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HEALTH/POPULATION/NUTRITION ASSESSMENT

TEAM REPORT

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## Health/Population/Nutrition Assessment, 3/13/88 - 4/10/88

As preparation for the Regional Development Strategy Statement (RDSS), USAID/SPRDO commissioned a number of background technical papers to provide the rationale for programming in specific sectors over the next five-year planning period. This paper examines the health/population/nutrition sector and provides several recommendations for USAID programming.

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The team spent two weeks from March 15-25 in Papua New Guinea, including Port Moresby, Mendi, Madang and Goroka. The purpose of the visits was to assess policy and programs of the GPNG at the central level, observe three provincial health systems, two highlands and one coastal, and visit one of the four GPNG Regional Epidemiology Units. In Port Moresby the team interviewed all of the key Dept. of Health (DOH) officials available, representatives from other donor organizations working in the health sector, and reviewed a number of DOH and other documents related to health in Papua New Guinea. A list of persons interviewed and selected materials reviewed are attached as Appendix A and B.

After PNG the team split up, part going to Solomons, part to Tonga, and one person to Vanuatu. In Solomons and Vanuatu we carried out an abbreviated version of the PNG assessment and in Tonga, we looked at the capability of the USAID-funded regional family planning organization, South Pacific Alliance for Family Health (SPAFH).

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## INTRODUCTION

The purpose of this paper is to provide the technical background and rationale for USAID/SPRDO programming in the health/population/nutrition sector. The Mission covers ten countries in the South Pacific Region including: Papua New Guinea, Solomon Islands, Vanuatu, Tonga, Fiji, Cook Islands, Kiribati, Tuvalu, Samoa, and Niue.

Of the estimated 4.7 million total population in the region, Papua New Guinea (PNG) accounts for 3.3 million (1985 estimate) followed by .7 million in Fiji and .25 in the Solomons. Health indicators and demographic data on all 10 countries, show clearly that PNG, Solomons and Vanuatu suffer the worst health conditions.

Based on the needs, the concentration of the region's population, and extremely difficult geography, the team strongly recommends that the Mission focus its HPN activities in PNG. Although countries like Solomons and Vanuatu could benefit from assistance in the health sector, separate projects for these two countries would not be feasible given the human resource and management constraints on the SPRDO. Distances between Suva, Honiara, and Vila are great. Traveling between the islands is both extremely costly and time consuming. With one health advisor in the Mission and the possibility of an additional contract employee, management of projects outside of PNG would not be cost effective.

The consensus was that the Mission should develop a health/nutrition program for PNG and in so far as the project would provide training and/or short-term T.A. appropriate for the Solomons and Vanuatu, these resources could be tapped by them on a limited scale.

In family planning, the Mission has already made an important contribution to the region through support for the South Pacific Alliance for Family Health (SPAFH). In particular, PNG, the Solomons and Vanuatu could benefit directly as emphasis countries for SPAFH activities. This issue is discussed in detail in Section IV.

The bulk of the paper concentrates on PNG. Sections I-III provide an assessment of the health/nutrition/population problems, a description of the health delivery system, and an analysis of constraints to resolving the problems within the system.

The Government of Papua New Guinea (GPNG) has made impressive strides toward providing rural health care. About 10% of public expenditures are for the health sector and about half of this amount goes to rural health care. The Department of Health (DCH) has prepared a National Health Plan for 1986-90 which

describes the GPNG's programs and articulates their goals and objectives for the planning period. The document is an excellent starting point for assessing health care in PNG.

Despite an impressive organization and network of rural health facilities, appropriate focus on primary health care, and financial commitment to health services, the GPNG faces some major constraints to delivery of rural health care. These are summarized below and discussed in more detail throughout the paper.

Decentralization of health services to the provinces has not been accompanied by the necessary transfer of planning and management skills to ensure appropriate emphasis and quality of services. As a source of technical assistance, four Regional Epidemiological Units (REU) have been created to serve the technical needs of provinces in their respective regions. However, these units have not been staffed or equipped adequately to perform this function. The DOH recognizes the need for strengthening the REUs with technical resources and for broadening their mandate to include planning, management, and training.

Coverage and utilization of rural health services, in particular, MCH services, are also major constraints. Although the fixed facility network for primary health care is impressive by developing country standards, the system still lacks village-based health workers and adequate coverage of outreach services in most areas. Mobile clinics are the principle vehicle for MCH services. They are overextended both geographically and in terms of the broad spectrum of services they are to provide. Further, unlike most other developing countries, PNG does not have a tradition of birth attendants nor village health aids. As a result, most villages do not have either trained or untrained workers and most births go unsupervised or supervised by an untrained relative.

PNG is a country of diverse cultural practices and language groups, over 700 at last count. Diversity is both a blessing and a curse. It's a blessing that some areas diverge substantially in cultural practices that favorably affect their health and well-being. On the other hand, diversity makes generalization extremely tenuous. There is bound to be an exception to any observation on rural health in PNG. The team tried to take this factor into account by emphasizing rural health conditions of those areas in the moderate range, not the worst off and not the best off.

Health financing issues have become a stumbling block to expansion of rural health care and to improvements in the system. Although the percentage of public expenditures in the health sector have been increasing, they are decreasing relative to population growth. The GPNG is looking towards other donors as Australia's substantial input to budget support is declining. The team considers this an ideal opportunity to encourage the GPNG to improve planning and increase efficiencies in the present system. This subject is discussed in detail in Section III E.

Most external aid to PNG has been from the Australian government and loans from the Asian Development Bank. The GPNG, with the help of these donors, has gone a long way in providing the infrastructure for rural health care delivery. They must now turn their attention to maximizing impact with a shrinking resource base. Several sustainable improvements to the system are possible.

More emphasis should be placed on antenatal and natal care. This will require a reordering of priorities and shifting of resources. A first step in this process will be to recognize that this area, for the most part, cannot be adequately addressed through the fixed facility system. Complementary inputs at the provincial level must be put in place to support the creation of community-based health workers.

An ability to carry out quick assessments, plan programs, and manage them will enable provincial offices to better serve the needs of the rural population and will contribute to the process of reordering priorities. It will also reduce some of the wastage of facilities, commodities, and personnel.

The U.S. has a comparative advantage in the kind of public health reorientation that is needed to make the health system in PNG more effective and efficient. The process has begun but still has a long way to go. Strengthening public health capacity at the regional level and ultimately, provincial level, are essential first steps and an appropriate point of entry for USAID assistance.

## PAPUA NEW GUINEA

### I. Statement of the Problem

#### A. Background to Health in PNG & Selected Health Indicators

Like the geography and culture of PNG, reported health statistics present startling contrasts and puzzling inconsistencies. Papua New Guinea has a population of just over 3.3 million growing at a rate of 2.2% per year. Despite the impressive organization of primary health care services, PNG suffers moderately high rates of infant mortality and extremely high rates of maternal mortality. In some areas of PNG, studies have documented the infant mortality rate (IMR) at 400-500/1000 live births. The official maternal mortality rate (MMR) is calculated at 800/100,000 population which rivals some of the least developed countries in Africa. Since these two indicators are good barometers of the general health of a population, the team looked at them in some depth, as well as population statistics and various other data.

##### 1. Maternal Mortality Rate (MMR)

The Maternal Mortality Rate is a key indicator of reproductive health status and corresponding services. In PNG the MMR ranges from 200/100,000 women of reproductive age in urban areas and 2000/100,000 in rural areas. Few other countries in the world pose a higher risk to women in childbirth.

The main causes of maternal deaths are infection, bleeding and obstructed labor. Maternal deaths due to sepsis are generally attributable to poor hygiene at the time of delivery. In fact, the traditional method of childbearing among large portions of the population is for the mother to go alone into the bush and give birth unassisted, this may still account for a majority of births in PNG. Because the blood of menstruation and childbirth is considered dangerous to others, the mother is often cut off from sources of help, and even in extremes, she may be refused assistance in getting to a health facility.

In malarious areas, women are particularly susceptible to dying from post-partum hemorrhage, since the chronic anemia of malaria accompanied by the normal blood loss of childbirth leaves a woman with few reserves. A blood loss which can be well tolerated by a woman with a normal hemoglobin may be sufficient to kill a woman who was severely anemic prior to delivery.

While it is clear that adequate antenatal care, focusing on identification of high risk mothers and supplementation with iron and folic acid, as well as appropriate assistance at the time of childbirth would be likely to have significant impact on maternal mortality, another major factor would be family planning. It has been shown that pregnancy before the age of 20 and after 35, as well as parity of five or above, result in much higher risk of death for both mother and child. Additionally, a short birth interval of two years or less also poses considerable risk, especially given the high prevalence of anemia, noted above.

## 2. Infant Mortality Rate

The official IMR for PNG is calculated using information gathered during the 1980 census. The resulting estimate is 72/1000 live births. Using the same data base, official IMR's have been published for each of PNG's 19 provinces and range from a low of 33/1000 in the North Solomons Province to a high of 116/1000 in the Southern Highlands Province.

However, there is considerable cause to doubt the accuracy of the 1980 mortality estimates. First, the census figures from which they are drawn are based themselves on an extrapolation, since they were derived from a stratified partial sample in which rural households (the largest number and the highest mortality group) were greatly under-represented. Second, the mortality rates are based on family-reported deaths rather than on an actual analysis of birth outcomes: this is known to result in significant under-reporting unless carried out in a highly rigorous fashion, which appears unlikely in this case. Third, estimates of maternal mortality in PNG are in the same range as many of the least developed African and Asian countries, as mentioned above, implying a commensurately high infant and child mortality.

Taking all of the available data and a number of factors concerning the way in which the official IMR was calculated, the team estimates that the overall IMR for PNG is about 130/1000 live births, or twice the official estimate, and the neonatal mortality at about 52/1000 live births, high relative to developing country standards. For a detailed discussion of the survey methods used in calculating the official IMR and an explanation of how the team arrived at an IMR of 130/1000 using the data from the census and health statistics compiled by the DOH, turn to Appendix D.

An accurate assessment of the IMR and its underlying causes is important for planning priority interventions that will maximize the impact on child survival and make most efficient use of scarce resources. For planning purposes, an IMR of 130/1000 argues more forcibly for emphasis on maternal and child health (MCH), including antenatal, childbirth, postnatal and child spacing services.

### 3. Population Statistics

The population distribution is typical of a developing country with high fertility and high mortality. The estimated life expectancy is 49.6 years. Infants account for 3.4% of the population while all children under 5 comprise 15.7%. Women of childbearing age make up 20.4% of the population and are showing evidence of increasing fecundity.

