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South Pacific

Health in the Solomon Islands

*Fadia Saadah, Peter Heywood
and Ian Morris*

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RESEARCH SCHOOL OF PACIFIC AND ASIAN STUDIES

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- n.a. Not applicable
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abstract

The paper reviews health achievements, emerging challenges and priorities, and discusses options for policy reform for the Solomon Islands. There have been significant improvements in health outcomes during the past two decades. However, the health care system is not meeting current health needs, and is not in a position to respond to future challenges resulting from demographic and epidemiological changes. Meeting these challenges will require significant changes in the structure, focus and financing of health services.

The main issues facing the health sector are

- the relative emphasis on hospitals at the expense of rural health services
- the relative emphasis on curative versus public health activities
- the timely and adequate provision of drugs and supplies, especially to rural health services
- the various supervision and workforce issues linked to implementation.

This report also discusses a number of options through which government can pursue alternative health priorities and sector needs.

System and workforce changes

The health care system needs to alter its current pattern of allocating resources to hospitals at the expense of rural health services, public health and outreach activities. Further, ensuring quality services will require adequate and timely provision of drugs and medical supplies and equipment.

Management and structure

Responding to the reassertion of the primacy of rural health services will imply changes in the role of the centre and its support to service delivery in rural areas. The primary role of the centre should be to provide resources and support to provincial service

delivery. The primary role of the provincial health office should be the management of the resources allocated to it in a way that responds to the local situation. This implies major changes in budgeting, responsibilities and deployment of personnel.

Health financing

Addressing the challenge facing the health sector will require a significant reform of health sector financing. Such a restructuring should ensure that resources match program priorities, and that crucial recurrent expenditures for the program are adequately financed. Options for health financing reforms include cost recovery, improved use of foreign assistance, targeted import levies, promotion of private sector service delivery, and improved use of existing budget and human resources.

Health planning and setting priorities

The review points to the need to develop a coherent investment program for health services delivery that establishes health sector priorities, program objectives and outputs, and ensures that resource allocations reflect those priorities.

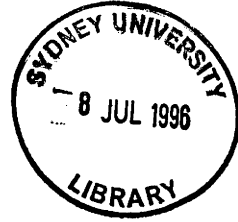
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Abbreviations

AIDS	acquired immune deficiency syndrome
ARI	acute respiratory infection
BCG	bacillus galumette guerrain
DPT3	diphtheria, polio, tetanus
EEC	European Economic Commission
EPI	expanded program for immunisation
HIS	health information system
IEC	information, education and communication
IPPF	International Population Planning Fund
IUD	intrauterine devices
IMR	infant mortality rate
MHMS	Ministry of Health and Medical Services
SICHE	Solomon Islands College for Higher Education
SIG	Solomon Islands Government
SIMTRI	Solomon Islands Medical Training and Research Institute
SPAF	South Pacific Alliance of Family Planning
SPC	South Pacific Commission
STD	sexually transmitted diseases
TB	tuberculosis
UNDP	United Nations Development Programme
UNFPA	United Nations Fund for Population Activities or United Nations Population Fund
UNICEF	United Nations Childrens Fund
WHO	World Health Organisation

H Health in Solomon Islands



Solomon Islands has achieved major improvements in overall health status during the past two decades. Infant mortality rates dropped from 70 deaths per 1,000 live births in the 1970s to 44 deaths per 1,000 live births in 1992. Still, major challenges lie ahead. Infectious and parasitic diseases, including malaria, continue to dominate the morbidity and mortality picture. Non-communicable or 'lifestyle' diseases are on the rise and the population is growing at very high rates. The health care system is under significant pressure to deliver services to a growing population in the face of a diverse disease profile and under economically constrained conditions. Meeting these challenges will require significant changes in the structure, focus and financing of health services.

Health problems and options in Solomon Islands are heavily influenced by its geographic characteristics and tropical climate. The country is archipelagic in nature with six main islands and nearly 1,000 smaller islands stretching over a distance of almost 1,300 kilometres of Pacific Ocean. Of the total land area of 29,785 square kilometres, more than 90 per cent is mountainous and covered with dense rainforests. The population, estimated at 339,000 in 1992, is extremely dispersed with the majority living in small, scattered villages dotted along the coast and in isolated inland valleys. This constitutes a major constraint on service delivery options and renders the provision of health services in many areas of the country difficult and costly. In addition to dispersed settlement patterns, two population trends have significant implications for health service delivery and planning. First, the 1992 estimated population growth rate of 3.1 per cent per annum is very high by international standards. Second, the mobility of the population is increasing as reflected in the rapid growth of the capital city, Honiara, at 6.5 per cent per annum. While the overall proportion of the population living in urban areas is still fairly low, on present trends it can be expected to grow significantly over the next decade.

Solomon Islands gained independence from Great Britain in 1978, and now is divided administratively into nine provinces and a municipal authority in Honiara. The monetised economy is mainly dominated by export-oriented production involving tree crop plantations, commercial fishing and logging. Subsistence agriculture provides the livelihood of about 80 per cent of the population. GDP, estimated at about US\$200 million in 1991, grew by an average of 2.8 per cent per annum during the 1980s, a growth pattern that has fallen short of the country's needs, especially in view of the high rate of population growth. Per capita GNP was estimated at US\$560 in 1992, ranking Solomon Islands as a low-income country. Educational attainments are low. Only 30 per cent of the population is literate and less than one per cent has tertiary education. Over most of the 1980s and early 1990s, the public sector grew at an unsustainable rate, resulting in significant fiscal imbalances. Over the next decade, public sector health financing options will be constrained significantly by the need for government to contain expenditures.

In view of various demographic, epidemiologic, geographic and economic constraints, further improvements in health will require policy reforms designed to establish the sector on a sustainable basis. This paper attempts to analyse the status of the health sector and the main issues facing it in view of emerging needs and challenges. In the first section, the demographic setting is described. The second section presents health patterns and determinants, including information about mortality and morbidity, and health services and their financing. The private sector and its role are also described in this section. The following section contains a discussion of various options and suggestions for health service delivery reforms, the role of external aid in health care financing and recommendations for a public investment program. A summary of the report and its main findings can be found in the final section.

Demographic profile

(Solomon Islands population, estimated at about 339,000 in 1992, is growing at a very high rate of about 3.1 per cent per annum. At this rate of growth the population will double in about 22 years. The average rate of growth in Solomon Islands population increased over the past four decades from a low of one per cent in the 1950s to over three per cent in the 1970s. The crude birth rate is about 38 births per 1,000 population whereas the crude death rate is estimated to be seven deaths per 1,000 (Table 1).)

Fertility levels in Solomon Islands are among the highest in the world. The 1986 census estimated the total fertility rate at about 6.1 births per woman. During the 1990–95 period this rate is expected to have declined to about 5.4 births per woman, mainly as a result of delayed marriage and earlier cessation of child bearing. An increase

Table 1 Selected demographic indicators

	Population ('000s)	Rate of growth (%)	Crude birth rate	Crude death rate	Total fertility rate	Infant mortality rate	Life expectancy (years)
1976	197	3.4	46	12	7.4	-	-
1986	282	3.5	43	88	6.1	53	62
1990	316	}3.1	}38	}7	}5.4	}44	}65
1995	369	}3.1	}37	}6	}5.1	}36	}67
2000	431	}2.9	}34	}5	}4.5	}29	}69
2005	500	}2.6	}31	}5	}3.9	}24	}70

Note: The brackets indicate mid-year estimates; in column 2 for example, 3.1 is the average for the years 1990 to 1995.

Sources: World Bank, *Population Projections* (Population, Health and Nutrition Department); Solomon Islands Statistical Reports, National Statistical Office (NSO), Honiara.

in the use of contraceptive methods could be contributing to the decline, however, the data on contraceptive prevalence are very poor.

The population is characterised by a young age structure with a high dependency ratio. About 45 per cent of the population is less than 15 years of age. The overall dependency ratio of the economically inactive population (less than 15 and greater than 64 years of age) to those economically active (15 to 65) is 109. In terms of ethnic composition, 93 per cent of the population are Melanesians, four per cent are Polynesians and the remaining three per cent comprise other ethnic groups.¹

(The high rate of population growth between 1970 and 1986 was heavily influenced by the age structure of the population, specifically the increasing number of females entering the reproductive age group, as well as high fertility levels and declining mortality rates.)

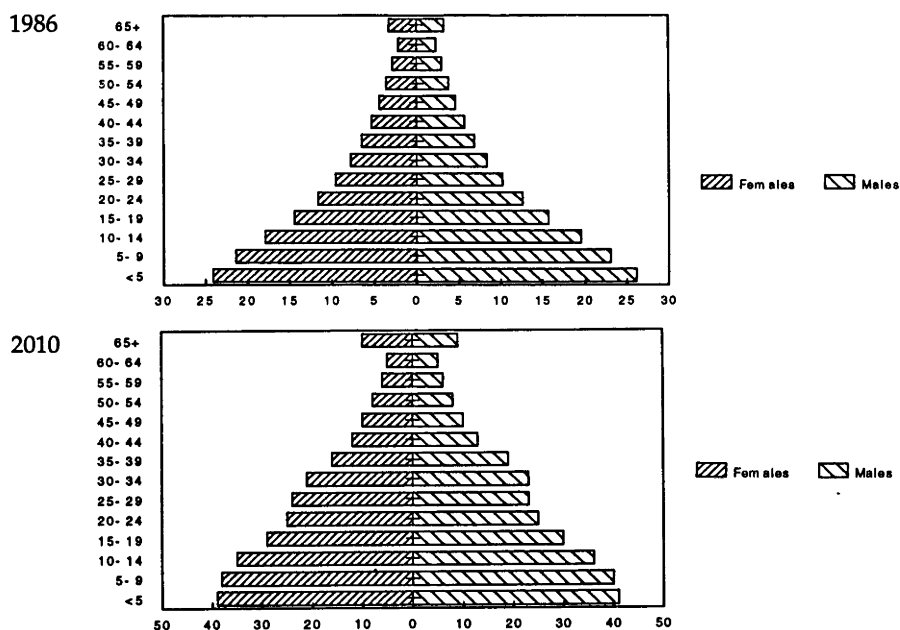
High levels of fertility are associated with increased health risks for mothers and their children. Repeated, relatively close pregnancies raise the risk of mothers' exposure to maternal mortality and morbidity. Short birth intervals, especially when interacting with other health problems and malnutrition, have a negative impact on the mother's health and increase the risk of maternal depletion. Births to very young women elevate the health dangers to both mother and child, and births at older ages and higher parities are riskier to mothers. For instance, in the absence of obstetric care, women over 34 years of age are five times more likely to die than those 20 to 29 years of age. Hence,

high fertility levels are likely to have a direct negative effect on the health of the population, especially mothers and children.

In addition to the impact on health status as a result of high fertility levels, high population growth translates to a higher demand for health care services. For instance, the population under five will increase from about 50,000 in 1986 to about 80,000 in the year 2010, assuming a gradual decline in fertility. The number of women in the reproductive age group will more than double from about 60,000 in 1986 to about 137,000 by the year 2010 (Figure 1). Given that these two groups are the most frequent users of health services, these large absolute increases will be likely to lead to increased pressure on the health care system.

The high rate of population growth is also an important factor in economic development. Growth will raise the demand for employment, increase public sector spending for social services, impact on the environmental sustainability of development projects and is already leading to unplanned urban growth. For instance, population projections show that between 1986 and 2010, the number of school age children (5–9 years of age) will increase by about 1.8 times. The working age group (15–59 years) is also projected to increase by more than three times during the same period.

Figure 1 Population pyramids, Solomon Islands, 1986 and 2010 ('000s)



Sources: (1986) 1986 Census, NSO, Honiara, Solomon Islands; (2010) World Bank, Population and Health and Nutrition, Population Projections, 1993.

Population growth has had an uneven impact across Solomon Islands, affecting urban areas more than rural areas and some provinces more than others. In the 1970–1986 intercensal period, urban population growth was more than twice that in rural areas. In this, Solomon Islands is not unique. Most of the growth is in the capital, Honiara, and this is already causing pressures on social services like housing, schools, water and sanitation, and health facilities. The urban population is projected to increase from 13 per cent of the total in 1986 to more than 30 per cent in 2010.

The early signs of the fertility decline coupled with declining mortality rates also indicate that Solomon Islands is in the initial stages of the demographic transition. This transition will affect the health indicators in the country as a result of the decline in mortality levels, changes in the age structure and in the major causes of death. The demographic profile interacts with the disease pattern to influence health indicators of the population and subsequently determine health care needs in the country. Understanding these profiles and their interaction is crucial for long-term health planning in the country (see box, page 6).

The Solomon Islands government responded to rapid growth and related issues by adopting a National Population Policy in 1988. The National Population Policy is multi-sectoral in principle, with a National Population Policy Council, assisted by a technical committee, responsible for integrating population issues in the different sectors. To date, implementation of population policies and programs has been on an *ad hoc* basis. No clear strategies have been articulated, and for those programs already initiated, strategies, alternatives and resource implications have not been analysed.

Health patterns and determinants

Overall mortality and morbidity trends²

Overall health status has improved since the mid-1970s. The best global indicator of this improvement is the fall in the infant mortality rate (IMR) from 70 deaths per 1,000 live births in the 1970s to a low of 44 deaths per 1,000 live births in 1992.³ Despite these improvements, communicable diseases continue to have a large impact on morbidity and mortality, especially in children. As in many similar situations in the Pacific, this burden of infectious disease is superimposed on, and contributes to, a pattern of chronic protein-energy malnutrition, itself a major factor increasing the risk of death in any episode of infectious disease. In addition, adult non-communicable diseases, particularly those related to cardiovascular disease, diabetes and cancer are now emerging as significant, but still largely undocumented health problems. At the same time, maternal mortality remains high⁴ and sexually transmitted diseases (STDs) are

The demographic and epidemiologic transitions

Changes in the patterns of disease proceed in two steps. The first is the demographic transition, when mortality from infectious disease declines and, partly as a result, fertility decreases as well. The second, a consequence of declining fertility and differential rates of decline among causes of death, is the epidemiologic transition. The population grows older, and noninfectious diseases become the main causes of ill health. Health patterns in the developing world over the next three decades will be profoundly influenced by both of these transitions.

