patient are required. A brood spectrum of ovcillary services are necessary from early care through rehabilitation.

D. POISONING

Poisonings occur as a result of exposure to a very large number of toxic substances. The majority of toxic exposures can be handled over the phone by trained professionals within the regional Poison Information and Control Center, who give instructions to the public for patient management according to antidotol procedures. This consumer access system must include return telephone calls to insure effectiveness and patient safety as well as providing a link to in-hospital providers.

Hospital facilities for the care of the emergency poison patient should be categorized according to the American Association of Poison Control Center criteria. Special poison treatment centers should have adult and pediatric CCS's with inhouse intervist and pediatrician, medical director - clinical toxicologist, and complete laboratory services.

E. ACUTE CARDIAC CARE

Acute Cardiac emergency is one of the most prevalent conditions seen within the EMS system. The EMS system provides early intervention and CPR at the scene. Basic Life Support procedures should be initiated as quickly as possible in the prehospital phase with further rapid integration to the emergency room and Coronary Care Unit. Successful resuscitation of arrest victims requires rapid measures American Heart Association Criteria should be utilized when cardiac care designation of facilities and transportation units is done.

There must be identification of patients by diagnosis, special needs and magnitude of illness and a conceptualization and design of an emergent care system. Treatment and triage protocols with appropriaate training courses for field, emergency room and hospital personnel must be completed. Medical control is of the utmost importance and is provided by the designated resource hospital emergency physician. This physician provides not only on-line medical direction to field paramedics at all times, but also monitors the associate hospitals within the areawide and/ore regional paramedic program.

F. HIGH RISK INFANT

The EMS system in improving the transportation and care of the high risk infant should be planned within the framework of an overall perinatal plan. The development of the plan should be the responsibility of the Department of Public Health and appropriate groups. The group would include all disciplines of perinatal health professional throughout the area, professional societies and health planning agencies. The plan thus developed should make provision for guidelines for planning activities.

Designation of facilities should provide for primary ~~poisoning~~ care centers (Level I, using the vertical categorization scheme) that provide care for uncomplicated prenatal patients, serving a small birth population with limited access to specialty care. Intermediate care centers (Level II) are for the care of the amjority of high risk pregnancies, the premature, convalescing newborn, and moderately ill newborn, as well as the full term newborn. These intensive care center provide the full range of care from speciality treatment for the most complex high risk pregnancy and newborn intensive care through normal pregnancy and newborn care. The Level III Centers are responsible for providing 24 hour telephone consultation and responding regionally with personnel and equipment to support acute care when needed. Level III certified staff will execute patient transfer in behicles well equipped for total life support of the mothe~, fetus or infant.

The system would include the Community hospital and all out - reach ambulatory care settings caring for the needs of up to 90% of a population.

G. BEHAVIORAL EMERGENCIES

The EMS system must coordinate a comprehensive range of medical and social services for those individuals experiencing psycho-social trauma in cooperation with existing institutions and agencies.

The system should plan for care of alcoholism, drug abuse, suicide, rope and other behavioral emergencies. The responsibility for development of the behavioral care plan rests with the EMS Office. An advisory planning group (such as a task force of the GHPDA) with membership from the existing agencies and institutions involved with the various aspect of behaviroal medicine can be infaluable assistance as the problem of categorization of treatment facilities and community mental health centers is planned and implemented. As in the other clinical care areas, speciality care services including the number of behavioral critical care beds that should exist within the system should be considered Triage protocals should provide a poisoning access point as well as referral centers within the continuum of care so that coordination of the multiple resources is assured. Training programs for EMS personnel, taking into account the safety of patient and personnel, should be implemented.

(2) CURRENT CAPACITY

As indicated in the previous chapters, elements care for each of these critical clinical groups and available on Guam. The extend of care, service capacity and patient volume still needs to be determined.

Categoriztion of the existing services must be done prior to planning for future development.