The total fertility rate (TFR) is currently estimated at 5.4 with a national crude birth rate of 35.3 births/1000 population per annum. This results in a 2.2% rate of natural increase, a rate that would result in a doubling of the population in 31 years which will put an increasing burden on the country to provide health, education, and other services.

In most of the traditional societies of PNG short birth interval was a rarity since extended post-partum abstinence was the rule. A major reason for this was the warring nature of highland society: a mother had to be able to carry her child to safety in case of an enemy raid, and it was not safe to undertake a new pregnancy until the child was old enough to run alone. It was also taboo to have sexual relations during lactation, sometimes up to 3 years. These practices were, and still are to an extent, enforced by housing women separate from their husbands. However, with the breakdown of some of these traditional practices, post-partum abstinence is also decreasing, driving up the birth rate as well as driving down the birth interval.

Access to modern, effective methods of contraception is very limited. One can estimate from official sources that the maximum contraceptive prevalence rate could be about 17% which is not sufficiently high to have a meaningful impact on the growth rate. Moreover, 17% is probably a gross overstatement of contraceptive prevalence, because of the way in which the DOH tabulates new acceptors and "re-attenders", rather than ascertaining "continuing users". It should be noted, however, that this figure does not include contraceptives distributed through community-based distributors nor private sources.

PNG publishes its dependency ratio as 80. This indicates that the ratio of economically dependent persons to the economic producers of PNG is very high. In essence, PNG has relatively few economic producers supporting a lot of children and other non-producers. High dependency ratios in conjunction with low per capita income generally are interpreted to suggest poor health status of young children.

## B. Leading Causes of Morbidity/Mortality

In all PNG health institutions, the following were the five leading causes of death among children under five in 1985:

Pneumonia	35%
Perinatal causes	18%
Diarrhea/ill-defined intestinal infections	11%
Malaria	5%
Nutritional causes	4%

### 1. Acute Respiratory Infections (ARI)

Childhood pneumonia, the most severe form of ARI, has been extensively studied in the highlands areas of PNG, and the Institute of Medical Research in Goroka, has carried out a number of pioneering clinical as well as population-based studies. Between 1977 and 1983, a rural population in Tari District, Southern Highlands, was followed to determine vital events and a crude cause of death was determined based on verbal autopsies. Of all the deaths in children under the age of 1, 46% were suspected to be due to ARI, 30% due to stillbirths or birth-related causes, and only 5% due to gastroenteritis and dysentery. In children aged 1-4, ARI was still the leading cause of death (33%), with diarrhea accounting for an additional 22%. Similarly, in the Asoro Valley of Goroka District 36% of the children under five who died between 1980 and 1985 were considered to have had ARI as the underlying cause of death.

Currently, the primary strategy for dealing with childhood ARI is case management using antibiotics. Injectable penicillin is widely available down to the level of Aid Posts, and is, reportedly, widely used. It was not possible during the course of this assessment to determine the degree to which treatment standards are followed.

There is also indication from a study carried out in PNG that pneumococcal vaccine may be effective in preventing deaths due to ARI down to the age of 6 months. Although this finding has not been widely accepted outside of PNG pending confirmation in other research studies, consideration is currently being given to the addition of the vaccine on a pilot basis.

## 2. Diarrheal Diseases

PNG is not alone in finding ARI to be a major cause of childhood morbidity and mortality: throughout the developing world, ARI is increasingly recognized as one of the primary killers of children. What is most unusual about the reported statistics from PNG, however, is the extent to which ARI appears to overshadow diarrhea. While the statistics are consistent in this finding, the team was able to find no good reason why diarrhea should be so much less significant here than in similar countries. Water and sanitation in rural areas are far from adequate, and the nearly universal finding of intestinal parasites, particularly roundworm and Strongyloides in the highlands and hookworm in the lowlands, indicates that fecal contamination is a regular feature of life in rural areas, where defecation in the fields or the bush are the rule. In addition, there have also been a number epidemics of typhoid and hepatitis over the past decade, leading to the same conclusion.

Nor does host resistance offer a likely reason for lower than expected diarrheal mortality. It is clear that marginal nutrition and malnutrition are significant factors in the development of children in PNG. In this context, one would expect significant diarrheal morbidity and mortality.

Another possible explanation for the low reported rate is that diarrhea, as one of the most readily preventable causes of childhood death, is being adequately handled with oral rehydration therapy at the community level. However, a recent review of the PNG Control of Diarrhoeal Diseases (CDD) Programme indicates that this is most unlikely. In a small household survey carried out as part of the CDD Review, it was found that only 19% of households knew what the ORS packet was, and that none could prepare it correctly. As to the other alternative, home-made preparation of oral fluids, the survey found that only 63% of households had salt and only 47% had sugar.

Perhaps the reported statistics, indicating 11% of childhood deaths due to diarrhea, do give an accurate picture of the underlying situation. However, given the fact that more than 80% of childhood deaths occur outside health institutions, it is possible that a considerably higher proportion of these unreported deaths are due to diarrhea. The team concludes that the 11% figure should be considered a lower limit estimate and that the reality may be two or three times greater. This question clearly warrants further investigation in the new AID-funded HEALTHCOM Project in PNG.

### 3. Immunizable Diseases

The toll of immunizable diseases on children in PNG is even more difficult to estimate accurately. Again, service statistics are in all likelihood a significant undercount of actual diseases, but they at least provide a starting point. In 1986, the following number of cases of notifiable diseases were reported to the DOH:

Diphtheria	0
Pertussis	2,487
Tetanus	76
Polio	24
Measles	19,024
Pigbel	420

#### Neonatal Tetanus

Historically, neonatal tetanus was a scourge in many parts of PNG. Today it is rarely reported. The 76 cases reported in 1986 out of approximately 35,000 attended births indicates a neonatal tetanus mortality rate of only 2/1000 live births.

According to the 1986 EPI Review, only 16% of the target population was adequately covered with TT. It appears that although antenatal care has developed considerably over the past decade, it is unlikely to have resulted in the rather complete immunization coverage of the highest risk mothers that a neonatal tetanus rate of 2 would imply.

Given that fewer than a third of all births take place in health facilities, it is more likely that a high proportion of neonatal tetanus cases are never reported. In other tropical developing countries where similar presumptions of low neonatal tetanus rates have been checked by means of surveys, rates on the order of 20-25/1000 have often been found.

#### Pertussis

It is difficult to estimate the contribution of pertussis to childhood mortality in PNG, although this may in fact be a significant contributor to the high ARI rates noted. In 1987, an estimated 41% of children under one were reported to have completed their third dose of DPT, known in PNG as triple antigen, TA. The dropout rate between the first and third dose of DPT was on the order of 30-50%. The EPI Review considered this high drop-out rate due to lack of information among communities and health workers about the importance of completing the series.

It should also be noted that the pertussis element of the DPT vaccine is heat sensitive and the first to be inactivated. Given the cold chain issues discussed below, there may be considerable degradation of this vaccine resulting in actual protective coverage lower than the coverage figures estimated by the DOH.

## Measles

Measles has long been recognized as a major contributor to both childhood mortality and morbidity. In the longitudinal community study carried out in Tari District, mentioned earlier, approximately 4% of all childhood deaths were attributed to measles. However, no good estimates were found of the overall incidence or case fatality rate for measles. It is presumed to play a significant role in the etiology of a large proportion of both ARI and diarrheal diseases, and the CDD Review singled out improved measles immunization as the highest priority activity for reducing diarrheal deaths in the near term.

In 1987 the reported measles immunization coverage was 35% of children under one and the coverage of children 12 to 23 months was estimated at 55% to 65%. Like pertussis, measles vaccine is heat sensitive, making it vulnerable to the significant cold chains problems faced by PNG. The effective coverage is therefore, likely to be much lower.

## Pigbel

This disease is mentioned here as PNG is the only country in which pigbel vaccine is administered as part of the EPI program. Pigbel was discovered in PNG prior to independence as a major killer of children. It was found to be due to *Clostridium Welchii* which can cause proximal bowel necrosis, leading to perforation, peritonitis and death. It is apparently caused by unaccustomed high intake of poorly cooked pork during the highland pig kill festivals, and may further be worsened by components of yam, the basic food staple of the highlands. A specific vaccine was developed for this disease which is administered concurrently with DPT. As with other reported diseases, the 420 cases of pigbel should be considered a minimum estimate.

## 4. Malaria

Portions of PNG are hyperendemic for malaria, which is one reason that A.I.D. has selected the Institute of Medical Research to carry out a major malaria vaccine trial at a field site in East Sepik Province. Maternal malaria infection is known to predispose to low birth weight, which is itself a major risk to child survival. Among children under 10, whose blood was tested, 24% tested positive for malaria parasites.

While there is evidence of considerable natural resistance in various parts of the country, malaria continues to contribute significantly to childhood mortality, particularly in lowland areas. The impact of multiple debilitating febrile episodes and malaria-induced anemia are certainly predisposing factors to the development of other life-threatening diseases.

Vector control through the use of insecticides has gradually decreased both in coverage and in bioeffectiveness as the vector mosquitos have developed resistance. Current malaria control strategy stresses location-specific vector control and the treatment of presumed cases with chloroquine or quinine. There is now increasing evidence of significant chloroquine resistance developing in the falciparum malari, which will increase problems of control.

## 5. Nutrition

Malnutrition is a major problem among children in PNG. The 1982-83 national nutrition survey found that overall, 38% of children under 5 years of age were under the 80th percentile standard weight for age. The situation is extremely variable among the 19 provinces and even within the provinces, ranging from over 50% under the 80th percentile in 6 provinces to 25% or lower in 3 provinces.

The variations in growth of children follow a pattern along altitudes zones. Children from the middle altitude zones were both shorter and lighter than those in the highlands or lowlands. Highland children were heavier than lowland children but also shorter. Height indicates chronic or past malnutrition whereas, weight is more an indicator of current status

The most serious growth problems occur during the second year of life. Unlike most other developing countries, PNG has been able to enforce a strict marketing code making it difficult to obtain breastmilk substitutes and the paraphernalia that go along with them, except with a prescription. Women breast feed their infants for 2 and sometimes 3 years. As a result, infants show relatively good growth patterns up until 6 months. However, studies show that breastfeeding practices are a problem in that many women only feed 2 times/day and infants are often left at home instead of taken to the field with the mother during the day. Infrequency of feeds results in inadequate milk supply and inadequate nutrient intake by infants.

In addition to infrequency of feeds, growth rates falter at 6 mos - 2 years because of late introduction of supplementary feeding and lack of an appropriate weaning food. Sweet potatoes, used to feed small infants, are considered too bulky and low in nutrient density. Tinned fish and other protein-rich foods, consumed by adults, are usually withheld from small children. Nutrition experts in PNG consider the lack of an appropriate cereal-based weaning food one of the major causes of malnutrition.