It is commonly assumed that when a country is going through its demographic transition, the changes in its health indicators are primarily a function of declines in mortality. In fact, both the age structure and the cause-of-death structure are strongly influenced by the rapid decline in fertility. When fertility is high, the age structure of a population is heavily skewed towards the young, irrespective of the level of mortality. Because birth rates remain high and larger numbers of women enter the reproductive ages every year, the base of the population is continually expanding. When birth rates start to fall rapidly the absolute number of babies each year remain unchanged or even decline. The shape of the age structure of the population then begins to be transformed from a broad-based triangle into a rectangle, or even into a pear shape with a more pronounced narrowing of the base.

Source: World Bank 1993. *World Development Report: investing in health*, Johns Hopkins University Press, Baltimore:pp 30.

increasing. Thus, the general picture in Solomon Islands is one of increasing complexity characterised by an overall positive trend in health status, continuing dominance of infectious diseases in children and the emergence of adult non-communicable diseases as important problems.

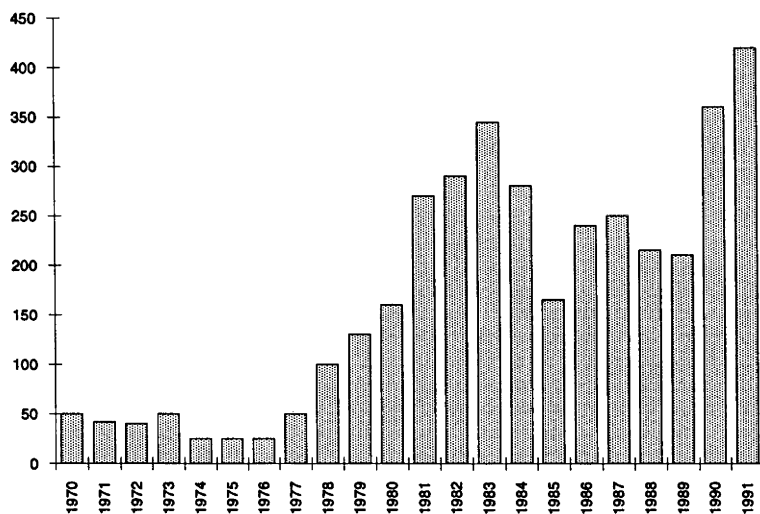
Communicable diseases

Available health information indicates that infectious and parasitic diseases continue to be major causes of mortality. Service statistics for 1990 show that the principal causes of death were infectious and parasitic diseases (24 per cent), diseases of the circulatory

system (17 per cent) and diseases of the respiratory system (15 per cent).⁵ Among children under five, who account for 30 per cent of reported deaths, the leading causes of death were infectious and parasitic diseases (41 per cent), deaths related to childbirth and puerperium complications (17 per cent) and respiratory conditions (15 per cent). The burden of acute respiratory infections and diarrhoeal diseases among children is illustrated by 1988 data showing that respiratory infections accounted for 28 per cent of paediatric admissions and 14 per cent of paediatric deaths in Central Hospital. A 1986 survey estimated that, on average, a child under five years of age experienced about 3.5 diarrhoeal episodes per year.

(Malaria remains a very significant public health problem in Solomon Islands, despite more than 30 years of intensive efforts to bring it under control. Between 1965 and 1975 the incidence of malaria declined as a consequence of a major malaria control/eradication program) But malaria incidence subsequently increased, and it became evident that eradication was not a viable strategy. When health services were significantly disrupted by cyclone Namu in 1986, malaria incidence increased (Figure 2). More worrisome, an increased incidence was also reported among infants from 170 per 1,000 in 1989 to 267 per 1,000 in 1990. Of particular concern is that parasite resistance to chloroquine, while mostly of Grade I type, appears to be widespread.

Figure 2 Malaria cases in Solomon Islands, 1970–91



Sources: MHMS and SIMTRI Reports, Honiara, Solomon Islands.

(Various immunisable diseases continue to be of concern. Measles and pertussis continue to be reported and Hepatitis B seems to be a growing health problem.⁶ Current immunisation rates are not yet high enough to prevent periodic outbreaks of immunisable diseases. In 1989 a major measles outbreak, mostly among those not previously immunised, involved 14,000 cases.)

That tuberculosis (TB) and leprosy, previously major public health problems, are still reported indicates the need for continued program efforts. In 1990 there were about 372 new TB cases and 29 TB-related deaths. However, the total number of TB cases under treatment has been declining with improvements in treatment completion rates. Leprosy is no longer considered a major public health problem but new cases continue to be reported. The National Health Plan reported an increase in the incidence of STDs, particularly in the urban population. No AIDS cases have been reported to date, however, the disease remains a potential public health threat.⁷

Non-communicable diseases and lifestyle factors

There is growing evidence, much of it clinical and anecdotal, that the incidence of non-communicable diseases, particularly those associated with changes in lifestyle, is increasing. In general, these health problems are more prevalent in urban areas and are associated with a more sedentary lifestyle, dietary changes and increasing consumption of alcohol and tobacco. Cases of heart disease, hypertension and diabetes are increasing in most hospitals.

The only population-based information on non-communicable diseases of adults, and then only for women, comes from the 1989 National Nutrition Survey which obtained data on obesity, cigarette smoking and betel nut chewing, all important risk factors for non-communicable diseases.

Obesity among women tends to be more prevalent amongst Polynesians, Micronesians and those living in urban and peri-urban areas. The National Nutrition Survey reported that 33 per cent of women were overweight and 11 per cent obese. There are no similar data for adult males.

Cigarette smoking and consumption of alcoholic beverages are now common, particularly in urban areas. Of women canvassed in the National Nutrition Survey, 23 per cent were smokers. Smoking was most common in Central (45 per cent) and Temotu (40 per cent) provinces and least common in women from Makira and Western provinces and Honiara (10 per cent, 13 per cent and 15 per cent respectively). There are no similar data for men.

Information on betel nut chewing, the most important risk factor for oral cancer in the South Pacific, is also available for women seen in the National Nutrition Survey.

Overall, 46 per cent consumed betel nut, with considerable regional variation. There are no similar results for men.

Information on non-communicable diseases remains inadequate. Nevertheless, it is likely that the epidemiologic transition is underway. Non-communicable diseases may result in increasing demands on the health services in the near to medium term. There is a need for reliable information on non-communicable diseases to enable the health services to plan appropriate responses. The current approach of responding to non-communicable diseases when they present at health facilities for curative care is likely to become increasingly costly and unsustainable.

Nutrition and dietary factors

Although severe malnutrition is not widespread in Solomon Islands, mild to moderate (undernutrition is a significant problem among children under five years of age) As in other low-income countries, (undernutrition increases the risk of death from a number of infectious diseases) Growth faltering begins at about four months of age. Beyond this age, growth is increasingly below the standard. Height is also initially at the standard and departs from it increasingly as the child gets older. Growth faltering is correlated with the introduction of weaning foods based on traditional staples with low energy and protein densities. (The 1989 National Nutrition Survey showed that of children under five years of age, 23 per cent were underweight (less than 80 per cent weight for age), 12 per cent were stunted (less than 90 per cent height for age) and 21 per cent were wasted (less than 90 per cent weight for height). There was considerable regional variation (Table 2), indicating the need for greater attempts to understand the causation of undernutrition and the possibility of targeting intervention efforts. Children residing in 'bush' villages showed a prevalence of stunting (24 per cent)—twice the national average.) Children of shorter mothers were significantly more likely to be stunted than those of taller mothers, emphasising the importance of the nutritional status of women.

The National Nutrition Survey reported the nutritional status of women of child bearing age who were not pregnant. Only seven per cent were underweight and 11 per cent were obese. Furthermore, the incidence of low birth weight is relatively low with approximately 13 per cent of recorded births being below 2,500 grams. However, as 20–25 per cent of births are not attended by trained health staff, mainly in inland areas, it is possible that the true prevalence of low birth weight is considerably higher.

Micronutrient deficiencies are also common. Iron deficiency anaemia, a significant problem among women and children, is exacerbated by the high prevalence of malaria. The best information is for women seen during the National Nutrition Survey—almost one quarter of women had haemoglobin levels less than 12g/dl. Signs of Vitamin A

Table 2 Nutritional status of children, 0–4 years of age, by province

	Underweight	Stunted	Wasted
Western	32	15	30
Isabel	35	16	31
Central	29	9	28
Guadalcanal	26	11	23
Honiara	14	4	17
Malaita	20	16	15
Makira	21	11	17
Temotu	15	5	19
Polynesian Outlier	9	1	16
Solomon Islands	23	12	21

Note: 'underweight' is <80 per cent of WHO/NCHS standard for weight/age; 'stunted' is < 90 per cent of WHO/NCHS standard for height/age; 'wasted' is < 90 per cent of WHO/NCHS standard for weight/height.

Source: Solomon Islands, *National Nutrition Survey-1989*.

deficiency have also been reported in a xerophthalmia survey in 1991. This is unlikely, however, to be a significant public health problem. Although there is no survey information, it is likely that the dietary pattern leads to marginal zinc deficiency, a known factor in limiting the linear growth of preschool children.

(Dietary patterns vary considerably between rural and urban areas. Traditional root crop staples remain a major element of the diet of the rural population, whereas rice, tinned fish and other imported foods are more commonly consumed by urban residents and groups involved in the cash economy. These changes in diet lead to increased intake of protein, fat, energy and sodium and a decreased intake of fibre—changes known to be associated with increases in non-communicable diseases in other South Pacific populations.)

The epidemiological transition in Solomon Islands has begun. The disease pattern is changing. While the overall mortality rate has fallen, infectious diseases and chronic undernutrition continue to dominate the morbidity and mortality of children. Non-communicable diseases of adults are becoming increasingly important. At the same time, the demographic transition has also commenced. The outcome of these dual trends is likely to be a more complex health situation. While much attention will need to be devoted to prevention and control of infectious diseases, there will be increasing demand for health services to respond to the increase in non-communicable diseases.

Health services

The current health system in Solomon Islands is the outcome of responses by a colonial administration and successive national governments, particularly in the post-World War II period. The system has achieved some success. Nevertheless, there are problems with the current health care system both in terms of the way it responds to current disease patterns and its ability to respond effectively to new problems.

The vast majority of the population depend on government services for health care. In addition, religious missions, a small number of enclave companies concerned with medical care for their employees and an embryonic private sector play a small role in service delivery.

Recent governments have moved to decentralise health and other public sector services to the eight provinces.⁸ The extent to which decentralisation was implemented varied between governments and has resulted in considerable confusion surrounding the relationship between the centre and the provinces. Currently, the Ministry of Health and Medical Services (MHMS) is responsible for overall health care, although provincial authorities are responsible for many aspects of public sector service delivery. The central ministry is headed by the Permanent Secretary who is responsible to the Minister. Three Under-Secretaries for Administration, Health Care and Health Improvement report to the Permanent Secretary as does the Director of Nursing and the Director of the Solomon Islands Medical Training and Research Institute (SIMTRI). Each of the Under-Secretaries is responsible for a number of units, the choice of which is not always functionally determined. For instance, the Health Information Unit reports to the Under-Secretary for Health Improvement and the Planning Unit reports to the Under-Secretary for Health Care. The structure at the central level of the MHMS also suffers from overlapping and poorly defined roles and responsibilities. For example, there is no clear distinction between the role of the Maternal and Child Health Unit and the Primary Health Care Unit both of which were established largely in response to specific donor efforts. Moreover, decisions regarding deployment of registered nurses are taken by the Director of Nursing on behalf of the Permanent Secretary. To complicate the matter further, the relative roles of the different units at the centre in relation to the provincial health services are also confused. Program coordinators at the provincial level feel loyal to the national coordinators, but are administratively responsible to the provincial managers.

At the provincial level, service delivery, both preventive and curative, is managed by mostly expatriate provincial health directors reporting to the provincial secretaries and provincial governments on administrative and financial matters, but with access

to and support from the MHMS in professional matters. The role of the provincial health directors is further complicated by their lack of control over the deployment of registered nurses. The ability of the provincial health directors to provide services responsive to local needs is restricted by nationally determined allocations and administrative complexities resulting from divided responsibilities to both the MHMS and the Ministry of Provincial Government. In terms of staffing and organisation, a high proportion of the provincial staff are in the hospital and in administrative positions in the health office. The organisational structure of the provincial health offices indicates strong bias in resource allocation at the provincial MHMS level towards curative and hospital-based services rather than towards community-based activities.

Within each province, health facilities have pyramidal structures. At the base are village health worker posts. The second level is the nurse aide post followed by the rural (and urban) health clinics. The area health centres act as a referral point for the nurse aide posts and the rural (and urban) health clinics and are the fourth level of care (Table 3). The larger provinces all have a hospital and the Central Hospital, located in Honiara, acts as the national referral centre as well as the provincial hospital for Guadalcanal, Central and Rennell Bellona provinces and for Honiara Town Council.

Village health workers provide a service point for very small populations and/or isolated areas and can provide treatment for common complaints, simple preventive health advice and referrals to higher levels of the system. A total of 266 village health worker posts have been established since 1978. A survey in 1991 found that of 355 village health workers known to have been employed, only 128 (38 per cent) were working at the time of the survey. The survey also indicated that poor maintenance of the posts as well as shortages of medicines were common problems.

Theoretically, nurse aide posts, staffed by one nurse aide, provide basic curative and preventive services and identify and refer patients to rural (and urban) health clinics or area health centres. The reality, however, is that nurse aide posts are in many cases providing a wider range of services, similar in scope to a rural health clinic, including deliveries and some emergency care. The range of services provided largely depends on the inaccessibility of the location (i.e. local needs) and the nurse aides' capabilities. This raises the issue of the skills needed by nurse aides.