(3) ANALYSIS AND RECOMMENDATIONS

Each critical care component available on Guam must be evaluated in light of standard categorization criteria. In addition data systems must be developed that will make available information on patient origin, diagnosis, treatment, and outcome.

(4) GOALS AND OBJECTIVES

.GOAL - To provide service capability in the seven critical linical groups within the resources of the EMS system.

-OBJECTIVE - To categorize the seven clinical groups in light of present capability

-OBJECTIVE - To plan for the expansion, consolidation or upgrading of services capabilities of the seven clinical groups. Such planning must involve the cooperative efforts of GMH and NRMC.

LIST OF MAJOR REFERENCE DOCUMENTS

1. GUAM HEALTH PLAN, GUAM HEALTH PLANNING AND DEVELOPMENT AGENCY.

2. U.S. DHEW, "EMS HANDBOOK FOR PATIENT RECORD KEEPING AND LIST OF MINIMUM DATA" DHEW PUBLICATION No. HSA 77-2034.

3. _____, "GUIDELINES FOR DEVELOPING AN EMS COMMUNICATIONS PLAN" DHEW (HSA) PUBLICATION No. HSA 77-2036.

4. _____, "EMERGENCY MEDICAL SERVICES SYSTEMS PROGRAM GUIDELINES" DHEW (HSA) PUBLICATION No. 79-2002.

5. GUAM MEMORIAL HOSPITAL, "MONTHLY COMPARTIVE REPORTS" 1975-1980.

6. OFFICE OF HIGHWAY SAFETY, (DEPARTMENT OF PUBLIC WORKS) "HIGHWAY SAFETY PLAN FOR TERRITORY OF GUAM FISCAL YEARS 1981-85."

7. OFFICE OF COMPREHENSIVE HEALTH PLANNING, EMERGENCY MEDICAL SERVICES PLAN, (First Edition) 1976

8. UNIVERSITY OF GUAM "HEALTH NEEDS ASSESSMENT OF NORTHERN GUAM" COMMUNITY DEVELOPMENT INSTITUTE, PROJECT NO. GHPDA 79-304, 1980.

9. ARTHUR YOUNG AND COMPANY "TECHNICAL ASSISTANCE TO THE GUAM OFFICE OF EMERGENCY MEDICAL SERVICES" July 1977

APPENDIX B

FOOTNOTES

1. GUAM HEALTH PLAN Page 93
2. TABLE IV. 5
3. STATISTICAL REPORTS 1970-1977, OFFICE OF VITAL STATISTICS, DEPARTMENT OF PUBLIC HEALTH AND SOCIAL SERVICES
4. 45% is for total runs through April 1979 only
5. Data in this section is from manpower inventories conducted by the Guam Health Planning and Development Agency.
6. DHEW (HSA) PUBLICATION No. 79-2002, Revised August 1979
7. Final Report to OHS, August 1980
8. OEMS regulations require 48 hours of continuing education for recertification of EMT-A's every 2 years.
9. DHEW PUBLICATION No. HSA 77-2034, August 1977

LIST OF GOVERNMENT AND COMMUNITY AGENCIES RECEIVING DRAFT OF EMS PLAN

1. Bureau of Planning
2. GHPDA
3. GMH
4. NRMC
5. AIR FORCE
6. Speaker, 16yh Guam Legislature
7. Chairperson Committee on Health Welfare and Ecology
8. Guam Air Port Authority
9. Department of Public Works
10. Office of Highway Safety
11. Lt. Governor's Office (A-95 Agency)
12. Nieves Flores Memorial Library
13. Guam Medical Society
14. Guam Community College
15. University of Guam
16. Department of Education
17. Civil Defense
18. Department of Public Safety
19. Guam Heart Association
20. Guam Chapter American Red Cross
21. Kiwanis
22. Village Commisioners via Office of the Chief Commissio
23. Guam Nurses Association
24. Guam Mental Health and Substance Abuse Agency