## 6. Sexually-Transmitted Diseases (STDs)

Another indirect indicator of reproductive health status is the prevalence of sexually-transmitted diseases, including AIDs. While the data to document the magnitude of STD's is sparse, the

National Health Plan for 1986-90 lists STD's as among the top ten most important health problems of PNG. According to the recently published Handbook on Health Statistics, PNG, STD's are a major cause of morbidity.

Acquired Immune Deficiency Syndrome (AIDs) has been confirmed in a number of cases in PNG. One person has been officially acknowledged as having died from AIDs although discussions with health experts suggest that a few people have already from the disease. The problem has become serious enough for the government to take steps to establish a blood screening facility in-country. The GPNG has also asked for A.I.D. assistance in an education & information campaign.

Family planning is considered another activity of MCH services in PNG and is referred to as family health services. While all facilities visited by the team were prepared to offer family planning services, these services are virtually unused. A woman is required to obtain written permission from her husband each time she receives contraceptives. Men do not require their wives' permission to use contraceptives.

When family planning is practiced, a variety of reasons seem to promote its use: marriage costs; a desire to maintain person to land ratios, education costs. While practice of family planning for health reasons is a basic premise of the health justification for offering contraceptives, this reason was not mentioned by most service providers. Opposition by some church groups to family planning practices is evident, but their impact is unclear.

SUMMARY HEALTH INDICATORS FOR PNG

<u>Indicator Program</u>	<u>Estimated Rate</u>	<u>Causes</u>	<u>Underlying Implications</u>
Infant Mortality Need for better MCH services live births EPI, maternal diet, antenatal care	130/1000	Ostetrical Complications Low Birth Rate Malaria	Acute Respiratory Infect Maternal Nutrition
Maternal Mortality Obstetrical Complications 100,000 childbirth supervised by trained women of reproductive and health age		Maternal Nutrition	800-1200 Need for better antenatal care, birth attendant, better maternal
Fertility Need to increase effective demand for contraceptives	5.4	Low contraceptive prevalence Breakdown of traditional birth spacing practices	
Malnutrition Need to increase community aware- ness on proper weaning & adequate child nutrition, training of health workers, nutrition education	38% under 80 percentile		Infrequency of breastfeeds, late intro. of supplementary standard foods, lack of appropriate weaning food, food taboos

## D. Other Factors that Influence Rural Health Care and Child Survival.

### 1. Socio-cultural Factors

The population of PNG in 1985 was estimated at 3.3 million. PNG is rich in natural resources, the per capita GDP is \$732. However, inspite of its relatively high level of income, PNG remains a predominantly rural agrarian society: 82% of the population live in rural villages with an additional 6% in rural non-village settlements. The remaining 12% live in urban and peri-urban areas.

The large rural majority is poorly served with water and sanitation. Only 10% of rural households have regular access to safe water and less than 4% have adequate sanitation.

Most people of PNG are classified as Melanesian but more than 700 different language groups exist. Cultural practices relating to health, sanitation, hygiene, childbirth, diet, vary widely.

Despite the diversity of the population, several recurring themes regarding culture and health arise in a number of different settings. Lack of community participation in health care is one of them. The perception of health care as an externally imposed program and not something inherently beneficial, appears prevalent. Knowledge of health care, hygiene, proper diet, is generally low. Some observers estimate that radios are available to about half of the population in rural areas. Several programs have incorporated their use in mass media efforts to raise awareness with as yet undetermined success.

The lack of community participation most likely accounts for the almost total absence of volunteer health workers and in particular, traditional birth attendants. In a few areas midwives have been trained to provide services to their village. Sometimes they receive payment from the client, usually in-kind. Reports from provincial health workers, however, indicate that these midwives are dissatisfied with this arrangement and have been pressuring to become wage-earning employees of the public health system.

### 2. The Role of Women

The status of women throughout PNG is bleak. Women are bought for a negotiated bride price and are expected to provide most of the agriculture labor. They carry an extremely heavy workload while they are pregnant, lactating and/or sick which contributes to the vicious cycle of poor maternal health, high incidence of pre-term and low birth weight (small for gestational age) infants, inadequate breastmilk, and sick children.

They play a secondary role in household decision making, relying on the husbands' consent in almost all matters. Some health experts in PNG believe that one way to improve health is to convince men that it will protect their economic investment in women.

### 3. Literacy

Literacy in PNG is estimated at 33%. Primary education is not universal. Almost 1/3 of children never attend school. Women's education is particularly not valued and as such, their school attendance is lower. In order to bring more women into the system, some provincial governments have set quotas to ensure a certain number of female students.

In many areas, communities are beginning to realize the importance of education as a vehicle to a wage earning job. This changing perception is also thought to account for more interest in fewer children as families realize that they cannot afford to send all children to school.

### 4. Law and Order Issues

The clan is the basis for group identification in PNG. People remain loyal to their clan above all other authority and in return, they receive support and protection when they need it. When a person suffers an injury, the clan organizes for revenge against the transgressor. Alcoholism and land disputes are said to account for many of the transgressions. This has been a major stumbling block to bringing about law and order in PNG, especially in the larger cities like Port Moresby, Lae, and Madang.

Most of the Aid Posts are staffed with male Aid Post Orderlies because historically, only men were trained to become Aid Post Orderlies, and it is unsafe for women to work alone in rural areas. The MCH mobile clinics are run mostly by female nurses who are continually faced with threats to their safety. The situation obviously hinders the effectiveness of this crucial vehicle for rural health delivery.

The fear of revenge or "payback" on the part of health care workers also influences the services provided. Women cannot obtain contraceptives without their husbands' consent for this reason. Also, often critically ill patients cannot be treated until the male head of household has agreed to the procedure.

## II. Structure of the Rural Health Delivery System

### A. Government Policy and Organization

As a rural country with varied terrain and lack of communications, it is difficult to gain access to large segments of the population. Against this backdrop, the GPNG has succeeded in creating an extensive network of rural health facilities. They estimate that 96% of the population is within two hours walking distance to a health facility, either an aid post, health center, sub-center, or provincial hospital.

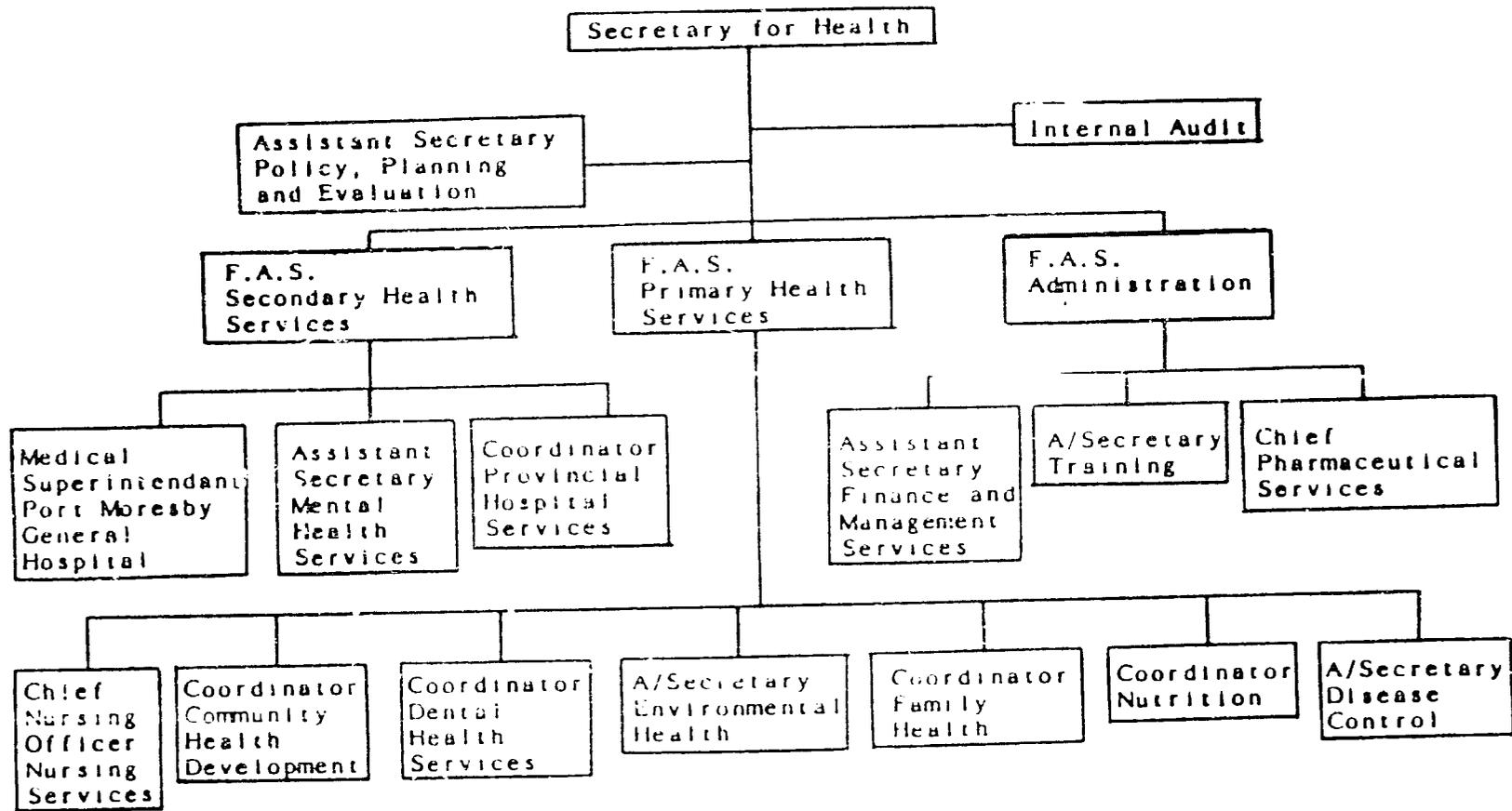
Prior to independence, public health services were centrally-controlled from Port Moresby. In 1977 the Government adopted a policy of decentralization designed to transfer administrative authority from the national to the provincial level. The move took about six years. In 1983 reorganization, including direct funding from the central budget to provincial government, bypassing the DOH, took effect. This change in administration was not accompanied, however, by the necessary transfer of expertise to plan and implement programs.

The post-decentralization role of the DOH is to set policy and standards for rural health care. The DOH has no authority over rural health planning and implementation nor budget and financing. Nevertheless, the central staff includes some very highly qualified individuals who are committed to primary health care as a first priority.