The health care delivery system assigns the delivery of a wide range of activities to rural (and urban) health clinics. Those services include maternal and child health, out-patient and satellite clinics, supervision of nurse aides and village health workers, health education and school health, provision of statistics, and participation in and support for provincially directed disease control programs. The extent to which these activities are actually carried out is highly variable and depends especially on the number, type and dedication of staff. Although the recommended level of staffing is two staff, including at least one registered nurse, only 51 per cent of rural (and urban)

Table 3 Distribution of nurse aide posts, clinics and area health centres by province

	Population	NAPs	Clinics	AHCs
Central	21,654	12	10	2
Choiseul	16,180	6	10	1
Guadalcanal	63,633	3	24	2
Honiara	39,633	0	8	0
Makira	26,070	0	12	3
Malaita	87,258	25	22	2
Isabel	17,061	14	7	4
Temotu	16,867	4	4	1
Western	50,777	13	18	2
Total	339,133	77	115	17

Note: NAP = nurse aide post; AHC = area health centre. See Appendix Table A3 for breakdown by staffing levels.

Source: MHMS, Honiara, Solomon Islands.

health clinics satisfied this recommendation in (Appendix Table A2). Understaffing limits the ability of the rural (and urban) health clinics to place due emphasis on outreach and public health activities because clinical responsibilities inevitably take precedence in situations of staff shortage. Rural (and urban) health clinics often contain a few beds for emergencies, deliveries and simple inpatient procedures where referral is difficult. There is no information about the quality of these services.

The main issue for area health centres is their role as a support unit for the nurse aide posts and rural (and urban) health clinics and as an intermediary referral centre. Discussions with health staff indicated that little supervision takes place at all levels of the system, with area health centres providing no exception. As for their role as a referral unit, there are no data to analyse the extent to which area health centres act as an intermediary referral level in the health system or whether referrals (self and official) go directly to the provincial and Central Hospital. It is likely that where transport is available, the latter option is chosen.

Provincial hospitals, the fifth level of health services, are mainly general practice facilities with medical, paediatric, surgical and maternity beds. There are five provincial hospitals with a total bed capacity of 325 beds and two mission sponsored hospitals with a total bed capacity of 146 beds (Table 4). Central Hospital also provides a range of specialist services in addition to acting as the provincial hospital for Guadalcanal and Central provinces. Central Hospital has a 300 bed capacity and efforts to renovate

Table 4 Distribution of hospital and area health centre beds by type of facility, 1992

	Hospital	Area health centre	Total
Government			
Provincial	325	135	460
Central Hospital ^a	300	0	300
Missions	146	0	146
Private/companies	12	28	40
Total	783	163	946

^aincludes 15 Psychiatric Beds at Kilu'ufi Hospital Compound.

Sources: Malaita Province, Provincial Health Report, 1992; Working Paper by SIMTRI, 1993, Solomon Islands, Honiara; MHMS estimates.

and expand the hospital are underway. The hospital absorbs a large proportion of the health workforce—particularly professional staff. Plans for two additional referral centres with some specialist capability at Gizo and Kilu'ufi in Western and Malaita provinces respectively are under discussion. No analysis of the need, cost, staffing implications, level of specialised services to be offered or cost effectiveness of the proposals has been conducted. Such an analysis is essential, given the high level of resources allocated to hospital care and their generally low current utilisation rates.

Basic clinical services for the vast majority of the population are provided through village health workers, nurse aide posts and rural (and urban) health clinics. The content of these services should include services to treat illness and the consequences of disease for the main causes of morbidity and mortality. For children, this should include acute respiratory infection (ARI), diarrhoea and malaria. For adults, the emphasis should include respiratory diseases, malaria, and STDs among others. An essential component of the basic package of clinical services is antenatal care and supervision of deliveries. Although these various services should be included, they are not always delivered. This is due to a wide range of causes ranging from lack of staff to poor training, lack of drugs, and limited access to services.

The assessment of the health care delivery system is hindered by the lack of information about major factors determining its effectiveness, including workloads, content of clinical services, quality of care and referral patterns. Evaluation of the potential workload, and therefore effectiveness at the various levels of the current structure, is limited by the lack of information on the populations actually served. Consequently, rationalisation of existing service points and planning of new ones is

frequently made on an *ad hoc* basis. Further, there is little information about the quality of services provided. Peripheral services lack support and supervision. Human resource shortages not only make it difficult for peripheral staff to carry out all the tasks expected of them, but also lead to less supervision and support than is needed.

Priority programs

Apart from their role in providing clinical services, a number of priority public health programs are delivered through the network of service delivery points. These include maternal and child health, malaria, tuberculosis and leprosy control. The maternal and child health program, which includes an expanded program for immunisation, control of acute respiratory infections, control of diarrhoeal diseases, maternal health, nutrition and family planning, is relatively new and is not yet institutionalised fully and adequately in the government budget. The more than 30-year-old malaria program has recently witnessed a major shift in strategy, management and structure. The tuberculosis and, particularly, the leprosy programs have been relatively successful. While these diseases are not presently considered a major health problem, there is a need to maintain vigilance, particularly against tuberculosis.

The Expanded Program for Immunisation (EPI) illustrates both the partial success of past maternal and child health activities and the problems in the delivery system constraining further advances. The considerable advances in recent years have been largely a result of efforts to improve the cold chain, staff training and immunisation campaigns. Coverage is now reported as 70 per cent for measles, 74 per cent for bacillus galumette guerrain (BCG) and 78 per cent for diphtheria, polio, tetanus (DPT 3) (Table 5). However, a recent evaluation of EPI in Malaita and Makira/Ulawa Provinces indicated that in both provinces, only one-third of the children had completed a full primary course of vaccination by one year of age. The proportion of children immunised for Hepatitis B remains low, largely due to problems with the supply of the vaccine. Evaluation of the program points to lack of transport, unserviceable refrigerators and interruption of vaccine supplies as major constraints for improving and maintaining vaccination coverage (Briese et al. 1989). Lack of clarity about the roles of the EPI and cold chain coordinators in ensuring adequate vaccine supplies and maintenance is of concern. Resolving these issues will be essential for the program to achieve its goal of 80 per cent coverage.

The Family Planning Program was launched in 1989, following the adoption of the National Population Policy. The program is coordinated by the Maternal and Child Health Unit at the MHMS. To date, the main activities of the program have been

- training family planning nurse coordinators
- in-service training for health staff

Table 5 Coverage of the expanded program on immunisation, 1988-93

	BCG	DPT 3	OPV 3	Measles	TT ^b
1988	79	69	68	59	52
1989	83	67	67	92	59
1990	87	77	75	70	64
1993 ^a	74	78	79	70	66

^a Due to the change in the health information system in 1991, the data on immunisation from MHMS service statistics for 1991 and 1992 exclude children immunised at hospitals and hence produce lower estimates. The 1993 figure is reported in the expanded program for immunisation (EPI) annual report and is based on the projection of immunisation coverage for the months January-July, 1993.

^b TT=those receiving two doses of tetanus toxoid and one booster dose.

Note: DPT 3=diphtheria, polio, tetanus; BCG=bacillus galumette guerrain; OPV=oral polio vaccine.

Sources: EPI Program, Final Report, 1991, MCH Unit, MHMS; Save the Children Canada; and Save the Children Fund Australia.

- population education through introduction of population studies in the secondary school curriculum
- information, education and communication campaigns to induce social mobilisation and community participation in the Family Planning Program
- distribution of contraceptives.

The program is also concerned with improving the reporting and recording of family planning services, but no significant progress in the design, collection or analysis of family planning data has been achieved.

In addition to the maternal and child health unit, services are also delivered by non-government organisations like Solomon Islands Planned Parenthood Association (SIPPA) and Solomon Islands Development Trust. SIPPA's main effort is the dissemination of information and carrying out information, education and communication (IEC) campaigns, through the radio and written media. It also initiated a pilot project for community-based distribution of condoms in Guadalcanal and has plans to include the resupply of the pill in the future.

Contraceptive methods available in Solomon Islands include the pill, injectable contraception, condoms, intrauterine devices (IUDs) and sterilisation. The level of coverage of the Family Planning Program was initially estimated to be less than 10 per cent, based on service records. However, two recent surveys done in Choiseul and Guadalcanal indicated that the contraceptive prevalence in these two provinces could be as high as 45 per cent among married women of reproductive age and about 33 per cent among all women of reproductive age. Female sterilisation was a highly prevalent

method in these two surveys, accounting for about half of the users in the Choiseul survey. The prevalence of modern reversible methods was still low at about 11 per cent in Choiseul among all women of reproductive age. The surveys also indicated that among non-users of family planning about half intended to use contraceptives in the future. Although these surveys are not nationally representative and are based on small samples, they point to a possibly higher contraceptive prevalence rate than originally expected, a relatively high degree of knowledge of family planning and acceptance of these methods, and a potentially large unmet need (Bage et al. 1992).

While the establishment of a Family Planning Program represents a major achievement for the MHMS, the level of effort does not match the need for the program and its future challenges. There is no clear strategy for program implementation and evaluation efforts are hindered by poor service statistics. Service provision is strongly clinic based, even in rural areas where community-based distribution could be used, thus limiting the access of the services to couples in the rural areas. IEC campaigns in rural areas are difficult given their current focus on written media and radio in a country with low literacy levels and with more than 80 languages and dialects. IEC campaigns are also restricted by the reluctance of religious groups to discuss contraceptives openly, thus limiting the scope of the messages used in these campaigns. The number of staff with specialised training in family planning is very small and contraceptive supplies are subject to frequent interruptions. Finally, reporting mechanisms are not clearly established, leading to unreliable service statistics.

Anti-Malaria Program. Malaria remains a significant health problem in Solomon Islands (see box page 18). The malaria program, which commenced 30 years ago, originally aimed at eradication by indoor spraying. A vertical program which was essentially independent of other MHMS activities evolved and became heavily dependent on donor support. This structure was maintained through successive changes of strategy and means. As in many other countries, the realisation that eradication was not possible led to a shift in strategy from eradication to control.⁹ Initially, reliance was placed on indoor spraying and source reduction. Problems with compliance and changes in behaviour of the vector were underlying factors in the failure of indoor spraying and the move to mass drug administration as the primary means of control. The emergence of significant levels of parasite resistance to chloroquine led to the abandonment of mass drug administration as a control strategy and has also complicated the clinical management of malaria cases. Currently, control measures are community based and revolve around an expanding program using permethrin-treated bednets.

The malaria program, until the early 1990s, was organised as a vertical program with clear central control. The program was essentially independent of other MHMS

Malaria in Solomon Islands

Malaria remains a critical public health problem in Solomon Islands, despite more than 30 years of intensive efforts to bring it under control. Efforts at control began in the 1960s, with residual indoor spraying with DDT. The success of several pilot efforts resulted in the initiation of a national eradication project in 1970, with 1976 as the goal for malaria eradication. Unfortunately, 1976 saw an upward trend in malaria prevalence which peaked in 1983 at over 300 cases per 1,000 population. A critical factor in the reduced effectiveness of spraying was behavioural change in the main vector. In the 1980s, the objective of the malaria program shifted from eradication to control.

Residual spraying with DDT was supplemented, beginning in 1984, with mass anti-malaria drug administration. Initial results were promising. After the disruption of the program by Cyclone Namu in 1986, its effectiveness dropped significantly, mainly due to the dramatic fall in compliance. The program was discontinued in 1991. The program strategy changed again in 1991 as a result of a series of trials on the cost-effectiveness of permethrin-treated bednets as a malaria control strategy, and the continued ineffectiveness of the residual spraying activities in malaria control. Treated bednets are now the main intervention. Larvacides are used in particular situations where breeding sites have been identified and close supervision of activities is possible. Treatment with drugs remains an important part of the strategy. Chloroquine is available through village health workers and through all health facilities. The standard treatment regime includes provision for dealing with apparent drug resistance.

Chloroquine has been the treatment drug of choice, however, the chloroquine resistance of *P. falciparum* has been documented since 1980. The proportion of resistant cases is increasing, but the level of the resistance is usually low (Grade I). The poor compliance in the latter period of mass drug administration could have contributed to the emergence of drug resistance. Drug resistance is likely to become more important in the future, and treatment regimes will have to take it into account.

activities, had a separate budget, and was funded mostly by donors. But in the last three years, there have been efforts to integrate malaria control with other health initiatives. In addition, the malaria program has been brought into the national recurrent budget progressively since the late 1980s and now accounts for ten per cent of recurrent health outlays.

Integration of the malaria program into the ongoing activities of the MHMS is proving more difficult than was first thought. Further, the change in strategy has resulted in significant changes in staffing requirements. Thus, the program faces the need to change its style of operation to one which is decentralised and collaborative, involving the acquisition of new skills by some staff and the retrenchment of others. In terms of financing, both impregnated bednets and drugs (the mainstays of the current control strategy), are dependent on donors for their financial support. To ensure their long-term sustainability, it is vital that these activities be included in the recurrent budget as soon as possible. Finally, it is vital that levels of resistance are monitored on a routine basis and that results are used to modify standard treatment routines as appropriate. This monitoring activity is not well developed and needs much more attention than it is receiving at present.

The control of malaria in Solomon Islands in the last 30 years has been one of continual adaptation to changing circumstances and new knowledge about the parasite, its vector and their interaction with the various means of control. Applied research has made an important contribution to the recent evolution of the program activities through evaluation of the effect of the existing activities and assessment of possible new methods of control. It is important that these activities be continued.

The experience with malaria has three clear lessons for the health services in general. First, efforts to reorient malaria abatement strategies from an independent vertical program to one which is decentralised and integrated with other MHMS activities indicate the need for a clear plan of action if this is to be done effectively. Second, the need to bring the program into the national recurrent budget to reduce dependence on donors has clear parallels in other public health activities. Third, the importance of a capacity for applied in-country research is well demonstrated by the experience with malaria. Such capacity could also make a significant contribution to the evaluation of policies in respect of other public health problems.

The reorganisation of the MHMS and moves to decentralise health services have led to pressures to integrate malaria control activities into the regular health program and budget. Although the vertical program was costly and inefficient, integration of malaria control activities into other health activities has proved more difficult than originally anticipated. These difficulties include significant financial pressures to replace donor funding for drugs and bednets and to rationalise staffing levels and management.