The DOH is organized in four divisions, Primary Health Care, Secondary Health Care, Policy & Planning, and Administration, each headed by a First Assistant Secretary. Under Primary Health Care are seven functional units, each composed of from 1-5 professionals. (See the organization chart on the following page). Though funding is available for more professional staff at the central level, vacancies have not been filled for lack of qualified candidates and lack of housing in Port Moresby.

Discussions with all of the major units under the Primary Health Care Division of the DOH indicates that they are unsure of their new role vis a vis provincial health officers. They are mindful that decentralization has placed them in positions as advisors, not supervisors, and as such, they are not sure how to influence the effectiveness of rural health care programs. They are reluctant to be critical of specific provincial health activities, although they recognize the need for better planning and management expertise at the provincial level.

Figure 4.1: Organisational Structure of the Department of Health



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In an effort to provide some of the technical expertise needed to carry out provincial programs, the DOH created four Regional Epidemiology Units in 1985. None of the four units, however, is fully staffed although the DOH advised that the positions would be funded if qualified candidates were available. They also agree that the mandate of these REUs should be broadened from their current narrow focus on epidemiological surveillance to include other technical assistance functions like: program planning and management, in-service training in both technical and managerial areas, health and nutrition education, evaluation and monitoring.

#### B. Rural Health Care Facilities and Major Categories of Workers

In 1985 the GPNG estimated that the rural health facility network included:

- 2,231 Aid Posts
- 269 Health Subcenters
- 190 Health Centers.

Aid posts are staffed by Aid Post Orderlies, most of whom are male, and many of whom are reaching retirement age. They were trained to provide rural health care with an emphasis on curative care. Each post serves about four villages.

Nurse Aids were originally intended to provide community-based health care when training of them began in the early 60's. They have ended up staffing health centers, sub-centers and provincial hospitals.

The DOH, with assistance from the Asian Development Bank and A.I.D. under the MEDEX Project, has created a new category of worker, the Community Health Worker (CHW). Training began a little over a year ago. CHWs will eventually replace Aid Post Orderlies and Nurses Aids. They will work out of health centers and Aid Posts with an orientation towards preventive rather than curative care.

Immunizations and MCH services are handled mostly by mobile MCH patrols that are staffed by nurses and nurses aids. These teams are responsible for providing an extensive array of MCH services as well as immunizations to groups of villages that they are to visit once/month.

The backbones of the rural health system are health extension officers (HEOs) and nurses. HEO's receive an intensive four-year course of study, which covers clinical medicine (including surgery) and health administration. Most provincial health offices are staffed by HEO's.

Nurses outnumber all other health workers including nurses aids by a ratio of 2:1. They are responsible for administrative functions at the provincial health office and other health facilities, clinical functions in hospitals, health centers and subcenters, and training at several levels. They also supervise and participate in the MCH mobile patrols.

### C. Health Manpower Training

Health manpower data are unreliable and/or unavailable in PNG. There has been no analysis of staffing needs on a national level, although the GPNG is beginning to work on this problem. The Training Division of the DOH is currently establishing a national manpower data bank for all types of health workers.

Preservice or basic training of health workers began in the 1950's for nurses and nurses aids. In the 1960's other categories of workers were added. At present, preservice training is provided for: community health workers, nurses, health inspectors, health extension officers, medical officers (MDs), lab technicians, radiographers, dental therapists, medical laboratory assistants, pharmaceutical dispensers, and medical technologists.

Training for nurses takes place at the provincial level, although not all of the provinces have a nursing school. Physicians are all trained at the University in Port Moresby. The Colleges of Allied Health Sciences in Madang and Port Moresby administer programs for all other categories of health workers. All training is paid for by the government and students receive full room and board plus a stipend.

Pre-service training programs for the major categories of rural health care workers, health extension officers, nurses, and community health workers, are described below.

#### 1. Health Extension Officers (HEOs)

As described earlier in this section, HEOs are a category of health worker unique to PNG. They function as physicians in the rural areas. About 50% of the Assistant Secretaries of health in the provinces are HEOs. In 1985 there were 337 HEOs employed in the country.

The College of Allied Health Sciences in Madang has been the sole facility for the training of HEOs since 1967. The program is of 4 years duration. The first year is spent at the College, the second in Kainantu in the Eastern Highlands at a community health practice center, the third year at the College, and the fourth year is a residency period in which the HEO works under close supervision in a hospital and a provincial health office.

The usual entry level for HEOs is grade 12. The curriculum for HEOs needs to be upgraded and recently the DOH has stated that it would like assistance in revising the curriculum.

The annual student intake ranges from 25- 45 with a very high rate of attrition. There is a shortage of HEOs but also a shortage of qualified candidates for the program.

## 2. Nurses

As mentioned earlier nurses form the largest category of health worker in PNG. About 42% work in hospitals and 56% work in health centers, sub-centers or provincial health offices.

At present there are 12 nursing schools in PNG. The government runs five of the schools, the remaining 7 are run by the missions. The training program is more or less standardized

and lasts 3 years and 4 months. The entry level requirement is grade 10 and about 75% of the students are female. The annual intake for students in the government schools ranges from 100-150, with an attrition rate of 30-50%. In the mission schools, the yearly intake is 125-150, with an estimated attrition rate of 25%.

The curriculum for nurses lacks an emphasis on primary health care. It is not competency-based and does little to prepare them for supervisory and administrative roles. The nursing leadership is aware of the need to revise the curriculum and has recently asked the DOH for outside assistance to do so.

## 3. Community Health Workers (CHWs)

The CHW training program was started in 1987 with technical assistance from A.I.D. through the MEDEX Group and ADB. The CHW program was created to replace training for nurses aids and aid post orderlies.

At present there are 15 CHW schools with 2 more scheduled to open within the next year. Over half of the schools are run by missions. The number of students in each class varies from 8-30. The program is two years long, competency-based, and community-oriented. The curriculum was adapted from the MEDEX Primary Health Care Series and is still in the process of being revised.

The majority of CHW tutors are nurses, although nurses aids, HEOs and physicians occasionally assist with the training. Entry level requirements for the program vary from 6th to grade 10 level. Students are recommended by the provincial health offices and priority for admission to the program is largely based on community needs. The schools are also attempting to enroll more female students. CHWs are expected to return to their respective regions for work upon graduation. The attrition rate appears to be very low for the first year of operation.

#### 4. In-service Training

There is a general lack of coordination regarding in-service training for health care providers in PNG. The lines of responsibility for staff development and in-service education are often unclear. In addition to various divisions within the DOH, each provincial health office has a provincial in-service training team which carries out, and theoretically, coordinates, in-service training in the province. The team may consist of an in-service training coordinator, a hospital matron, a community health matron, a health educator, and a nutritionist.

Under direction of the Training Division in the DOH, the National Training Support Unit (NTSU) was created in 1985 as part of an Asian Development Bank project. The purpose of NTSU is to improve health services in the rural areas through in-service training and the production of health education materials. Over the past few years they have been involved with the CHW curriculum development and training, supervisory workshops, in-service training for trainers, and distance learning in family planning.

NTSU, like many externally-financed entities, has faced coordination problems with other training activities sponsored by the DOH. There is considerable confusion about their mandate, where they are going over the next few years, and what areas need to be strengthened.

NTSU's budget and staffing needs should be closely examined and clarified for other functional units within the DOH and provincial health offices. The DOH has pledged to continue to support NTSU's operations and has assumed responsibility for their recurrent costs.

#### D. Drug Supply & Logistics

Pharmaceutical equipment and supplies including vaccines, are ordered by provincial hospitals and health centers through six regional medical stores. Aid Posts order through their respective health center. Orders are supposed to be made every two months.

Supplies are transported by several modes. Medical stores have some of their own vehicles but often use commercial means of transport. Also, hospitals and centers sometimes send their own vehicles to the medical store to pick up orders.

Drug supply needs are not systematically checked against health problems. Health workers, untrained in pharmacy, make out orders from a standard catalog. These are rarely checked against existing inventories.

The central DGH controls most of the procurement through its supply office in Sydney. The orders then go to tender on the international market. The central DGH also allocates the budget for medical stores.

Most observers agree that the budget for drug supplies is not a major problem. If the demand for drug supplies increased, the DGH believes that they would be able to meet it. The current health budget for drugs is about \$1.40/person/yr.

The main drug supply problems concern: inefficient use of drugs (e.g. 3-4 times the amount of vaccines needed are ordered); lack of trained manpower; inadequate cold chain; lack of appropriate information on needs; and lack of effective demand for certain commodities like ORT and contraceptives.

The condition of health center refrigerators, generally kerosene, is poor, with limited maintenance and even more limited attention paid to checking temperatures. At some Aid Posts vaccines are stored for up to five days in portable vaccine carriers which are rated for a maximum of three days if left unopened.

#### E. Mission Health Services

Since the 1950's religious missions have played a significant role in the provision of health care in Papua New Guinea. Their primary areas of emphasis have been in health training, particularly for nurses and nurses aids, curative services, maternal and child health, TB and leprosy control.

Although over 25 different denominations provide health services, the Catholic Church is responsible for the bulk of them, including 28% of mission-run training schools, 39% of mission-run health centers and 56% of mission-run subcenters.

At present, the missions are primarily active in two areas: rural health services and the training of nurses and community health workers. In 1984 the churches were responsible for one provincial hospital, 27% of health centers, 64% of subcenters and 5% of aid posts. The missions also run 7 of the 12 nursing schools and over half of the community health worker training schools. Staffing patterns in mission health facilities are similar to government-run facilities except that they use less health extension officers.

In 1966 the Church Medical Council was formed to coordinate mission health services. In 1972 a liaison officer, paid by the government, was appointed and church representatives became advisors on provincial health boards and government policy-making bodies. The GPNG has also agreed to create more staff positions for church health workers with salaries commensurate with their public sector counterparts.

The missions receive funding for their health services from donations which they raise themselves, institutional fees and government subsidies. Government funding is received through provincial health offices. Some equipment and most pharmaceutical supplies are provided through the Pharmacy Division of the DOH. Salaries, operating costs, and subsidies for health training are also provided by the GPNG.

Given the shortage of public sector health workers, the GPNG will continue to rely heavily on missions. Most experts consider the quality of these services equal to or in some cases, better than, public sector services. The major disadvantage to the dependence on missions for rural health services is that the GPNG cannot readily fill the void should the missions decide to leave. In areas where mission facilities have closed for financial, security, or other reasons, the population was left abruptly without care.

#### F. A.I.D. & Other Donor Programs in PNG

The major donor in the health and other sectors in PNG is the Australian International Development Assistance Bureau (AIDAB). Until recently AIDAB provided resources in the form of block grants which were used to support various ministry budgets but were not designated by AIDAB for specific sectors. This form of aid has been gradually shifted over to project aid, referred to by AIDAB as "tied aid".