Human resources

Solomon Islands health services depend on four main categories of staff to deliver services—village health workers, nurse aides, registered nurses and doctors. The village health workers are the frontline staff of the system. Trained at the provincial level under a variety of similar curricula, they were introduced to improve access to primary care for rural people. Their important role in primary health care delivery will need to evolve as access to higher level services improves (e.g., due to improved transport infrastructure). They will, however, remain the only viable locally based service delivery mechanism for a significant proportion of the population and every effort should be made, especially through supervision, to ensure quality service delivery. A number of factors constrain the potential effectiveness of village health workers, including selection practices, training programs, different remuneration arrangements, reliability of payments for their services by the community (and/or provincial government) and inadequate supervision. Adequate training and sustained supervision are crucial to service delivery quality, while more reliable and consistent remuneration practices and more careful selection practices could reduce the high dropout rates from the service (50 per cent in five years).

The core of Solomon Islands health professionals are registered nurses and nurse aides. They comprise 65 per cent of the formal workforce. The majority of nurse aides are posted to nurse aide posts where they provide basic curative and preventive services and some supervision of deliveries. Nurse aides are now trained through Helena Goldie Hospital in an 18 month curriculum in which stress is placed on both curative and preventive aspects of health care, importance of recognition of serious illness and referral to other levels of the system. There is a broad age range in the current workforce. Older members were trained in a six month course. The most recent graduates are seen as better trained and making an important contribution to health care. The older members of the workforce have lost skills and their contribution, in general, is more limited. Plans have been made for a second training school and a new syllabus has been drawn up. The expected number of graduates starting in 1996 is about 35 nurse aides per year. There is a need to carefully assess the workforce needs for nurse aides over the next 20 years and to plan training capacity with this in mind. Such an assessment should address the role of the nurse aides relative to those of registered nurses.

Registered nurses, the most numerous category of health professionals, were formerly trained in a two year apprenticeship system at Central Hospital. In 1985, training moved from the MHMS to Solomon Islands College for Higher Education (SICHE) and was lengthened to three years. Graduation is followed by a compulsory 12 month period of practical experience which is mainly hospital-based in Honiara.

Half the registered nurse workforce is employed in hospitals, with a small, but rapidly growing number of senior nurses involved in administration at MHMS headquarters. There is a shortage of nurses, particularly in rural health services where only half of the rural (and urban) health clinics have more than one registered nurse. Thus, the system needs to ensure a more balanced distribution of registered nurses and to provide adequate support, in terms of in-service training and supervision, for those in the clinics. At present, a significant proportion of registered nurses in the clinics end up providing services similar to those provided by nurse aides, at a higher cost and with less focus on public health activities.

Doctors manage the health system and provide clinical care, mostly at hospitals (Table 6). There are two main issues related to doctors: the high proportion of expatriate doctors, particularly at the Central Hospital and in the provinces, and the small number of Solomon Islanders being trained in medicine. The dependence on expatriates for providing medical services at the provincial level is, in part, due to reluctance of the national medical graduates to work as provincial level directors, where public health management and administration form a significant part of the work load. This raises the question whether doctors are really needed to manage provincial health services and if fresh medical graduates can fulfil this role. Alternative options need to be explored, especially since the donor financing for these positions may be phased out in the near future. The basic training of doctors is concentrated at the medical schools in Papua New Guinea and Fiji with post-basic training mostly in Australia and New Zealand. Localisation of doctors' positions is slow and the current levels of training need to be increased.

As in many other health systems, the distribution of the numbers and types of staff is of concern and it reflects a bias towards allocating staff to the central level and

Table 6 Distribution of staff posts by category and type of facility, 1992

	Medical doctors		Registered nurses		Nurse aides	
	Number	%	Number	%	Number	%
MHMS Headquarters	4	7.4	14	2.9	0	0
Central Hospital	26	48.1	112	23.6	30	9.5
Provincial hospitals	19	35.2	128	26.9	74	23.3
Area health centres	0	0	49	10.3	28	8.8
Clinics/aide posts	5	9.3	172	36.3	185	58.4
Total	54	100.0	475	100.0	317	100.0

Source: Health Information System and MHMS Reports, Honiara, Solomon Islands.

Table 7 Distribution of the health workforce posts by province, 1992

	Population total	<u>Doctors</u>		<u>Registered nurses</u>		<u>Nurse aides</u>	
		No.	Pop./ doctor	No.	Pop./ nurse	No.	Pop./ nurse aide
Central	21,654	1	21,654	20	1,083	33	656
Choiseul	16,180	1	16,180	19	852	20	809
Guadalcanal	63,633	2	31,817	39	1,632	41	1,552
Honiara ^a	39,633	31	1,278	141	281	40	991
Makira	26,070	1	26,070	35	745	19	1,372
Malaita	87,258	7	12,465	83	1,051	63	1,385
Isabel	17,061	1	17,061	30	569	21	812
Temotu	16,867	1	16,867	26	649	16	1,054
Western	50,777	5	10,155	68	747	64	793
Total	339,133	50	6,783	461	736	317	1,070

^a This includes 29 doctors at Central Hospital, the national referral centre. The inclusion or exclusion of these doctors has a marked effect on the population/doctor ratio.

Note: See Appendix Table A3 for breakdown by type of facility by province.

Source: MHMS, Honiara, Solomon Islands.

hospitals. The frontline workers are the registered nurses and nurse aides. Nevertheless, more than half of registered nurses and one-third of nurse aides are to be found in hospitals. Half the doctors are in Central Hospital. A growing number of doctors and nurses are involved in administration at the centre. The distribution of the population to human resources ratio across provinces shows a large degree of variation by province (Table 7). For instance, the range of population to nurse ratio goes from as low as 281 to 1 in Honiara to 1,632 to 1 in the rest of Guadalcanal province. If Guadalcanal is excluded from the analysis, the range goes from 569 to 1 in Isabel province to 1,083 to 1 in Central Islands province.

Drugs and equipment

The health care delivery system, at all levels, depends on the national and provincial medical stores for a continuous and timely flow of drugs, supplies and equipment. At the national level the procurement and distribution of drugs, medical supplies and equipment occur through the National Medical Store. Annual tenders are made through outside agents using standard lists of drugs and supplies. There are no standards for medical equipment yet. From the central store, drugs and supplies are distributed to provincial stores. From there an assistant pharmacist distributes them to the various

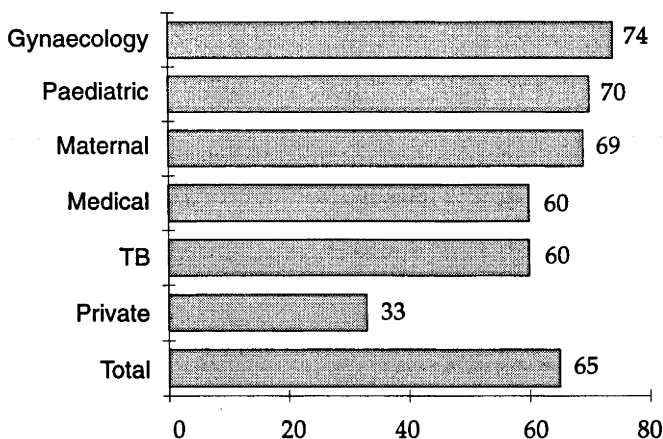
health facilities. Overall, aggregate quantities of drugs and medical supplies seem adequate. Problems remain in both the ordering and distribution of drugs to health facilities and issues of transport, geographic accessibility and monitoring of drug reporting and requests from the clinics remain crucial.

Utilisation

There is wide variation in the levels of utilisation of the various health facilities within and between provinces. Hospital data in general are lacking, especially because in-patient data are excluded from the health information system. Reports from general hospitals, particularly Central, Kilu'ufi and Kira Kira report unusually low average bed occupancy rates (from 45 per cent to 65 per cent) indicating that there is little need for increased bed capacity, even in the national referral hospital. There is variation in occupancy rates between wards with highest rates reported for maternal and paediatric beds (Figure 3).¹⁰

Central Hospital acts as the national referral centre. However, most of the referrals come from Guadalcanal, Central and Rennel Bellona provinces, and Honiara Town Council, for which it acts as the provincial hospital.¹¹ The highest numbers from outside this area are from Western and Malaita provinces. Important influences on the referral rates from these centres include the presence of specialists in the province and the greater availability of transport.

Figure 3 Central Hospital occupancy rates by ward, 1991 (per cent)



Source: Central Hospital, Honiara, Solomon Islands.

Table 8 Out-patient visits by type of facility and province, 1993

Facility	Choiseul		Guadalcanal & Honiara		Isabel		Makira		Malaita		Western		Central		Temotu		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Hospital	0	0.0	31,080	15.0	5,784	21.8	3,928	16.0	12,516	9.9	23,942	23.7	0	0.0	8,757	35.9	86,012	15.0
AHC	3,425	9.5	15,077	7.3	3,877	14.6	6,749	27.4	14,566	11.5	7,125	7.1	8,373	29.9	5,082	20.8	64,274	11.2
UHC/RHC	25,215	70.3	158,861	76.6	6,462	24.4	13,922	56.6	79,635	62.9	54,213	53.7	14,193	50.6	7,613	31.2	360,114	62.7
NAP	7,232	20.2	2,310	1.1	10,389	39.2	0	0.0	19,988	15.8	15,589	15.5	5,469	19.5	2,958	12.1	63,935	11.1
Total	35,872	100.0	207,333	100.0	26,512	100.0	24,599	100.0	126,705	100.0	100,869	100.0	28,035	100.0	24,410	100.0	574,335	100.0
Average visits per capita per year		4.4		4.6		2.4		1.9		2.9		4.0		2.6		2.9		3.4

Notes: AHC = area health centre; UHC/RHC = urban health centre/rural health centre; NAP = nurse aide post.

Source: Data reflect information at the central Health Information System, MHMS for January to June, 1993.

Out-patient treatment occurs throughout the health system including nurse aide posts, rural and urban clinics and hospitals. Across all these facilities there is an average of 3.4 out-patient visits per person per year. This average masks a wide variation between provinces with the lowest being 1.9 in Makira and the highest 4.6 in Guadalcanal (including Central Hospital and Honiara). Sixty per cent of all out-patient visits take place in the urban and rural health clinics. Although hospitals contribute 15 per cent of all visits, more than one-third of these occur at Central Hospital. Nurse aide posts account for only 10 per cent of all visits, largely because of their smaller numbers (Table 8).

There is considerable variation in workload (in terms of patients per staff member per week) at the various facilities. At the area health centres most staff see 5–6 patients per day whereas at clinics the number of visits per staff per day is higher at about 11 visits, with a range of 5 to 19 for the different provincial estimates. The average number of visits per staff at nurse aide posts is lower at eight visits per day. There are wide variations in the levels of utilisation of the various facilities within and between provinces (Table 9). A number of factors may contribute to this, but available information does not allow determination of the most important. These factors may include the size and density of the population being served by any given facility, variation in the number and type of staff, the quality of the service provided (including the hours during which service is actually available), variation in disease patterns, and availability of alternate services and transport to reach them. Nevertheless, overall work loads are low, particularly given the low levels of outreach activities.

Water and sanitation

Water supplies and sanitation are important public health interventions that could have a significant impact on health status. There have been significant investments in rural water supplies over the past 15 years, with official estimates indicating that 62 per cent of the rural population now has access to installed water supply facilities. It is estimated, however, that only 75 per cent of the 951 installed systems are operating at present. About nine per cent are not functioning, 10 per cent are working but require major maintenance, and a further five per cent have insufficient source (Table 10).¹² Development of sanitation programs has not been as successful. In 1978, it was estimated that less than five per cent had access to installed sanitation facilities and this number had only increased to nine per cent in 1991.

Urban water supply and sanitation services are also a problem. The demand for services exceeds the capacity of the relatively old, poorly designed system that serves only part of the urban areas. Drinking water quality is variable and rivers and beach-

Table 9 Workload at area health centres, clinics and nurse aide posts, 1993

	Area health centres			Clinics			Nurse aide posts			Total		
	No. facilities	Av. outpatient visits/fac/day	Av. outpatient visits/staff/day	No. facilities	Av. outpatient visits/fac/day	Av. outpatient visits/staff/day	No. facilities	Av. outpatient visits/fac/day	Av. outpatient visits/staff/day	No. facilities	Av. outpatient visits/fac/day	Av. outpatient visits/staff/day
Central	2	32.2	3.4	10	10.9	5.7	12	3.5	3.5	24	9.0	4.3
Choiseul	1	26.3	4.4	10	19.4	8.4	6	9.3	9.3	17	16.2	7.9
Guadalcanal	2 ^a	40.4	20.2	24	22.3	7.4	3	5.9	5.9	29	21.2	7.7
Honiara	-	-	-	8 ^b	82.3	18.8	-	-	-	8	82.3	18.8
Makira	3	17.3	4.7	12	8.9	5.6	-	-	-	15	10.6	5.3
Malaita	2	56.0	9.3	21 ^c	22.5	12.9	19	8.1	8.1	42	17.5	10.9
Isabel	4	7.5	2.5	7	7.1	4.5	14	5.7	5.7	25	6.4	4.3
Temotu	1	39.1	4.9	4	14.6	11.7	4	5.7	5.7	9	13.4	7.1
Western	2	27.4	9.1	18	23.2	13.4	13	9.2	9.2	33	17.9	11.8
Total	17	16.2	5.5	114	22.8	11.1	71	7.7	7.7	202	17.5	9.3

^a Data on only visits from one area health centre was used due to errors in the reporting from the other area health centre.

^b All these are urban health centres.

^c There are 21 rural (and urban) health clinics, however data from one clinic was considered as an outlier, so the reporting is on 20 clinics only.

Source: Data reported by the MFIMS service statistics for January-June, 1993. Honiara, Solomon Islands.

Table 10 Water supply facility by status, 1992

	Number	Per cent of total facilities				Total
		Fully operating	Operating but require maintenance	Not functional	Insufficient source	
Gravity	630	75	12	7	6	100
Rain catch	179	88	5	5	1	100
Well with pump	101	62	5	30	3	100
Others	41	53	20	15	12	100
Total	951	75	10	9	5	100

Source: Joint review of Solomon Islands rural water supply and sanitation program, MHMS, Honiara, Solomon Islands.

front areas surrounding Honiara are now polluted because sewerage outfalls are located in densely populated areas. The absence of appropriately designed solid and hazardous waste disposal sites is a matter of concern. There is a tendency to burn wastes, resulting in leachate contamination of the sea. Further, the leaching of inappropriately disposed chemical and other hazardous wastes also has the potential to contaminate water sources. Effluent from septic tanks is already leaching into the high-porosity soils of the area and has reduced the quality of ground water.

A number of provincial towns/headquarters have outgrown the capacity of their water supply systems and sanitation facilities. As a consequence, a number of provincial hospitals are frequently without water for long periods of the day. Water and sanitation facilities at most rural schools and health facilities are also inadequate. This not only means that general hygiene is a problem at schools and health facilities, but also that teachers and health staff are not able to demonstrate the benefits of good water and sanitation facilities through their work.

Villages and communities are responsible for proposing schemes, but the selection and evaluation process has historically focused on technical considerations and has not paid enough attention to community participation in the design and implementation of the programs. Significant problems with maintenance underscore this observation. A major constraint to the development of sustainable programs is that communities view the installation of water supplies as the responsibility of government and see water as a free good. Moreover, institutional needs for water supply should be planned carefully and not just be added onto the existing village

supply since this could lead to the collapse of the whole scheme due to overloading the system at peak or dry times of the day or year.

Administration and management of urban and rural water supply programs have been diffused with local, provincial and national governments sharing responsibilities. Compounding these problems has been the continual shifting of responsibilities among the different levels of government and between national supervising agencies. At present, the Environmental Health Division of the MHMS has responsibility for coordinating the implementation of rural water supply and sanitation programs and providing overall policy and technical advice. Responsibility for implementing programs is with provincial government and the senior health inspector in each province. As for the Honiara water supplies and sanitation services, administrative responsibility is split between the Town Council and the Department of Works. Plans are underway to establish an urban water authority to lead efforts to introduce a modern sewerage and sanitation system. It is envisaged that this authority will also take responsibility for a number of provincial centres. Some of the current plans/technical solutions are unlikely to be financially sustainable in many of the provincial centres.

Resources devoted to the rural water supplies and sanitation program have been substantial, with expenditures increasing from SI\$186,300 in 1979, the year the program was initiated, to SI\$2.5 million planned expenditure in 1993 (Appendix, Table A7). The program has received significant financial support from Australia, New Zealand and UNDP/WHO. In recent years non-government organisations have emerged as participants in the program. The non-government organisations typically receive financial support from donors. While they still only contribute about five per cent of the total cost of the program donor support is growing because of a belief that non-government organisations may be more effective in working with communities in many cases. The donor contribution to the program has been mainly in the form of materials and supplies (piping, plumbing supplies, concrete and so forth) and has represented about 60 per cent of the total cost since the program's inception.

Health education

Health education, according to the National Health Plan, is a priority area for the MHMS. The Health Education Division and its activities are considered an integral part of all health programs. However, several programs have initiated their own health education activities, in part due to the lack of capacity at the Health Education Division. In fact, some programs like water and sanitation have their own health education staff and there is little coordination between such units and the Health Education Division. At the provincial level, a health education assistant, who is usually recruited from the

ranks of health staff and undergoes six months training at the MHMS, is responsible for health education activities. 'Priority', but not resources, is given in the National Health Plan to the establishment of provincial resource units for health education. Activities at the MHMS are mainly focused on the reproduction of existing health education materials and distributing those to the provinces. There is very limited capacity to develop, test and produce health education materials at the MHMS.

As there is no specific allocation for health education activities in the central recurrent budget, funds are mostly drawn from external sources. The MHMS's recurrent budget covers salaries for health education staff. Resources for development and reproduction of media packages are provided by donors. Until recently most of the support was drawn from a United Nations Population Fund (UNFPA) project. These funds have been cut substantially and the division currently relies on funds derived from the JICA-funded Primary Health Care Project. The sustainability of this integral part of the government's health priorities is thus in question as well as the basis on which the health education program's priorities and content are decided.

Health information system

The health information system is an essential tool for monitoring and evaluating health services. The MHMS, noting the importance of information in planning and management of health care, undertook, with European Union assistance, a major effort to set up a health information system. The program started in 1992, after a field test in 1991. The current system reports facility based data from both the public sector and non-government organisations. Hospital information is limited to out-patients only. Data are collated and analysed centrally, and reports include three types of information

- demography and vital statistics
- activities of health services
- health conditions and morbidity.

Reports are provided to the provinces monthly. At the national level, feedback is provided through quarterly reports.

There are several limitations to the current system. First, it excludes several important components of the health care system, namely drugs, laboratory results and hospital in-patients. Second, all data analysis is done centrally and no provisions are made for helping the provinces to develop their capacity to analyse and utilise service statistics. This results in a system used mainly for monitoring health activities at the centre and not as a management tool for health services. Third, there are no internal checks of the data quality within the system, and finally, the turnover of results

is slow, restricting the use of the data by health planners and program managers. This is in part due to the understaffing—the health information system has only three staff, one epidemiologist and two statisticians, at the centre. No staff are trained or assigned at the provincial level to analyse service data.

Traditional healing

Traditional healing practices remain an important part of the response to perceived ailments in Solomon Islands. Beliefs in the benefits of traditional healing are widespread, and in 1978, the Cabinet endorsed the practice of traditional medicine and encouraged its use. However, the nature and impact of the different regimens undertaken by traditional healers have not been analysed or quantified. Although the exact level of utilisation of traditional healing is not documented, it is hypothesised that a large segment of the population uses traditional healing as the only or first response to ailments, prior to contact with the Western health care system. The level of substitution and/or complementarity has an important impact on disease prevention and early treatment strategies. Traditional medicines and beliefs are also important for understanding behavioural responses to ailments, an essential element for health education programs.

In sum, health services in Solomon Islands face a number of challenges in the period ahead. These include the need to accord greater priority to rural health services, and within them to the quality of clinical care and public health activities. This will require increased attention to

- determining the optimal roles of the various players at each level of the system, and how they may be most effectively supported and supervised
- a clear definition of the roles and responsibilities of the centre and the provinces
- how priority public health programs can be sustained and institutionalised.

Health financing

The national government, through appropriations at both the national and provincial levels, is the major provider of health services in Solomon Islands. The absolute share allocated to health over the period 1989–93 was about 11 per cent of the government budget. This is high by Asian and developing country standards, but comparable to other Pacific countries (7 to 15 per cent) and to high income European and North American countries (11 to 12 per cent). The real level of resources appropriated by government to health increased at a rate of 6.8 per cent per annum during the period

Table 11 Overall government and health budgets and revenues, 1989–93

	Total gov't recurrent budget (SI\$ million)	Health. recurrent budget (SI\$ million) ^a		Share to health (%)	Health revenues (SI\$ million)	Share recovered (%)	Per capita (SI\$)	
		Nominal	Real ^b				Nominal	Real ^b
1989	125.2	12.8	7.6	10.2	0.2	1.6	41.4	24.5
1990	146.6	16.3	8.9	11.1	0.2	1.2	51.1	27.8
1991	162.8	18.5	8.7	11.4	0.2	1.1	56.4	26.6
1992	208.8	22.3	9.5	10.7	0.2	0.9	65.4	28.2
1993	231.0	24.9	10.0	10.8	0.2	0.8	71.1	28.6

^a Includes recurrent budget and recurrent domestic resources appropriated to malaria under the development budget.

^b 1985 prices.

Sources: Approved recurrent estimates (several years) and Budget and Accounts Section, MHMS, Honiara.

1989–93. On a per capita basis, real government allocations increased from SI\$24.5 in 1989 to SI\$28.6 in 1993 (1985 prices) (Table 11). The major determinant of this expansion was the transfer of the malaria budgets from aid to government budgets. In addition to national government allocations for health (at the national and provincial levels), provinces also allocate modest funds from untied grants and own revenues. These amounts are not systematically documented and the government budgeting and accounting systems should be developed to allow for a systematic monitoring of these resources.

In addition to government expenditures on health, contributions to health service delivery are also made by local governments, aid agencies, non-government organisations (particularly the churches), employers and private individuals. Systematic data on total resource use by the health sector over time are not available. But an estimate for 1991 provides a good sense of total resources devoted to health (Table 12).¹³ According to the study, government accounts for about 60 per cent, and donors for about 26 per cent, of total health funding. Non-profit private health service providers (non-government organisations—mainly missions and employers providing for employees) make a significant contribution to health care, accounting for six per cent of the total. The remainder is accounted for by private practitioners supplying services to the public mainly in Honiara. While the contribution of private non-profit providers has not changed significantly over the period 1986–93, donor contributions, as a consequence of some large capital investments, have varied significantly.

Table 12 Total health expenditures, 1991

	Sector (SI\$ million)	Per cent ^a
Government ^a	21.1	60
Private (NGOs)	1.0	3
Private companies (to employees)	1.2	3
Private for profit	2.9	8
Donors ^b	9.2	26
Total	35.2 ^c	100

^a This includes some health expenditures made by other ministries (not documented separately) and government contributions to the capital budget.

^b A more detailed breakdown of donor allocations is presented in Table 16.

^c Errors due to rounding.

Source: Health Economics in Solomon Islands: Introduction to cost recovery, EEC Rural Health project, 1993.

The analysis of allocations of government expenditures on health raises various issues. First, the real per capita allocations to provinces, and subsequently to rural health services, has been declining. Second, there is a strong bias in resource allocations towards hospitals, especially Central Hospital. Third, very few resources are allocated to critical recurrent expenditures like maintenance of health facilities, training and transport and to priority public health programs.

The share of the national recurrent health budget going to rural hospital and basic rural service delivery declined from 43.5 per cent in 1989 to 28.7 per cent in 1992 (Table 13). In 1993 the share increased, largely as a result of salary increases for nurses. Hence, despite an overall increase in real per capita health allocations over the period 1989–93, the real per capita grants to provinces have declined (Table 14).¹⁴ At the same time, health services grants to the provinces, the only significant pool of discretionary funds available to provincial health managers, also declined over the late 1980s and early 1990s.¹⁵

A high proportion of the government's health effort is expended on hospitals, particularly Central Hospital (Table 13 and Appendix Table A9) which consumes almost one quarter of all recurrent outlays. The level of resources allocated to Central Hospital increases to about 31 per cent of total government expenditures if national dental, X-ray and laboratory services, which are effectively part of Central Hospital, are included. Hence, resources allocated to Central Hospital are comparable to those allocated to all provincial health services throughout the country. The central medical store which is responsible for purchasing and distributing all drugs to health facilities in the public

Table 13 Recurrent health budgets, 1989-93, (SI\$ '000)

	1989	1990	1991	1992	1993
National					
Head quarters	449.8	618.9	782.3	1,083	1,190.9
Central Hospital	3,425.5	4,408.8	4,250.7	5,691.7	6,499.6
Dental	263.6	305.5	333.2	393.4	408.4
X-ray	183.3	188.4	240.2	270.6	278.9
Laboratory	303.4	328.3	380.6	425.1	439.9
Pharmacy & stores	755.3	2,426.8	3,627.3	4,122.6	4,137.7
Health education	88.4	144.6	121.3	152.8	156.7
Health environment	113.5	128.6	174.9	192.6	200.6
Med research & training	306.4	389.9	432.9	552.7	572.6
Social welfare	189.7	157.3	138.7	165.5	153.3
Malaria: recurrent	0.0	0.0	469.0	1,757.6	1,820.3
(SIG) development ^a	1,142.0	1,200.0	950.0	1,100.0	900.0
Total malaria	1,142.0	1,200.0	1,419.0	2,857.6	2,720.3
Total national	7,220.9	10,297.1	11,901.1	15,908.2	16,758.9
Total provincial	5,560.6	6,006.1	6,632.0	6,399.4	8,180.4
Total budget	12,781.5	16,303.2	18,533.1	22,307.6	24,939.3
Per cent national	56.5	63.2	64.2	71.3	67.2
Per cent provincial	43.5	36.8	35.8	28.7	32.8

^a Domestic recurrent resources allocated to malaria but appropriated in the development budget.

Source: Approved Recurrent Estimates and Solomon Islands Government (SIG) Development Budgets (various years).

Table 14 Total provincial health budget, 1991-93 (SI\$ '000)

	1991	1992	1993
Nominal			
Salaries and allowances	4,086.8	3,790.2	4,964.2
Health service grants	2,545.2	2,609.2	3,216.2
Total	6,632.0	6,399.4	8,180.4
Per capita (SI\$)	22.8	21.4	26.5
Real (1985 prices)			
Salaries and allowances	1,929.6	1,621.8	1,998.5
Health service grants	1,201.7	1,116.5	1,294.8
Total	3,131.3	2,738.3	3,293.2
Per capita (SI\$)	10.8	9.2	10.7

Source: Appendix, Table A9.

health system accounted for about 16–17 per cent of the health budget over the last few years. Preventive health which includes health education, rural water supplies, maternal and child health and primary health care support accounts for only 2 to 3 per cent of national outlays. Most of these priority programs are financed by donors covering most of the development and recurrent expenditures for these programs.

An analysis of recurrent outlays by budget line (Table 15) indicates that the largest budget items are salaries and wages (62 per cent) followed by drugs (16 per cent).¹⁶ Less than five per cent of recurrent allocations are for transport despite the fact that transport bottlenecks are cited by most health managers as a crucial constraint to rural service delivery.¹⁷ While salaries and wages account for almost two-thirds of the health budget, and service delivery depends significantly on the quality of staff, very little (less than one per cent) is allocated to in-service training. Quality service delivery requires that the health workforce maintains and expands its skills. Aggregate resource allocations for these activities are inadequate, despite significant donor support.