Several AIDAB projects are planned for the health sector during the next two years. They include: a visiting medical specialists program (Aust. \$620,000); management training at Mt Hagan Hospital (LOP not available); and an assessment of the Colleges of Allied Health Services in Port Moresby, post-basic nursing education, and Madang, HE0 and health inspector training (estimated Aust. \$45,000).

The Asian Development Bank (ADB) has been the other major donor in health, providing the bulk of funds as loans. They have assisted in: setting up a computerized reporting system for service statistics; training of in-service training coordinators at the province level; hospital reconstruction; provincial level management; water and sanitation; and a cost study of rural health services.

WHO and UNICEF have each provided aid for limited scope activities in a variety of areas. WHO's two-year budget for PNG will provide \$1.2 million/year for T.A. and training in health education, management, malaria, water and sanitation and various other areas.

UNICEF will provide about \$1.2 million, plus a possible \$300,000 supplemental over the next five years. They will continue to focus on community-based activities as pilot projects with limited geographical focus. In the past they have supported training of birth attendants in two districts of the Southern Highlands Province and every year they provide the GPNG with 250,000 packets of oralite.

The Japanese will likely become a major donor in the near future.

A.I.D. has provided support to a number of activities over the past three years. Through the U.S. PVO, IHAP, the Mission has supported a number of limited scope activities in health and nutrition. Possibly the most important A.I.D. contribution thus far in the HPN sector has been to the development of curriculum and training of trainers for the new Community Health Worker training program through the A.I.D.-funded MEDEX group.

A new social marketing and ORS project will begin this year under the HEALTHCOM Project (\$800,000 over two years) funded with a combination of ANL Bureau, Mission and central funds. The resident advisor is due to arrive in May.

Last year A.I.D. signed a grant agreement with the GPNG's Institute for Medical Research to carry out malaria vaccine trials. This \$3.0 million project will be financed with S&T/H resources.

In Population, A.I.D. has played a key role in the South Pacific over the past two years. An A.I.D. grant supported the creation of the South Pacific Alliance for Family Health (SPAFH) which is a regional family planning umbrella organization based in Tonga. (See Section V for more on SPAFH.) SPAFH is still in its infancy, having just completed one full year of operation, but has already been instrumental in the organization of population policy meetings in PNG and the Solomons.

For an inventory of other donor activities in PNG, prepared by the DOH, see Appendix C.

### III. Major Constraints to Delivery of Rural Health Care In PNG

PNG has achieved remarkable progress in getting personnel, services, and drugs out to the periphery. The government has shown a striking commitment to rural health services. Despite the impressive organization and progress thus far, PNG faces some major constraints to delivery of rural health care.

#### A. Human Resources

Lack of trained manpower in both technical and managerial areas is the most serious constraint. The output of health workers from PNG institutions has not met the needs. GPNG budget for payroll has not been the main problem even though 71% of the health budget now goes to cover salaries. The problem is in finding trained personnel to fill the vacancies at all levels of the system: central, regional, provincial, outreach.

With the exorbitant cost of training physicians, an estimated K100,000 (US\$ 140,000) per student, the GPNG took appropriate steps to ensure that the rural health system would rely on Nurses and Health Extension Officers as the primary caregivers. The DDH has begun to look at the curriculum, entrance requirements, and qualifications of faculty in each of these training programs. However, the problems of recruiting qualified candidates to enter the programs are likely to continue into the next decade.

In addition to insufficient numbers in the existing categories of workers and need to re-examine their training programs, the almost total lack of village-based health workers has been a major constraint in reaching the majority of the population, especially for MCH services. The DDH has traditionally emphasized, and apparently still does, the extension of fixed facilities as the principle point of contact for most of the population.

The creation of a new category of worker about two years ago, the community health worker, is a step in the right direction. CHWs will be based in health centers and aid posts but will also serve as outreach workers in the surrounding communities. The idea is similar to their use of mobile MCH patrols that provide MCH & EPI services periodically to communities they can reach.

It will be several years, however, before a sufficient number of CHWs are trained and on board. Even after PNG has a critical mass of CHWs working in the rural areas, the problem of easy access to a trained basic health worker for most villages will still be a problem. For natal care, a critical vacuum now in PNG, the CHWs will not fill the need.

A major effort should be undertaken by Provincial Health Offices to train birth attendants at the village level. In the Southern Highlands and in other provinces, as well, training programs have met with some success. Since the program began in the two districts of Southern Highlands a few years ago, not one maternal death has been reported.

A major deficiency in manpower development in PNG, perhaps more serious than the deficiencies on the health delivery side, is the lack of management capability. This has been more critical as authority for planning and implementation of programs has shifted to the provincial level. Provincial health offices have been tasked with the responsibility for problem identification, program planning, and resource allocation. The budget for provincial health programs is submitted by the province with no input from the DOH or assistance from the regional offices.

Some of the provinces are better prepared to cope with these tasks than others. Some have even carried out their own in-service training programs to build management skills among provincial health officials. A.I.D. supported this activity in selected provinces through the MEDEX group. More of this kind of training needs to be done.

The DOH has a training division which oversees the ADB-funded National Training Support Unit. NTSU's mandate is to support in-service training. They work through the in-service training coordinators in each of the provinces, discussed earlier in Section II. In addition, each functional division of the DOH carries out workshops and a variety of in-service training seminars. Most of the provinces do not have training plans for their health personnel nor do they have much advance notice of training opportunities from the various sources. Not surprisingly, there is a lot of duplication in content of the courses and many of the same people repeatedly attend.

The DOH has done an impressive job of creating an extensive network of health facilities. The team believes that they should now shift their focus to manpower planning and development: increase the quality and output of basic training programs; improve the quality of post-basic training programs; promote training of village-based workers, mainly birth attendants; prepare a manpower plan; rationalize in-service training; provide administrative and management training and support to the provincial level. The creation of Regional Support Units with a broader mandate than the current Regional Epidemiology Units would serve as an appropriate vehicle for the DOH to provide assistance in this area to provincial health offices.

## B. Information for Health Planning

A major weakness in the rural health delivery system is the lack of systematic problem identification, including the ability to accurately assess major causes of morbidity/mortality, and feed these data into a system that drives programming, budgeting, manpower deployment, and commodity allocation.

PNG has had a history of burdening health workers with volumes of reports that were not read or used and therefore, served little purpose. With the help of ADB and WHO, the DOH has succeeded in streamlining health reporting down to a minimum. The health system now mostly collects only service statistics, including immunization coverage.

As a planning tool, to aid in identifying priority areas for health resources, and thereby, better serve the needs in any specific area, the team considers it essential that provincial health officials learn how to use and institutionalize a rapid assessment technique for problem identification.

To a limited extent, the Regional Epidemiology Unit in Goroka is providing assistance to provinces to investigate disease outbreaks, evaluate and monitor programs. The resources at the regional level could be used more efficiently if they were not employed so often on a crisis basis to investigate epidemics. If the provinces were able to assess health conditions on an on-going basis, they may be able to avoid the crisis of epidemics or at least reduce their incidence.

## C. Roles of Health Workers, Supervision, Service Packages

This is an area difficult for the DOH to directly influence, because authority for personnel matters rests with the provincial health office. The National Health Plan, which emphasizes primary health care, discusses workers roles but does not provide a well-defined package of services for each level of health care worker. The situation varies from province to province. However, in the "duty statements" reviewed by the team in various provincial offices, no relative priority was given to certain interventions over others.

While this problem is probably linked to the lack of problem identification capability, the lack of well-defined supervisory relationships is also key. Again, the situation will vary along provincial lines, some provinces doing much better than others in this area.

The DOH, perhaps at the regional level, could play a more active role in setting standards for health worker protocols, supervision, and reporting. A better understanding of the relative importance of certain interventions on a province-specific basis should also improve the situation.

#### D. Coverage & Utilization of Rural Health Services

As mentioned several times in this paper, the coverage of the fixed facility system is impressive by developing country standards. The DOH estimates that about 96% of the population is within 2 hours walk of a health facility, aid post, health center or hospital. The coverage of the outreach system is much less extensive, however.

Provincial health offices do not have enough personnel to cover a large proportion of the population in their areas nor transportation to facilitate access. Even areas that are covered, seldom receive the MCH patrols at the intended frequency of visits. In addition, the patrols are not equipped nor do they have the time to provide the wide array of services for which they are responsible. Many times, they only deliver immunizations and no other service.

Only limited data on utilization of health services are available, but if the fact that 2/3 of the births are unsupervised is an indicator, the large proportion of the population is outside the health system.

In 1985 the DOH estimated that 55% of all pregnant women received some prenatal care from the health system. It is unclear, however, what measure of care is represented. (According to the 1986 EPI Review, only 15% of the target population was adequately covered with tetanus toxoid.) The DOH also reports that 79% of all infants are reached with some sort of MCH service.

Though probably limited in scope, few developing countries can match the achievement of coverage reflected in the above data. PNG still has a long way to go, however, and key to expansion of coverage and increased utilization is outreach. CHWs and village-based workers can have a substantial impact on bringing health to the community and making it a sought-after commodity. The team considers that the DOH's de facto policy of trying to bring most everyone into a health facility will not bring results as efficiently as expansion and improvement of outreach.

## E. Health Financing

As discussed earlier, both the government and Missions deliver rural health care in PNG. In general, public health services, with the exception of hospital services, are provided free of charge. Hospital costs are financed from the central government. Fees collected for hospital services are returned to the central coffers.

For other rural health services, the situation varies slightly from province to province. Overall, cost recovery for these services has been minimal.

Mission-provided health services, are financed by the churches and also by the Government. They apply for and receive public funds to cover their specified geographic area. Since Missions provide about half of all rural health services, they are a critical, albeit precarious element, in the system. They can, and in certain circumstances have, closed their doors and left the area without health care coverage.

Although the GPNG budget for health has increased in absolute terms over the past several years, population growth is outstripping the government's ability to keep pace. Many observers are fearful that PNG's ability to provide rural health services is now falling far short of needs and will get much worse without measures to mobilize resources for health or institute some mechanisms for cost recovery.

In 1986 the GPNG conducted a health sector expenditure study and found that 71% of the budget for operating costs was covering salaries. Health workers are paid very well by developing country standards. For example, an Aid Post Orderly earns 2500K (U.S. \$3500) per year. Many of the APOs have other jobs to supplement their income and in the absence of close supervision, work only a few hours per day. Drug supply and distribution is another area in which wastage of scarce government resources is a significant problem.

The GPNG recognizes the need to motivate workers to be productive and examine ways to increase the efficiency of the system. At the end of this year the GPNG will carry out a full-scale health financing study with assistance from ADB. In the interim, they are looking at hospital costs and ways to improve hospital accounting.

## VI. Regional Population Activities

The South Pacific Alliance for Family Health, SPAFH, was established in 1986 with a \$446,000 grant from USAID/Suva. The purpose of the organization is to promote family planning activities in the region by building a network of contacts and organizations in each country. Through the network, SPAFH promotes family planning, provides technical assistance, carries out workshops and conferences, and administers a small grants program.

The three objectives of the organization are to: be responsive to regional needs; provide a voice for member countries by representing their interests in the region and vis a vis the international family health/family planning community; and develop indigenous capabilities through technical assistance and training.

SPAFH is headquartered in Nuku'alofa, Tonga with a full time staff of four: an Executive Secretary, Program Officer, Administrative officer/Accountant, and Secretary/Bookkeeper. A regional Board of Directors consists mostly of high level government officials from the Ministries of Health of each member country. The Board formulates organizational and operating policies in consultation with the staff and USAID/Suva's Health Advisor. Each Board member also serves as a liaison between SPAFH and his/her respective country by facilitating activities and channeling requests for SPAFH support.

In its first full year of operation, 1987, SPAFH has made impressive progress. They orchestrated the first family planning workshop for high level Solomon Island government officials. As a result of the workshop, a working group was formed to begin the drafting of a population policy. In Papua New Guinea SPAFH contributed to the recent workshops and conferences to promote family planning and has been working painstakingly with government officials to develop policies and programs that will address population pressures.

Two small grants have been made by SPAFH. One was for the Ministry of Health/Tonga for the development of educational materials on AIDS. The other grant went to the Solomons for a training of trainers workshop. The purpose of the workshop was to upgrade the capability of provincial nurses in the areas of family planning and in particular, contraceptive technology.

SPAFH is still in its infancy and has a long way to go before it becomes a fully functioning organization capable of addressing the needs of its member countries. They have good potential, however, and compared to other more "mature" international organizations' long history in family planning in the region, they have performed extremely well. This may be due in large part to the fact that SPAFH is an indigenous organization and aims to work directly with other indigenous organizations.

To date, the only expatriate involvement has been USAID/Suva's technical oversight of the organization. By all accounts this input has been critical to the development of SPAFH during its first year of operation.

Over the next year SPAFH needs to focus on the following areas of concern.

\*In collaboration with the Board and with USAID assistance, they should try to narrow the focus of their mandate and establish clearly defined objectives. They have carried out a needs assessment for their member countries which is a good starting point. Now they need to determine a long-term plan for each of their emphasis countries, PNG, Solomons, and Vanuatu, and adhere to the plan. Otherwise, the risk that their resources will be diffused over lesser priority activities is great.

\*SPAFH is in a transition period in terms of staff turnover. When a new Executive Secretary and an additional Program Officer are hired, a staff development plan should be drafted. This would include short-term training, workshops, and perhaps study tours.

\*SPAFH will need long-term technical assistance in management and administration. An experienced family planning program management advisor should be assigned to work with the organization for at least two years. SPAFH needs help in planning, developing an organizational strategy, drafting proposals, networking with other international family planning organizations, identifying resources, and strengthening their capabilities in family planning technologies, social marketing, information and education approaches. As a region, there is a general lack of materials on family planning and related topics. Some short to long-term T.A. in IE&C is essential.

\*Administrative management support, at least short-term, and periodically is also required. The original grant was administered by the Foundation for the Peoples of the South Pacific (FSP). The nature of FSP's assistance, as set out by the grant, was to administer the funds. Technical input was not part of FSP's role.

There have been serious problems with SPAFH's relationship to FSP perhaps due in large part to communication problems, and ambiguities in the role of each party, SPAFH, FSP, and the USAID Mission. Transfer of administrative capacity for budgeting and general management of the organization has not taken place over the short life of the grant. Despite these problems, SPAFH has done exceedingly well in handling the routine administrative matters that can make or break a new organization.

Administrative assistance needed would include the following areas: personnel policy and management, supervision, recruitment practices, accounting and reporting requirements, procurement, and financial management.

The USAID grant will expire in September 1988. In order for the organization to continue to function, they will have to obtain new sources of funding. SPAFH has strong potential for making an impact on family planning. A lot of progress has been made because of the regional nature of the organization and the exclusive participation of islanders in the implementation of activities. A low key indigenous organization has shown that regional efforts in this sensitive area may have more promise for success than a frontal attack targeted toward a single country.

Since USAID has played such a key role in the development of this organization, the team strongly recommends that A.I.D. continue to support them over the next 3-5 years. Although some progress on addressing issues is being made, neither PNG nor any other country in the region is ready yet for an A.I.D.-funded project in family planning. SPAFH can play a lead role in changing attitudes and bringing about a favorable atmosphere for project development in the future.

## VI. Recommendations for USAID Programming in HPN

The major problems in the health system that need to be addressed can be summed up as follows:

- \*Lack of trained manpower to fill existing vacancies at all levels of the system, especially outreach and community-based;
- \*Need for assistance in programming and managing resources at the provincial levels;
- \*Lack of support to provincial health offices through either the central or regional levels;
- \*Need for a coordinated system of in-service training that will provide quality education for upgrading and strengthening skills of health workers, particularly in areas of management;
- \*Need to develop problem identification and rapid assessment capacity at the provincial level;

The goal in addressing these problems is to make more efficient and effective use of a shrinking resource base by targeting high risk groups, women and children. Reproductive health care, including antenatal, natal, and family planning services are areas that are being relatively neglected. The provincial health offices need to be able to recognize priority areas and direct resources toward them in ways that will be most effective for their specific local context.

The team identified several approaches that could be taken in the design of a USAID project. Each would have a different entry point for intervention and different areas of emphasis. Expected outcomes would, obviously, also vary depending on the approach taken. Three approaches include: 1) vertical assistance to one or more subject area like EPI or reproductive health; 2) manpower development including training of community health workers, birth attendants, and strengthening in-service training at all levels; 3) program management support for improved rural care through the regional and provincial health offices. These options for USAID assistance are discussed below.

### 1) Single Intervention Approach

Perhaps the simplest way to design a program is to focus on one or more subject areas like EPI or reproductive health, identify weaknesses in the delivery of that service at various levels in the system, and make a concerted effort to address all or most of the problems. With serious problems in the cold chain, lack of trained manpower, the absence of data on

immunizable diseases, inventory and administrative management problems below the level of the regional medical store, this is an area in which A.I.D. could make a measurable impact.

Sustaining improvements in one subject area, however, is difficult without some longer-term inputs to strengthening the overall rural health system. Although EPI infrastructure would be improved, support for workers involved in a whole spectrum of other activities, the MCH mobile teams, would also be required. We still would have the problem of insufficient manpower, and other resources to support the system. The question then is whether it is cost effective to provide support for some of these needed complementary inputs focusing on only one subject area.

Reproductive health, particularly antenatal and natal care, would be a single intervention approach that may have the most return for the investment. However, any community-based activity will be dependent on complementary inputs that are not now in place. As discussed earlier in the paper, the atmosphere is not favorable in many areas for the creation of village health workers. There's a lot of work to be done in health education and communications to raise awareness and promote community participation for this to be a sustainable activity.

Because of local health conditions, cultural diversity, the multitude of languages, much of this work will have to be done at the local level. Training of trainers in clinical skills, program management and design of IE&C programs are necessary first steps.

## 2) Manpower Development

The system lacks adequate manpower at all levels. The problem is likely to get worse with population pressures, increased demands for services, and the need to extend coverage of the system. The issue then becomes how to do more with less.

Manpower deployment is now, for the most part, under the jurisdiction of provincial health offices. The problem is not just one of better and more training but better planning and implementing programs to optimize the use of existing human resources.

Improved coordination of in-service training is an area that can be addressed by provincial health offices but may be addressed more cost-effectively through support from regional or central resources. Likewise, improved pre-service training for certain categories of workers must be handled through regional and central resources.

Increased numbers and quality of personnel are not likely to improve rural health care without other essential inputs. Personnel require support for implementing programs at the

provincial and regional levels. They need to be able to focus their energies on priorities identified for their areas.

### 3) Program Management Support at the Regional Level

This was the only approach that the team considered would have long-term, sustainable impact. It incorporates features of the other two approaches without concentrating on either a single intervention or one deficiency in the system, manpower. The areas for emphasis will vary depending on the province and even within the province. Health offices, with support from the regional level, must be strengthened to identify their own priority areas and devise strategies to address them.

The GPNG recognizes the need for a regional resource to support provincial health programs. They have not been able to shift central resources toward the regional level in order for these regional units to begin to function effectively. However, they are slowly moving in that direction.

This is an appropriate point of entry for USAID assistance. The U.S. has a comparative advantage in public health management and administration. The regional units will require some long-term and substantial short-term T.A. to strengthen their capabilities in the areas mentioned earlier. They can become a technical resource for program planning and implementation and a training resource for a variety of needs at the provincial level. Their mandate would be to transfer requisite skills to provincial health officials to enable them to better plan and implement programs.

With the support of the provincial health offices, priority areas now being neglected, will be targeted for assistance. Without this support, delivery of services through community-based workers and outreach from district and provincial levels cannot be sustained.

Appendix A

PERSONS VISITED  
(In order of appointment schedule)

Papua New Guinea

- 1) Dr. Quentin Reilly: Secretary of Health, DOH
- 2) Dr. Daniel Johns: Family Health Division, DOH
- 3) Ms Jane Thomason: ADB Coordinator
- 4) Dr. Riita Lisa Kolehmainen-Aikins:  
Policy, Planning & Evaluation, DOH
- 5) Mr. Lindsay Piliwas: Environmental Health, DOH
- 6) Dr. Isaac Ake: Training Division, DOH
- 7) Dr. Barry Karlin: WHO Consultant, Health Educ.
- 8) Dr. Bais Gwale: Dental Health, DOH
- 9) Mr. Enoch Posonai: Nutrition, DOH
- 10) Dr. I. Dulay: Disease Control, DOH
- 11) Dr. I. Pyakalia: Disease Control, DOH
- 12) Dr. E. Jalwat: FAS, Secondary Health Services.
- 13) Mr. Jonathan Yali: Health Education, DOH
- 14) Mr. Robert Whaites, Pharmaceutical Svcs., DOH
- 15) Mr. Geti Kila Primary Health Svc., DOH
- 16) Mr. Timothy Ward Minister for Health
- 17) Dr. Elias WHO Epidemiologist, Port Moresby
- 18) Mrs. Yitharet UNICEF Representative
- 19) Ms Christine Post UNICEF
- 20) College of Allied Health Sciences  
Mrs. Eileen Beneve Acting Dean  
Ms Mida Manda Acting Head of Nursing Studies  
Mr. Simon Lugabai Deputy Dean  
Ms Avaie Paiara Acting Admin. Officer  
Ms Estelle Jojoga Academic Registrar  
Mr. Sinclair Bako Admin. Registrar
- 21) National Training Support Unit  
Ms Elthy Cochran OIC, NTSU  
Ms Mary Bidulph ADB Consultant  
Mr. Ken Cramer Principal Curriculum Officer  
Mr. K. Singh Media Unit  
Ms Kathy Marren Senior Curriculum Officer  
Ms Glenda Smith College of Allied Hlth Sciences
- 22) Dr. David Weasche: Medical Faculty, Univ of PNG
- 23) Dr. Ian Aitkin: Community Med., Univ. of PNG
- 24) Mr. Bill Newbrander WHO Advisor
- 25) Mr. Heywood AIDAB
- 26) Mr. Nabuo Kanekawa Embassy of Japan
- 27) Mr. Roy Caruthers Ministry of Planning & Fin.
- 28) Ambassador Debierman U.S. Embassy
- 29) Mr. Boni Dev. Coop. Div., Min. of For. Aff.
- 30) Mr. Robert Igara Program Pl. & Mgt., Min. of Pl & Fin.