User fees

Public health facilities in Solomon Islands do not, for the most part, charge fees although some nominal charges exist for some in-patient services and for a limited array of

Table 15 Recurrent health budget by line item, (excluding malaria), 1993^a

	National		Provincial		Total	
	SI\$'000	%	SI \$'000	%	SI\$'000	%
Salaries & wages	8,499.9	53.2	6,419.0	78.5	14,918.9	61.8
Transport	481.2	3.0	646.0	7.9	1,127.2	4.7
Office supplies	165.8	1.0	41.6	0.5	207.4	0.9
Drugs	3,826.7	24.0	0.0	0.0	3,826.7	15.8
Equipment & supplies	408.0	2.6	288.7	3.5	696.7	2.9
Utilities	883.2	5.5	131.3	1.6	1,014.5	4.2
Maintenance	199.6	1.3	320.7	3.9	520.3	2.2
Training	195.0	1.2	30.6	0.4	225.6	0.9
Other	1,306.9	8.2	302.8	3.7	1,609.7	6.7
Total	15,966.3	100.0	8,180.7	100.0	24,147.0	100.0

^a These figures vary slightly from those in Table 13 because of treatment of a number of revolving funds in the budget process. As a consequence, some non-salary expenditures are over-estimated in this table. Current budget formats do not allow reconciliation by line item.

Source: Approved Recurrent Estimates, MHMS, 1993.

drugs. The latter fees are very low and are largely restricted to private patients (private ward) or to patients referred by private practitioners. The level of cost recovery in the health system is estimated at less than one per cent of the recurrent budget.

There has not been a history of cost recovery in the health sector in Solomon Islands, although some informal payment systems, in some areas of the country are still evident. Many church owned and managed health facilities have been built with significant inputs of local labour. A number of facilities have been extended and/or maintained with the assistance of local communities. In some parts of Malaita, at least, women visiting rural health facilities bring produce (usually sweet potato) which is collected by staff and sold to generate small amounts of discretionary funds for use at the facility. Typically, church managed facilities, and a few government clinics, have community committees which operate to support the health centre. In a number of areas, health facilities have also become the focal and meeting point for women's committees supporting to some extent community-based health activities. Cost recovery is also a feasible option for water supply and sanitation programs.

Health insurance

There is no general health insurance scheme available in Solomon Islands although government, by providing generally free health services acts in effect as the insurer of the population. Private health insurance has, however, begun to emerge in response to private demand. One private insurance group offers insurance coverage for medical evacuation to Australia (on the certification of the MHMS that the case cannot be dealt with in-country) and has recently introduced an in-country medical insurance cover as a rider to the medical evacuation policy. At present about 3,000 Solomon Island families are covered by the scheme. The company offers group discounts to employers or other organisations collecting premiums at the source, such as the Public Service Credit Union. Only about three per cent of those covered under the scheme are expatriates.¹⁸ A further 30 per cent are individuals while the vast majority are covered through company group schemes.

Single coverage for medical evacuation ranges from SI\$230 per annum (under 25 years) to SI\$500 per annum (over 60), while for couples it ranges from SI\$448 to SI\$976. Additional children cost SI\$140 each. There are discounts for group schemes ranging from six per cent to 20 per cent, depending on the number included in the group policy. Premiums can be paid semi-annually or fortnightly, in which case surcharges of three and 12 per cent, respectively, are paid. The medical evacuation policy also covers private ward expenses at Central Hospital of up to SI\$15 per night with a maximum yearly coverage of \$5,000.¹⁹ Premiums for in-country coverage cost SI\$315.²⁰

A second private insurance operator gained approval in 1993 to begin operation in Solomon Islands but has not yet opened for business. The introduction of a full array of out-patient fees and hospital fees within the government health system would increase the potential private market for insurance, but 87 per cent of the population is based in rural areas with limited cash incomes. The current workforce is estimated at about 145,000 persons but only about 18 per cent, or 26,630 are employed in the formal monetised sector. Health insurance is thus unlikely to be a viable option for the vast majority of the population, but it may be feasible for formal sector employees who are largely urban-based and currently enjoying significant benefits, particularly in Honiara, relative to rural populations.

External Aid. WHO, UNICEF, UNFPA, Australia, New Zealand, Canada, UNDP, EEC, Japan, Republic of China and the United Kingdom have all been active in supporting recurrent and new development initiatives in the health sector since independence. In addition, a number of non-government organisations have also been involved. These include the Australian Save the Children Fund, Rotary, the Foundation for the People's of the South Pacific and a number of national organisations. Regional organisations such as the South Pacific Alliance of Family Planning (SPAF) and the South Pacific Commission (SPC) have played a role as well. This rather extensive array of outside agencies has resulted in a large number of projects which must be managed by Solomon Islands health authorities and a wide range of budget, planning and project documentation procedures which must be handled by health management. The size of projects also varies significantly—from a few thousand dollars to millions. This takes a significant proportion of the time of all senior management and the health planning unit.

An analysis of major donor and development budget figures for the period 1989–93 indicates the importance in aggregate terms of external financing of the health sector (Table 16). From 1989 to 1993, major donors contributed resources equivalent to between 34 and 48 per cent of total public sector resources available for the health sector. This represents a very high dependence on aid for the sector. Capital assistance (including all assistance for water supplies) accounted for about one-half of total assistance over the period. It is estimated that about 45 and 33 per cent of support for hospitals and rural clinics, respectively, was capital in nature. About 43 per cent of training allocations was for in-country training. Moreover, technical support represented about 30 per cent of all donor assistance and about 20 per cent of foreign aid was earmarked for recurrent budget activities.²¹

The focus of health aid is also noteworthy. Almost 40 per cent of all assistance is hospital based, reflecting the primacy of hospitals for both donors and national authorities. A significant proportion of hospital assistance (about 50 per cent) was technical assistance support including the supply of doctors through British aid support

Table 16 Analysis of major donor allocations, 1989–93, (SI\$ '000s)

	1989	1990	1991	1992	1993	1989–93 %
Hospitals	4,600	4,800	5,000	6,650	4,550	39
Rural clinics	660	2,000	4,200	9,300	5,200	31
Rural program support	610	430	650	1,150	850	6
Training	810	780	960	925	925	7
Malaria	1,000	1,000	900	1,300	450	7
Water supply and sanitation	2,050	1,200	1,100	900	800	9
Women in development	20	80	120	20	300	1
Total donor	9,750	10,290	12,930	20,245	13,075	n.a.
Total government	12,781	16,303	18,533	22,308	24,939	n.a.
Total	22,531	26,593	31,463	42,553	38,014	n.a.
Per cent donor	43	39	41	48	34	n.a.

Note: The data for this table are derived from a variety of sources and represent 'best estimates' of donor allocations by program and year. Data on expenditure outturns were not available but were probably 10–15 per cent lower than budget allocations. Every effort was made to include estimates for health related technical assistance and overseas scholarships which typically do not flow through government accounts and record keeping. Thus the estimates of 1991 from this table were higher than those presented in Table 15.

Sources: Major donors, Solomon Islands government development budgets and mission estimates.

to provincial hospitals. While this assistance has been allocated to hospital-based programs, most of these doctors also perform crucial functions managing provincial health programs. In more recent years, donors (particularly Britain and the European Union) have recognised the need to assist with the rehabilitation and support of the rural health service infrastructure which has deteriorated as a consequence of the lack of recurrent resources for maintenance. These efforts will fail to have a sustained long-term impact without reform of recurrent budget allocations resulting in increased expenditure on maintenance and equipment replacement programs.

Donors also support operational costs at the centre, as well as service delivery at the clinic and aid post levels. Without donor support for travel, subsistence and materials, many rural health extension, outreach and training programs would be significantly reduced unless government increased recurrent budget allocations. These include the maternal and child health, health education, family planning and immunisation programs.

Project and program planning capacity

Planning capacity within the MHMS is limited and has been largely restricted to project preparation for the development budget which, in turn, is almost completely funded by donors.²² The Health Planning Unit was explicitly established to assist in developing projects for external financing and to monitor donor activity. In this regard, the unit does not focus on health planning per se. A major part of its function is to coordinate donor visits. Further, aid donors require varying levels of documentation in order to support development requests and, in the case of larger projects, usually provide their own technical assistance inputs to design and manage projects. Solomon Island staff within the Unit have had limited exposure to project planning beyond the submission of requests for funding through small grant schemes.

Systematic program planning for recurrent health activities has not been attempted by the MHMS. The planning cycle is driven by budget and donor schedules, with the only program planning activity being the preparation of annual budgets for each of the major cost centres. Budgets are usually left to administrators and budget officers who are part of the administrative cadre and are moved from ministry to ministry within government services. Health program managers at the national, provincial and area levels are seldom involved in the preparation of budgets. At best, program managers focus periodically on staffing allocations (largely in the form of arguing for more staff) rather than on how overall resources should be allocated. This hinders allocations of resources in a manner that would match implementation needs and capacity.

It should be noted that Solomon Islands developed a five-year National Health Plan, the second for MHMS, to guide health service development during the first half of the 1990s. However, this plan is mainly a list of projects (more than 70) with no clear policy direction or criteria for priority setting in relation to resources. The number of projects is excessive and does not take into account the management and capacity implications for the Ministry.

Private sector

There is a relatively new and active private (for profit) health service sector which largely serves the expatriate community and urban Solomon Islanders. In 1991, it is estimated that this component of the health sector comprised about eight per cent of total expenditure on health. There are five private clinics in Honiara, with four having one doctor each and the fifth comprising seven Solomon Island doctors who left the government service in 1992. Most of these doctors are expected to go back to the public sector, especially with the proposed increase in their salary structure. Nevertheless, several doctors have requested permission to continue with their private practice even after going back to the public sector.

Discussion with private practitioners indicated that each doctor handled, on average, about 900 consultations per month. This would suggest there are a total of 54,000 private consultations each year at present. Average consultation fees are in the range of SI\$20–25 for a 10 minute consultation, depending on whether cash or credit arrangements are made for fee payments. As a consequence of rising real incomes in Honiara in particular, the scope for private practice has expanded. Private practitioners estimate the number of private consultations is expanding at a rate of about 1.5–2 per cent per annum.

There are two private pharmacists in Honiara who dispense drugs and related products. It is estimated that these enterprises sell pharmaceuticals to the value of SI\$600,000 per annum. While there are no private radiology services, there are two private laboratories with a third being established. These laboratories test almost exclusively for malaria. The service charge for malaria tests is in the range SI\$5–6 each. Other tests could cost up to SI\$50. The number of tests for malaria done privately is estimated to be greater than 40,000 despite the basically free service available through Central Hospital. This may be due to the slow service at the public facilities.

Some private practitioners also have the capability to undertake minor surgery at their practice. Generally, private practitioners refer patients to government specialists at Central Hospital for surgery.

In addition to private practitioner provision of health services, employer and non-government organisations provided health services added three per cent each to total health expenditures. These are generally free services to specific groups or communities. A number of private employers provide free health services as a consequence of project agreements with government and/or local communities.²³ It is worth noting that many church missions have funding problems similar to those faced by government and are under pressure to reduce their dependence on overseas parent institutions. Thus, the scope for expansion of these parts of the private sector is limited.

Prospects and options

The current health system in Solomon Islands has developed in response to a number of pressures and influences. It represents the response during the colonial era to a disease pattern which was dominated by infectious diseases and a dispersed settlement pattern in an island nation. Thus, a pattern of services with many peripheral delivery points, small provincial hospitals or health centres and a single main referral hospital in the capital developed. At the periphery there is reliance on paramedical staff to deliver services. Provincial hospitals are managed by a small medical staff who are also responsible for overall management of provincial health services. Total health

expenditure is dominated by the central hospital, where approximately half of the medical and nursing staff are found. In the post-independence period, allocations to health by the central government, as a proportion of total expenditures, have been generous by comparison with most other low income countries. Despite these allocations, real expenditures on peripheral health services and public health have been decreasing in recent years—reliance on donors for funding operations, maintenance and capital expenditures has been increasing and is now at a high level.

In the early 1990s, infectious diseases continue to dominate the health profile of children and maternal health, particularly in the context of high fertility, remains a concern with high maternal mortality rates still evident. But, there are signs that non-communicable diseases in adults are increasing, an indication that the epidemiological transition has begun. Heart disease and diabetes are increasing and lifestyle factors which are risk factors for these and various cancers are increasing in prevalence. Other lifestyle diseases, particularly STDs, have increased and HIV/AIDS is a constant threat.

At the same time, the demographic transition has also commenced. Fertility rates are declining from their previous high levels. Infant mortality has decreased and life expectancy increased. The next two decades will see an increase in the proportion of the population who are adults with a corresponding change in the structure of demand for health services.

Economic development and delivery of government services have led to two important pressures which are already affecting the health system. The population in urban areas is increasing more rapidly than the population as a whole, with an increasing demand for health services in these areas. The proportion of the population in wage employment has increased with the growth of government and the monetised private sector. As a consequence, a significant proportion of the population is demanding increasingly more sophisticated health services and providing the stimulus for the development of a private health sector. At the same time, it is vital that health services in the rural areas, where the majority of the population resides, are maintained and improved.

Finally, the economic circumstances which led to the expansion of the government sector in the 1980s are unlikely to continue. It is also unlikely that the relatively privileged position of the health sector with respect to the allocation of government revenues will continue. As a consequence real government allocations to health as a proportion of government expenditures is likely to decrease, placing pressure on the sector to find other sources of revenue and to become more efficient in the delivery of health services. At the same time demographic, economic and disease pattern changes will place additional burdens on the health system to which it needs to respond. Nevertheless, the vast majority of the population will remain in the rural areas. It is there that the burden of disease will be greatest and that the biggest challenges in

delivering improved health will be. It is these challenges and the options the government has in responding to them that are discussed in this section.

Health services

The current structure and functioning of health services raise four main issues

- the relative emphasis on hospitals at the expense of rural health services²⁴
- within rural health services, the relative emphasis on curative versus public health activities
- the timely and adequate provision of drugs and supplies, especially to rural health services
- supervision and manpower issues.

Although rural health services and public health activities are said to have priority, it is clear from the allocation of funds and staff that the reality is somewhat different. Within rural health services, the emphasis is on curative tasks at the expense of public health activities. While most curative activities are funded from within the recurrent budget, many public health activities, particularly at the periphery, are dependent on donor support. Thus, improvements in the coverage of the immunisation program have been highly dependent on donor support as have water supply and sanitation activities.

Health promotion activities are generally inadequate and heavily dependent on donors. Capacity at the centre is limited and few resources have been allocated to the provincial level. As there is no specific allocation for health education activities, most have been dependent on donor funds to the point where continuation of activities upon completion of one project is dependent on identifying another source of funds.

Thus, the most important public health programs have not been institutionalised within the recurrent funding mechanisms and are constantly at risk of being scaled down or terminated. As a consequence, priorities for these activities are largely set by donors and are not always appropriate to the health concerns at the periphery.

The bias towards clinical rather than preventive health care results from a number of factors. These include: the clinical bias of training programs; the management and incentive structure; and the structure of health services in Solomon Islands where both public health activities and basic clinical services are delivered through the same components of the health system—the village health workers, nurse aide posts and rural (and urban) health clinics.

The current bias of the health system towards curative services, both through hospitals and the rural health services, raises concerns about equity and cost-effectiveness. The focus on hospitals means that a large proportion of the benefits go to 13 per cent of the population living in urban areas. The relative emphasis on curative

services, even within rural facilities, at the expense of public health activities raises issues of cost-effectiveness. In general, public health activities are more cost-effective than curative services which respond to health problems brought forward by patients. The relative dependence of public health activities on donor financing raises questions about the sustainability of these cost-effective interventions.

The effectiveness of both curative services and public health activities is dependent on an adequate and timely supply of drugs and supplies to the rural health facilities. This is problematic in many areas of the country, and services are impaired as a result.

Quality of care and referral patterns are another set of issues that need to be examined in Solomon Islands. Peripheral services at the moment lack support and supervision. Human resources shortages not only make it difficult for peripheral staff to carry out all the tasks expected of them, but also lead to less supervision and support than needed. A related priority for staff in peripheral facilities is the extent to which their isolation and lack of supervision means that they are being effectively de-skilled. This problem means that higher priority needs to be given to supervision coordinated with in-service training.

These issues of service delivery have major corollaries for planning and resource allocations. After revisiting the content of basic services at the periphery, enhancing the role of health promotion and prevention, the associated staffing, training and related implementation issues need to be addressed. This in turn will have implications for donor assistance and programs. These issues will be addressed in the following sections.

It is also important to stress that increased emphasis on preventive and peripheral curative care would not preclude continuing government involvement in hospital-based health care. There are a series of issues, however, that should be raised in that regard including cost-recovery options, the role of the private sector, utilisation and maintenance of these facilities, and referral patterns.

Role of the central department

A reassertion of the primacy of rural health services has implications for the role of the centre and the way it supports service delivery in rural areas. It is at the periphery that the vast majority of illness occurs, and it is there that services must be delivered.

At present, there is considerable confusion about the role of the various units at the centre and their relationship to provincial teams. Some units at the centre view their role in terms of the provision of what are essentially vertical programs. Others are genuinely searching for new ways to fulfill their role of coordination and provision of technical support. Still others appear to have no particular role beyond protecting the interests of a particular occupational group. At the same time, the actual staff needs at the centre under the emerging new arrangements may well mean that staff needs in

some areas will increase while in others it will decrease as various functions are devolved to the provinces. This period of change and redefinition provides an ideal opportunity for evaluation of the current structure and reassessment of the actual staff needs at the central level.

The primary role of the centre should be to provide resources and support to provincial level service delivery. The major activities would include

- national level planning
- budgeting
- coordination of donors
- human resources planning
- provision of technical support to the provinces (e.g. health education, nutrition)
- organisation and monitoring of training (e.g. training of nurse aides and registered nurses)
- the design and implementation of activities which are inter-provincial in scope (e.g. health information systems)
- operational and applied research to support priority setting (e.g. evaluation of particular interventions such as bednets to curtail malaria).

The mix of skills needed to fulfil these roles should then determine the staffing requirements for this unit.

The primary role of the provincial health offices should be the management of the resources (staff, funds, equipment and supplies) allocated to it in a way that responds to the local situation. This implies major changes in budgeting and deployment of staff. An adequate and timely response to the local health situation requires flexibility in the allocation of resources at this level. Further, provincial managers will require greater control over the allocation of all staff. Greater emphasis on responsibility for management of resources at the provincial level also requires increased emphasis on the provision of relevant health information, and the resources to analyse and utilise it quickly.

Human resources

The bias in the allocation of staff in favour of Honiara and the central administration, particularly of nurses and doctors, means that rural hospitals and facilities are frequently understaffed and that nurses and nurse aides at the periphery frequently receive less support and supervision than needed. A related issue is the extent to which the isolation, low workloads, and lack of supervision mean that staff at the periphery are being effectively de-skilled. Thus, the emphasis must be on maintaining existing capacity and, where indicated, developing additional capacity.

A revision of health priorities will result in changes in staffing requirements, in terms of roles, and deployment policies. This should also entail a careful reconsideration

of the capacity and skills needed in the health service, the roles to be played by the different staff at the various levels, the expected workloads and the possible need for new categories in the workforce to meet emerging needs. A workforce study that analyses these major issues, starting with system needs and leading to a definition of training requirements is recommended. Such a study, which could build on current MHMS efforts, should have a long-term vision, take into account private sector needs and should link workforce requirements to projections of population and service needs. A long-term plan for training the required numbers with the appropriate mix of skills and capacities should be developed. This will include reassessment of current training efforts, both in terms of numbers and content, particularly for nurse aides and registered nurses. Similarly, assessment of the training needs of other specialised health personnel should be based on an evaluation of staff requirements in the health care system.

Any redefinition of roles in the health system raises the issue of in-service training for existing staff to allow them to acquire any new skills and capacities needed. This is in addition to reversing the existing trend of de-skilling, particularly for those working at the periphery. Current allocations for this activity at both the central and provincial levels are low and will need to be increased. In addition, there is an important role for the centre in supporting the provinces in the organisation and provision of such training.

An emerging issue of importance is the reluctance of experienced national medical graduates to work in the provinces and in administration of health services. Historically, these positions have been filled by expatriates, largely financed by donors. In view of the possible phasing out of donor financing for such positions and if local medical staff cannot fulfil this need, it will be critical that consideration is given to the creation of a new group of professional administrators within the health system. This group, who will need additional training, could be drawn from current health staff, particularly nurses or other paramedical staff like primary health care practitioners.

Thus, an important issue is the maintenance of skills and capacities in those who are already in the service and the creation of appropriate new capacity to deal with emerging problems. Building a capacity for management among national staff is one of the most critical aspects of addressing future health care needs. It is important that the ministry is able to identify the requirements for new skills and capacities as they are needed and that staff are able to adapt to emerging new situations. This requires senior managers at the national and provincial levels to place much greater emphasis on capacity building than is the case at the moment.

The question of adequate levels of staffing with the appropriate type of staff underlies the issue of the quality of care being provided by the various levels of health facilities. There has been no evaluation to date of this issue and it is important that it is addressed as it may have a critical bearing on the load of some facilities as well as on the health status of the population.

Family planning

A number of factors could lead to an increase in the demand for family planning services in the near future. These include the new political commitment to and concerns about population issues; increased awareness of reproductive choices; improved access to family planning services; and the general improvements in girls' education and other socioeconomic developments. Mobilisation of all service delivery staff to proactively educate clients will also create demand for services and supplies.

Given the likely increase in demand, the family planning program faces a series of challenges. The program needs to develop a strategy specifying realistic and clear objectives and to derive input requirements as well as a means of evaluating these targets. Training of providers is still a major limitation, both in terms of the number of providers trained and the content and scope of the training. This should be explored in terms of both in-service training for registered nurses and nurse aides as well as curriculum development in the main health care training programs. The logistic system, in common with other primary health care programs, should be improved to provide continuous supplies of contraceptives. Service statistics are poor in terms of the quality of the information collected and their analysis—a major limitation for program monitoring, evaluation, and management. IEC campaigns should be enhanced, especially in rural areas, as should the means for evaluating these efforts. Community participation, an important element for program success, should be strengthened with an effort made to build on existing social structures. Finally, research, that could help address these challenges is lacking and the capacity within the country to conduct such activities should be developed.

A related issue of concern is funding for family planning activities. A number of donors, including UNFPA, IPPF and WHO are already funding the Family Planning Program. In addition, other funding agencies currently active in the health sector are also expressing interest in maternal and child health in general, and the Family Planning Program in particular. Given the number of agencies and potential donors which could be involved in the program and the expected expansion in its scope and coverage, there is a need for an assessment which explores various options and the associated resource implications. It is also important to integrate different donor inputs into a single clearly defined program strategy.

Anti-malaria program

The main issues facing the malaria control program include continuing attempts to integrate the program within other MHMS activities, funding for bednets and anti-malaria drugs, drug resistance, and the continuing need for program evaluation and research.

The integration of the malaria program into the ongoing activities of the MHMS is proving more difficult than anticipated. The recent change in policy and control strategies has meant that current staff skills are not always appropriate for the new activities. The vertical structure and central control are contrary to the efforts to decentralise and place more resources and authority at the provincial level. In addition, the cessation of spraying means that the number of staff is now in excess of requirements. Thus, the malaria program is faced with the need to change its style of operation to one which is decentralised and collaborative, involving the acquisition of new skills by some staff and the retrenchment of others. These challenges will require a high level of leadership and commitment to change at the centre and a clear plan of action over the next five years.

Impregnated bednets and drugs are the mainstays of the current control strategy. Funds for these activities, now derived largely from donors, will need to be found within the recurrent budget if these activities are to be sustainable. Drug resistance has led to changes in the effectiveness of drugs and the need for constant evaluation of the standard treatment regimen. Resources must also be found to support monitoring of levels of drug resistance on a routine basis.

The changing circumstances of malaria point to the need for continuing applied research to monitor changes and evaluate new approaches to control. SIMTRI has made an important contribution to the evolution of the malaria control program. Applied research activities addressing problems in the field should be supported. Conversely, research efforts have an important role in providing support of routine health services, particularly maintaining quality control of microscopy activities.

Water and sanitation

Another priority for public health activities relates to water and sanitation. Past efforts that placed significant emphasis on the construction of elaborate water supply systems have been mainly supply-driven. One consequence is that many systems are both difficult and expensive to maintain and have never had strong community support to help sustain them. There is a need for the water supply program to be demand driven, and built on the past and current experience of acceptable systems in the community. Fundamentally, involvement of communities needs to permeate all aspects of the program—design, location and selection of water source(s), construction and maintenance. This is vital if the efforts are to lead to sustainable improvements in water supply access.

Furthermore, the development of improved sanitation systems and practices has been hampered by a lack of program focus relative to water supplies and entrenched traditional practices. Significant effort needs to be made to improve the level of sanitation services available and to ensure that material and appropriate advice are

available where communities or individuals show a willingness to make a significant contribution to the costs of improved latrines.

There is also a need to pay particular attention to the specific problems of servicing the needs of other rural sites such as schools and health facilities. It is important that rural water and sanitation systems are not overloaded by including institutional needs without carefully considering their capacity. Further, it is important that the MHMS exercise care to ensure that funds previously designated for village water supply and sanitation schemes are not diverted to its own institutional needs.

Finally, authorities planning for water supply and sanitation systems in urban areas need to consider carefully their financial viability and sustainability. On public health grounds, it is essential that appropriate services are developed in urban areas and peri-urban settlements. All current urban systems have significant problems with coverage, reliability, and quality. Recent attempts, with donor support, to explore options for urban service development should continue. However, it is crucial that decisions to proceed with any investment scheme are made within the context of a physical plan that ensures all basic urban infrastructure services can be provided optimally on a least cost basis, with provisions for cost recovery when feasible.

Health education

Health education should be given a high priority at the MHMS in light of the emerging health patterns and the importance of behavioural factors in disease prevention and prognosis. Current health education programs face various issues relating to program implementation and sustainability, including

- funding
- the role of the central division as a resource for the provinces
- the program content at the provincial and central levels.

The national health plan and the activities of the provincial health offices place particular emphasis on the role of health education in health promotion. If the division is to do more than respond to the priorities set by the donors, it is important that funds are allocated in the recurrent budget to allow the development of a program which responds to priorities set by the MHMS. This should include building capacity to develop, deliver and evaluate health promotion activities. In addition to funding and capacity building within the MHMS, the scope of health promotion activities should be expanded to include other points of contact with the population including formal and informal education activities.

In developing such a response, it is important that the role of the division is clear. Provinces have few resources and there is limited development of local materials at either the central or provincial levels. There is a clear need for the centre to respond to

the needs of the provinces in development and reproduction of materials and in provision of technical support for the efforts of provincial staff. To achieve this it will be important to assess and, if necessary, supplement the skills currently available at the centre. More effective use of peripheral health workers could be achieved with more frequent visits by health educators from the national and provincial levels.

The MHMS is placing increasing emphasis on lifestyle factors as non-communicable diseases in adults become more prevalent. It is important to determine the extent to which health education can realistically contribute to this effort. In a number of cases, other factors in society, particularly economic ones, may be more important determinants of behaviour. For example, duties are crucial in determining the price of imported foods high in fat and salt. Other factors like exchange rates, income distribution and lifestyle also have an impact on the structure of consumption. In such cases, health education may have little effect unless it is supported by changes elsewhere. It is critical then, that health education efforts be monitored and evaluated. Needed skills, though, are largely absent from the MHMS at the moment. Attention should also be paid to the school health education syllabus, at both primary and secondary levels with new emphasis placed on diet, exercise, and family and interpersonal relationships including sex education. To be successful, this will require strong commitment from the Ministry of Education and teachers.

Health information system

Health information systems are potentially useful at the central level for monitoring and planning and at the provincial level for program management. Currently, the use of the health information system at both levels is limited. At the central level, current use is mainly for monitoring. Other uses are restricted by the lack of planning skills at the MHMS and the lack of information on in-patients, human resources, drugs and supplies. Capacity to process and analyse data on a consistent and timely basis needs to be firmly established. At the provincial level, the main issue is to foster data use in program management. This will require the development of provincial capacity to process and utilise data including provision of hardware, appropriate software and training of additional provincial staff. The experience of Western province could be used to help plan this development.