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- 31) Dr. William Alto Medical Officer, So. H. Prov.
- 32) Mr. Mark Maladu PHO, So Highlands Province
- 33) Ms Hannah Pulume Prov. Nursing Officer
- 34) Ms Larabino Irabo Village Midwife Trainer, Nipa Dist.
- 35) Ms Susie Tol Village Midwife Trainer, Tari Dist.
- 36) Mr. Ben Kapa Health Educator

Madang

- 37) Dr. Peter Heywood Nutrition, IMR
- 38) Dr. Paul Garner Health Research, IMR
- 39) Mr. Silas Zale Ass't. Dean, College of All. Hlth. Sc
- 40) Catholic Mission, Malala High School  
Ms Raingrade  
L. Ingaborg  
L. Jane Frances Millane
- 41) Dr. Fleming Larssen Ass't. Sec. for Health, Enga Province

Coroka

- 42) Dr. Japath Rubero Reg. Epid., Goroka
- 43) Mr. Gariel Kalmayem Reg. Epid. Unit, Goroka
- 44) Dr. Candy Lombange Ass't Sec. for Hlth, Goroka
- 45) Dr. Deborah Lehman IMR Research Epid.
- 46) Dr. P. Howard IMR, Goroka

## Appendix B

### Selected Materials Reviewed

- AIDAB, Development Papers #3, "The Health Sector in Australia's Aid Program", 9/16/87.
- Albu, Ruth and William Alto, "Training of Village Midwives in the Southern Highlands Province", unpublished paper.
- DOH, Handbook on Health Statistics, PNG 1985
- DOH Monograph #5, "Summary of Final Report for the Southern Highlands rural Development Project, Tari Research Unit, 12/84.
- Dept. of Southern Highlands Province, 1986 Division Health Annual Report.
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- Dept. of New Ireland, PNG and WHO, "Report on the Research & Development Project in PHC in New Ireland Province, PNG 6/81-12/84.
- DOH, "Report on the Evaluation of the National Immunization Program, 1-21 Nov. 1986.
- DOH, "Report on the Comprehensive Review of the Control of Diarrhoeal Disease Program, 2 Nov. -3 Dec. 1987.
- Garner, Paul, "Nutrition, Health & Education of Women in PNG", in press.
- Groos, Anita & Garner, Paul, "Nutrition, Health & Education of Women in PNG", in press.
- Hull, Terence, "Background Paper on the Health, Pop & Nutr. Sector of 10 Independent Nations of the South Pacific, 12/7-19, 1987.
- Lehman, Deborah, "Summary of Final Report for the Southern Highlands Rural Development Project, Tari Research Unit, 12/84.
- PNG, IMR, 1985 National Nutrition Survey, Preliminary District-level Analysis of Length and Weight Data, 6/16/85.
- Putney, Pamela, "Draft Evaluation Report on the AID-funded MEDEX Activities in P.N.G., 5/88.
- WASH Report # 182, "Evaluation of the Water Supply and Sanitation Component of the ADB-funded Rural Health Svcs Project in PNG, 6/86.

## APPENDIX C

## OTHER DONORS

EXTERNALLY FINANCED TECHNICAL AND CAPITAL ASSISTANCE, PROJECTS AND ACTIVITIES 1986  
(IN US DOLLARS)

Country Receiving Assistance: Papua New Guinea

ACC Sector: Health

1986

(1) Project/Activity (Title and Number)	(2) Source of Assistance	(3) Project Duration	(4) Total Assistance to Project	(5) Annual Delivery & Future Disbursement	(6) Nature of Assistance: TA - Technical Assistance CA - Capital Assistance
Health Services - Primary Health Care	UNICEF	1985-1987	120,000	1986: 57,800 1987: 64,300	TA - Health services, supplies, support to development and implementation of a primary health care strategy.
Water and Sanitation	UNICEF	1983-1987	177,400	1986: 73,400 1987: 84,000	TA - Training of health inspectors, supplies for water and sanitation in Southern Highlands, Milne Bay and West Sepik Provinces.
Nutrition Survey	UNICEF	1986-1987	75,000	1986: 20,000 1987: 5,000	TA - Nutrition education.
Control of Diarrhoeal Diseases	UNICEF	1987	17,100	1987: 17,100	TA
Expanded Programme on Immunization	UNICEF	1987	118,000	1987: 118,000	TA

EXTERNALLY FINANCED TECHNICAL AND CAPITAL ASSISTANCE, PROJECTS AND ACTIVITIES 1986  
(IN US DOLLARS)

Country Receiving Assistance: Papua New Guinea

ACC Sector: Health

Code: 10

(1) Project/Activity (Title and Number)	(2) Source of Assistance	(3) Project Duration	(4) Total Assistance to Project	(5) Annual Delivery & Future Disbursement	(6) Nature of Assistance: TA - Technical Assistance CA - Capital Assistance
Hospital Services	ADB	1986	304,000	1986: 304,000	TA - Feasibility study for a project involving improvements of selected provincial hospitals.
Animal Health Support Services	ADB	1988	200,000	1988: 200,000	TA - Concept and details still to be finalized with the Government. (Pipeline Project).
Provincial Hospitals Upgrading	ADB	1988	15,000,000	1988: 15,000,000	CA - Loan (Pipeline Project).

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EXTERNALLY FINANCED TECHNICAL AND CAPITAL ASSISTANCE, PROJECTS AND ACTIVITIES 1986  
(IN US DOLLARS)

Country Receiving Assistance: Papua New Guinea

ACC Sector: Health

Code: 10

(1) Project/Activity (Title and Number)	(2) Source of Assistance	(3) Project Duration	(4) Total Assistance to Project	(5) Annual Delivery & Future Disbursement	(6) Nature of Assistance: TA - Technical Assistance CA - Capital Assistance
Epidemiological Surveillance Services PNG/HST/001	WHO	1978 - Ongoing		1986: 106,750	TA - To establish at central level an epidemiological unit; to evaluate programmes for prevention and control of communicable diseases, including DPI; to plan and implement relevant training programmes.
Health Information System Development PNG/EST/002	WHO	1985-1987		1986: 39,000	TA - To further develop a comprehensive health service delivery system with full community participation through local costs.
Managerial Process for National Health Develop- ment PNG/MFH/002	WHO	1982-1985		1986: 91,950	TA - To further develop broad programming and detailed planning capabilities at all levels and develop a programme of management training, focusing primarily on the provincial middle level personnel. To establish by means of special studies and by continuous review of national policies, strategies to achieve health for all by the year 2000. To develop an improved monitoring and evaluation system at all levels. To develop, strengthen and further expand research and development activities in primary health care in order to ensure that correct information is used for the planning, implementation and monitoring of activities carried out at all levels.
Expanded Programme in Immunization PNG/EPI/001	WHO	1986 - Ongoing		1986: 10,450	TA - To support efforts to reduce mortality and morbidity through immunizations. To improve the cold chain. To train health personnel.
General Health Systems Development PNG/PHC/002	WHO	1974-1989		1986: 305,150	TA - To promote health protection by developing community awareness and participation in the delivery of health systems including the training of appropriate health manpower to strengthen national implementation.

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EXTERNALLY FINANCED TECHNICAL AND CAPITAL ASSISTANCE, PROJECTS AND ACTIVITIES 1986  
(IN US DOLLARS)

Country Receiving Assistance: Papua New Guinea

ACC Sector: Health

Code: 10

(1) Project/Activity (Title and Number)	(2) Source of Assistance	(3) Project Duration	(4) Total Assistance to Project	(5) Annual Delivery & Future Disbursement	(6) Nature of Assistance: TA - Technical Assistance CA - Capital Assistance
Provision of Training (Fellowships) and Nursing Education PNG/END/099 PNG/END/001	WHO	1982-1987		1986: 54,100	TA - To carry out overseas training activities for local staff to meet the service and administrative needs in response to the country's health demands through various fellowships.
Strengthening of Health Education Services and Training Programmes PNG/IEH/001	WHO	1982-1989		1986: 120,450	TA - To review and strengthen health education services at national, provincial and peripheral levels, with particular reference to infrastructure development and formulation of strategies to include programming activities and to organize training programmes in preparation of health personnel in community approach.
Workers' Health PNG/OCH/001	WHO	1986 - Ongoing		1986: 17,100	TA - To promote the identification of the major health problems of workers in agro-industry and small industries. To develop technical guidelines. To train health personnel.
Community Water Supply and Sanitation PNG/CWS/001	WHO	1984 - Ongoing		1986: 157,100	TA - To strengthen advisory services in rural water supply and sanitation to support national programmes covering the planning and implementation strategies.
Malaria Control PNG/MAL/001	WHO	1982-1989		1986: 172,150	TA - To further improve capabilities of the anti-malaria service to develop an optimal control programme given the various technical administrative and operational impediments which are being faced through.
Health Laboratory Technology PNG/CLT/001	WHO	1985-1987		1986: 10,300	TA - To strengthen national health laboratory services in order to meet the diagnostic case management and monitoring needs of the country.

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EXTERNALLY FINANCED TECHNICAL AND CAPITAL ASSISTANCE, PROJECTS AND ACTIVITIES 1986  
(IN US DOLLARS)

Country Receiving Assistance: Papua New Guinea

ACC Sector: Health

Code: 10

(1) Project/Activity (Title and Number)	(2) Source of Assistance	(3) Project Duration	(4) Total Assistance to Project	(5) Annual Delivery & Future Disbursement	(6) Nature of Assistance: TA - Technical Assistance CA - Capital Assistance
Nutrition Services PNG/NUT/001	WHO	1985 - Ongoing		1985: 12,700	TA - To support the formulation of national nutritional policies and programmes and strengthening nutritional surveillance.
Diarrhoeal Diseases	WHO			1986: 50,900	TA
TB/Leprosy	WHO			1986: 12,000	TA
Dental Therapy PNG/OEH/001	WHO	1982-1989		1986: 15,500	TA - To raise the oral health status of the population through a systematic development of the oral health care services more specifically, to develop the manpower required for upgrading and expanding the existing oral health services in the country so that the national goals can be met.

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EXTERNALLY FINANCED TECHNICAL AND CAPITAL ASSISTANCE, PROJECTS AND ACTIVITIES 1986  
(IN US DOLLARS)

Country Receiving Assistance: Papua New Guinea

ACC Sector: Health

Code: 10

(1) Project/Activity (Title and Number)	(2) Source of Assistance	(3) Project Duration	(4) Total Assistance to Project	(5) Annual Delivery & Future Disbursement	(6) Nature of Assistance: TA - Technical Assistance CA - Capital Assistance
National Nutrition Survey Data Analysis. PNS/62/003/S/UNV	UNDP	1984-1986	23,238	1986: 4,060	TA - 1 UN Volunteer .

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EXTERNALLY FINANCED TECHNICAL AND CAPITAL ASSISTANCE, PROJECTS AND ACTIVITIES 1986  
(IN US DOLLARS)

Country Receiving Assistance	Year	Project Title and Number	Source of Assistance	Project Duration	Total Assistance to Project	Ann. Delivery & Future Disbursement	Nature of Assistance: TA - Technical Assistance CA - Capital Assistance
		Medical Officers Training Program	Australia	1987-1988	554,820		TA - visiting medical specialists to provide in-country clinical training and lectures. External examiners will also be provided for final year medical examinations.
		Assistance with Para-medical Training	Australia	1987	16,187	1987: 16,187	TA - Assessment of the strengths and weaknesses of the Colleges of Allied Health Science in Port Moresby and Madang and the relevance of their training programs to National Health Plan priorities.
		Hospital Planning Study	Australia	1986	80,935	1986: 80,935	TA - Preparation of a prioritized Master Plan for the development of PNG's hospital system.
		Support for Immunization	Australia		17,986		CA - Grant. Supply of 57 solar powered refrigerators for the storage of vaccine in health centre and sub-centres throughout PNG.
		Mount Hagen Hospital Re-development	Australia		3,057,554		CA - Grant. Requires detailed design and rebuilding.
		Physio Handicapped Children	Austria (OED)	Sept. '84- Ongoing		1986: 3,000	TA - OED volunteer.

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EXTERNALLY FINANCED TECHNICAL AND CAPITAL ASSISTANCE, PROJECTS AND ACTIVITIES 1986  
(IN US DOLLARS)

Country Receiving Assistance: Papua New Guinea

ACC Sector: Health

Code: 10

(1) Project/Activity (Title and Number)	(2) Source of Assistance	(3) Project Duration	(4) Total Assistance to Project	(5) Annual Delivery & Future Disbursement	(6) Nature of Assistance: TA - Technical Assistance CA - Capital Assistance
Sacred Heart Nursing School	Canada (MAF)	1986	1,922	1986: 1,922	CA - Nursing teaching aids. To provide the small church-run nursing school with 29 teaching aids for its midwifery, anatomy and physiology and ear/nose/throat care training programmes. Lemakot, New Ireland Province.
Alotau Provincial Hospital	Canada (MAF)	1986	26,556	1986: 26,556	CA - Nurses' residence for provincial hospital. To construct a semi-private resident for six nurses staffing two new government-funded wards
Training of Personnel of the National Water Supply and Sewerage Board	Federal Republic of Germany	1987	322,594	1986: 322,594	TA
Water Supply/Sewerage 80 86300/80 70153	Federal Republic of Germany		4,020,000		TA - Water supply and sewerages at Kimbe, Eundiawa and Mount Hagen.

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EXTERNALLY FINANCED TECHNICAL AND CAPITAL ASSISTANCE, PROJECTS AND ACTIVITIES 1986  
(IN US DOLLARS)

Country Receiving Assistance: Papua New Guinea

ACC Sector: Health

Code: 10

(1) Project/Activity (Title and Number)	(2) Source of Assistance	(3) Project Duration	(4) Total Assistance to Project	(5) Annual Delivery & Future Disbursement	(6) Nature of Assistance: TA - Technical Assistance CA - Capital Assistance
Seminar on National Health Administration	JICA	3 April - 2 May 1986		1986: 3,917	TA - Seminar. Department of Central.
Laboratory Works for Tuberculosis Control	JICA	29 Sept. '86 16 Feb. '87		1986: 7,498	TA - Training course. Department of Health.
Medicine Botany	JICA	30 Dec. '85 29 Dec. '87		1986: 9,264	TA - JICA volunteer at Wau Ecology Institute. Morobe Province.
Primary Eye Health Care (4001) (6012)	USAID (HEI)	1984-1986	270,841	1986: 48,000	TA - Technical expert, community-based education and rehabilitation services.
Health Services Activities (0008)	USAID	1986	Ongoing	1986: 274,600	TA - Health manpower development, family planning assistance, malaria trials, water and sanitation evaluation.
Nutrition Support	US (Peace Corps)	1981 - Ongoing	150,000	1986: 25,000	TA - Four volunteers in Oro, Western, New Ireland, Southern Highlands and Western Highlands Provinces.
Laboratory Health Training	US (Peace Corps)	1981-1989	100,000	1986: 12,500	TA - Two volunteers at Popondetta Hospital, Oro Province and Tari in southern highlands Province.

EXTERNALLY FINANCED TECHNICAL AND CAPITAL ASSISTANCE, PROJECTS AND ACTIVITIES 1986  
(IN US DOLLARS)

Country Receiving Assistance: Papua New Guinea

ACC Sector: Health

Code: 10

(1) Project/Activity Title and Number	(2) Source of Assistance	(3) Project Duration	(4) Total Assistance to Project	(5) Annual Delivery & Future Disbursement	(6) Nature of Assistance: TA - Technical Assistance CA - Capital Assistance
Nutrition Training	The Save the Child Fund (UE)	1986-1988	141,000	1986: 28,000	TA - One nutrition training development officer working inter-departmentally mainly in co-operation with Departments of Health, Primary Industry, Education and the University of Papua New Guinea.
Nutrition Planning	The Save the Child Fund (UE)	1981-1988	960,000	1986: 137,000	TA - In co-operation with the Department of Primary Industry and the Department of Health. One nutrition planner in Port Moresby (terminated Dec. 1986); two regional nutritionists for Papua (terminated Feb. 1987) and Honase.
EPI Co-ordination	The Save the Child Fund (UE)	1987-1990		1987: 214,000	TA - One national EPI Co-ordinator to co-ordinate within the national Department of Health and to advise on provincial level.
Provincial Water Projects	The Save the Child Fund (UE)		10,000,000	10,400,000	CA - Grant. Locations: Ebaraba, Milne Bay Province Eaintiba, Gulf Province and Pindu, Morobe Province.
Pre-School/Water Project	The Save the Child Fund (UE)		8,000,000	8,000,000	CA - Grant. To be located at Fandu Village, Southern Highlands Province.

## Appendix D - Infant Mortality Rate

The Infant Mortality Rate is a key indicator of a population's ability to pass safely through a vital portion of the reproductive cycle. The reliability and validity of the official IMR, 72/1000 live births, draws credibility from at least two sources. First, the IMR was ascertained by survey, not by estimation techniques. The census conducted household surveys using interview techniques that were designed to calculate the number of infant deaths occurring in the previous 12 months as well as hospital and health center statistics. Second, the "Tari Study" found an IMR consistent with the official estimate in a well-defined and intensively studied population in the Southern Highlands Province.

This official estimate, however, suffers a significant credibility gap for the following reasons:

- Survey methods used to identify deaths in the 1980 census leave some doubt about the validity of both the survey to identify all infant deaths and about the resulting IMR. In particular, neonatal mortality (a substantial component of overall infant mortality), appears to be grossly underreported. (This is discussed in detail on the following page).
- While the Tari study may be accurate, Tari represents one survey of only one small area of one province in PNG. It is not generalizable in a country particularly noted for its diversity.
- There appears to be a significant discrepancy between official reports of low levels of mortality associated with certain diseases and the anecdotally reported high incidence of these diseases and associated deaths. (Discussions with provincial health officials, IMR, and REU/Garoka).
- MCH service coverage and utilization is highly variable, but generally low. Government reports note that as many as two thirds of all births go unsupervised. Mortality associated with unsupervised births in the bush go un-recorded to a large extent. (PNG Medical Symposium Papers). It is probable that only live births which reach the age of 2-4 weeks ever get reported.
- A low IMR is inconsistent with other health status indicators which suggest a far more serious picture of general health (e.g. the high total fertility coupled with a maternal mortality rate officially reported as between 200-2000 deaths/100,000 population, one of the highest rates in the developing world).

- Survey reports on isolated populations or areas (other than Tari), although not assessed by the Team and probably also not generalizable, do place the IMR for these specific groups at much higher levels, usually closer to 200/1000.

- A 1985 household survey, supported by WHO, covered three provinces and found an overall IMR of 130/1000.

The following considerations were taken into account in an effort to arrive at a more accurate estimate of overall infant mortality.

-Based upon experience elsewhere and upon work of PNG's own Institute for Medical Research, it is reasonable to expect that about 45-50% of all infant deaths occur in the neonatal period.

-Officially reported statistics are significantly more reliable and valid for deaths which occur in the post-neonatal period.

-Most of the deaths that make up the official IMR are actually post-neonatal deaths.

Using officially recorded statistics, the team estimated that the neonatal mortality component of the official IMR is only 3.8/1000 rounded to 4/1000. This calculation was derived from neonatal deaths reported in or to health facilities, and an estimated number of births for 1980.

The official IMR of 72/1000 was then adjusted downward to 68/1000 to represent only post-neonatal mortality. If experience in similar countries is relevant, and the team considers that it is, post-neonatal mortality should represent 50-55% of all infant deaths. Adding an estimated neonatal mortality rate of 62/1000, the overall IMR for PNG would then correspond to a level of about 130/1000 live births. The team considers this rate a minimum level in the absence of more reliable information.

\*Note: all official statistics used here are taken from the DOH, PNG National Health Plan, 1986-1990 and PNG Basic Health Statistics, 1985.

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