Health financing

The health system in Solomon Islands faces significant resource shortages due in part to the extremely high dependence of the sector on highly constrained public funding, even though finance has been significantly supplemented by aid donors in a number

of strategic areas. Government has relied heavily on donor support for health infrastructure development, management of provincial health services, maintenance and for the financing of a number of priority public health programs. Revenues from the sector have been less than one per cent of recurrent expenditures. Budget resources focus on curative hospital based services rather than on preventive and primary health services at the periphery.

As noted, the Solomon Islands is already allocating a very large share of its budget to health. Funding requirements for the health sector are likely to continue to increase for the following reasons. First, sustained population growth and the consequent population structure will result in increased demand for health services. Second, the existing system is experiencing recurrent budget and maintenance underfunding relative to requirements to ensure sustainability of quality services. Third, there is still a need to extend and improve access to services provided through the rural health infrastructure. Fourth, Solomon Islands will need to become increasingly responsible for existing health financing efforts. Finally, in the medium to long term, chronic diseases will increase the resource requirements of the curative health system. This includes the curative system which continues to receive sustained support from donors through infrastructure and staffing assistance, and for preventive/primary health care programs.

The challenge facing the Ministry is to sustain the existing system, extend and improve its quality, particularly service delivery at the periphery, while also taking increased responsibility for recurrent costs currently financed by donors. In order to meet this challenge Solomon Islands will need to significantly reform the financing of the health sector. In this respect, a range of opportunities is available including cost recovery; improved use of foreign assistance, targeted import levies; promotion of private sector service delivery (including the cautious exploration of health insurance options); encouragement of non-government organisations (particularly missions) in the running, maintenance and management of health service; and improved use of existing budget and human resources.

Cost recovery and other user charges

Cost recovery remains a largely unexploited policy tool in Solomon Islands. User charges could help sustain health services, improve management and positively influence health related behaviour. Greater recourse to patient fees, payments for drugs and other charges appears to be feasible for several reasons. First, user fees for traditional healers is a common practice throughout most parts of the country. An increasing proportion of the economically active population is now participating in

the monetised sector of the economy. The introduction of reasonable patient fees, payments for drugs and other user charges is also feasible on equity, efficiency and affordability grounds. The population has historically accepted user charges in education with individuals and families paying significant fees for education.

A key question is what should be priced and how should charges be determined? From first principles, it is appropriate to collect fees for goods and services (e.g. medicines, sutures and surgery) which yield a direct and immediate therapeutic benefit to the individual. It is not appropriate to charge for immunisation or other preventive activities since the benefits from such service accrue to individuals only over a long period of time. In many cases, the full benefits of these programs accrue to the community and individuals only if everyone participates in the program. It is not appropriate to charge the full price for public goods where the benefits spill-over to other individuals. On these grounds, it is appropriate to subsidise, for example, some costs for sanitation services because immediate benefits accrue to the individual but the full benefits to society depend on participation by the whole community.

The level of charges should be set with clear objectives in mind. A principal objective, in Solomon Islands context, is to raise additional revenue to sustain and improve the quality of peripheral health services after due consideration of equity and affordability issues. Second, fees signal that real resources are being used to provide services. Individuals will carefully consider the need for a service (e.g., drugs) just as they purchase other items for consumption. On the other hand, payment of fees raises consumer expectations about the quality of service they will require from providers. A fee-collecting health service is under more pressure to respond to the needs of consumers than to those of the supplier of the service. Moreover, significant opportunities to improve the quality and responsiveness of service delivery present themselves as a consequence of any move to introduce fees. First, the motivation of local health staff would be improved if revenues were collected and (at least in part) used at the point of collection to provide additional resources. Second, clients of health facilities (particularly if there are community groups involved in the management and operation of health facilities) can see how the resources are being used in their interest. Such a system can also encourage community participation in health service delivery and provide a focal group for community health activities. Third, fees can also be used to improve the efficiency of service delivery by encouraging initial use of local facilities and better referral practices. Thus an important option available to health authorities would be to levy an additional charge on individuals who bypass their designated nurse aid post or rural health clinic without an appropriate referral from their local health worker.

Out-patient fees could be indicatively set at SI\$1.00 for peripheral facilities (area health centres, rural (and urban) health clinics, nurse aide posts). This fee represents

about 50 per cent of the recurrent cost of delivering the service.²⁵ For in-patient care at hospitals, daily bed charges could be set in the range of SI\$3.50 to SI\$10.00 per day depending on the category of admission and location of the hospital. It may also be appropriate to charge specific fees for X-ray films, laboratory tests, pharmaceutical and surgical theatre services. The modest level of fees proposed here should not raise major equity concerns, especially if a mechanism is established to provide for fee reductions, fee caps or waivers for those without access to a cash income. Careful consideration also needs to be given (in the absence of health insurance arrangements) to the level of charges for children and the aged upon whom a significant proportion of the burden of illness falls. It is important that the schedule of fees does not become too complex to administer and remains transparent to both patients and the community. Provision should also be made for regular adjustment of the schedule of fees to ensure modest real increases over the medium term.

The revenue that could be collected through this indicative fees schedule is illustrated in Table 17. Based on the standard fee established for these services (without exemptions), the total potential recoverable revenue amounts to SI\$2.6 million given estimated usage rates. If the level of fee exemptions was kept in the range 10–30 per cent, additional revenues would be SI\$2.0 million. These figures indicate that it is feasible to generate additional revenues which represent between seven and 10 per cent of the 1993 budget allocation to the Ministry.

Health insurance

This is a health financing option which could be considered for further cautious development after careful analysis and thorough consideration of its advantages and disadvantages in Solomon Islands context. An embryonic private insurance sector is expanding in Honiara at present. Introduction of substantial fees for private wards and increased cost recovery for hospital services would further encourage the industry. It would also affect the structure of benefits likely to be offered in the future if, as is appropriate, insured patients pay the full costs of services delivered. At present the industry is focusing on infrequent events (e.g., expensive medical evacuation and inappropriately subsidised inpatient secondary and tertiary care within country). Provision for riders to these policies for more frequent lower cost ambulatory care, mainly at private clinics, is also evolving. It will be necessary for the government to establish an appropriate regulatory framework for the industry in order to ensure fair practice and protection for consumers.

A suggested approach to the exploration of private health insurance options would include the following. First, a detailed analysis of the cost of providing services is needed in order to establish a fee structure which allows for full cost reimbursement of services provided by the MHMS. Second, the appropriate range of benefits of the

Table 17 Indicative revenue estimates from nominal user charges

Revenue source	No. of patients	Bed days	Unit charge	Potential revenue (no exemptions)	% pop. not charged ^a	Potential revenue (with exemptions) ^b
In-patients						
Central Hospital						
Maternity	2,800	12,600	8.0	100,800	20	80,640
Children	1,500	9,400	5.0	47,000	25	35,250
Other	2,700	36,100	10.0	361,000	15	306,850
Total	7,000	58,100		508,800		422,740
Kilu'ifi, Gizo and Kira Kira						
Hospitals						
Maternity	1,800	9,000	6.0	54,000	20	43,200
Children	1,550	9,400	3.5	32,900	30	23,030
Other	3,300	31,300	8.0	250,400	15	212,840
Total	6,650	49,700		337,300		279,070
Other hospitals	2,000	14,600	7.0	102,200	25	76,650
Total hosp. in-patients	15,650	122,400		948,300		778,460
Out-patients						
Central Hospital	48,300	n.a.	3.0	144,900	10	130,410
Other hospitals	120,000	n.a.	2.0	240,000	25	180,000
AHC/RHC/NAP	991,000	n.a.	1.0	991,000	30	693,700
Total	1,159,300	n.a.		1,375,900		1,004,110
Drug sales						
Central Hospital	44,000	n.a.	1.0	44,000	10	39,600
Other hospitals	103,000	n.a.	0.5	51,500	25	38,625
AHC/RHC/NA	500,000	n.a.	0.2	100,000	30	70,000
Total	647,000	n.a.		195,500		148,225
X-rays	7,600	n.a.	9.0	68,400	20	54,720
Estimated total revenues	n.a.	n.a.	n.a.	2,588,100	n.a.	1,985,515

^a The figures used here are assumptions. Actual figures should be based on careful poverty analysis. Variations from the assumed levels will affect the estimates of potential revenue.

^b Exemptions are based on the percentage of the population not charged.

Notes: The total health receipts are calculated on potential inpatient and out-patient revenues using latest available patient load data for specific facilities over the years 1991 and 1992. AHC=area health centre; RHC=rural health centres; NAP=nurse aide posts.

proposed insurance plan and guidelines on the level of premiums which should be collected would need to be determined. The scope of services to be covered, at least initially, should be consistent with the basic insurance principle of covering expensive infrequent events. This type of insurance coverage would be relatively easy to implement (relative to payment for ambulatory care at private doctors, drugs and for other government services that are charged for) since it would not involve the processing of a large number of claims. It is not recommended, given the current health system environment and administrative capacity, that coverage include low-cost and frequent events such as out-patient visits. This would be better handled by appropriate user charges. Private health insurance benefits should be linked to the full costs of service delivery for the agreed range of services with appropriate co-payments making up the difference. It would be up to the industry to set appropriate health insurance premiums within the agreed regulatory framework.

Initially, health insurance options should be targeted on those in the formal sector of the economy. One way of reducing the collection costs of insurance firms, would be to use the National Provident Fund as a handling agency for health insurance schemes. It currently collects funds from all employees in the country. In the longer term, when administrative capacities have significantly improved, options to use other agencies such as cooperatives and local government councils as collection vehicles could be considered.

Import levies

Personal consumption decisions of Solomon Islanders are having an increasingly adverse impact on their health. Consumption of sugar and related products, tobacco, high salt and/or fat content foods, and alcohol is significant and rising and is contributing to a range of emerging high cost health problems. Thus, from a health status perspective it may be prudent to increase the excise taxes on those items which directly contribute to the rising cost of health care provision. Further, import taxes and duties, excise or indirect taxes on these products also provide a potential basis for raising additional revenues. Since price elasticities, in the short term at least, are generally less than one for the items under consideration, revenue from import duties will rise, without a concomitant drop in the amount consumed. This acts like a specific health tax even though the tax may not be directly and exclusively earmarked for the health sector. While it is generally not appropriate to earmark taxes to a specific sector or service, it is appropriate that the MHMS obtain at least its share of the additional revenue via the budgetary process.

The import and excise duties that can be collected from sugar, alcohol and tobacco related products are significant (Table 18). It is estimated that the total revenue currently collected is about SI\$14.8 million.²⁶ It would be feasible to increase duty rates 25 per cent immediately. Further systematic increases over the next four to five years, to raise existing rates 75 to 100 per cent, would be desirable. A 25 per cent increase in the average/implied duty rates on these items could generate an additional SI\$2.5 million in revenues. Raising duty rates by 75 per cent would generate an additional SI\$7.5 million in revenues. The duty rate on sugar (raw and cane) which accounts for 80 per cent of all sugar related imports is very low at five per cent. It would be desirable to move very quickly to the 80 per cent duty level. One possible constraint to rapid sustained increases in the duties on these products could be the recent rapid increases in indirect taxes and the significant shift from income taxes to an indirect tax base. Nevertheless, public health concerns suggest these products should be singled out for specific additional taxes.

On similar grounds it was inappropriate to grant the recently established domestic beer brewer significantly lower excise rates (SI\$1.50 compared to SI\$6.00 per litre). If one assumes that in 1993 beer consumption was 75 per cent domestic and 25 per cent imports and that the level of consumption is comparable to that of 1991, then excise collection, as a result of the differential excise rate, would drop from SI\$11.9 million in 1991 to SI\$5.1 million in 1993. It can be argued that excise on both domestic and imported beer should be increased and differential excise rates abolished as soon as the existing five year agreement with the domestic brewing company has expired.

Furthermore, the current range of tariffs varies widely. In a number of instances, foods with high fat and/or salt content have lower excise rates than other more nutritious foods. Government should consider adjusting the relative structure of duties and charges to encourage better (more nutritious) food consumption patterns within the population. This should be able to be achieved in at least a revenue neutral manner.

Improved efficiency of existing resource use

The MHMS has a number of alternatives available to realise cost savings. First, opportunities exist to effect significant cost savings on the existing malaria program now that the decision has been made to abandon systematic malaria spraying and focus on impregnated bed net distribution. There is scope to reduce drastically the current number of staff employed by the program. This will entail a significant number of redundancies as well as redeployment of staff after appropriate retraining.

Second, it is likely that systematic mapping of the catchment areas for each health facility would yield opportunities for rationalisation in some areas and reveal service delivery needs in others. Current utilisation figures suggest many facilities are underutilised. Third, and relatedly, the current roles and skills of the various cadres

Table 18 Estimated revenue based on 1991 import data and 1993 duties and excise from sugar, alcohol and tobacco related products^a

	Value of imports	Quantity of imports (litres/kg)	Duty/excise rate ^b	Implied ave. duty rate %	Total revenues	Add. rec. (25% increase ^{cd})	Add. rev. (75% increase ^{cd})
Sugar & related products	3,751,946	2,008,935	5%	5	187,597	937,987	2,813,960
Alcohol imports							
Beer	4,336,052	1,983,495	6.00/lt	275	11,900,970	1,107,186	3,275,212
Wine	385,348	50,284	7.50/lt	98	337,130	136,848	329,522
Spirits	353,832	27,607	55.00/lt	429	1,518,385	88,012	264,928
Tobacco & related products	852,072	117,062	95%	95	809,468	213,018	639,054
Total	9,679,250	4,187,383	n.a	n.a.	14,753,550	2,483,051	7,322,676

^a Import data for later years not available.

^b Duty/excise rate only. Does not include 10 per cent general import levy which is applied to all imports. Solomon Islands also levies a cascading seven per cent wholesale goods tax and an eight per cent sales tax. (see text).

^c Domestic production of beer began in late 1992. This has significantly reduced current beer imports and domestic beer has only a \$1.50/litre excise by agreement with the Foreign Investment Board for a period of five years. Thus current excise collection will be significantly below that shown. Domestic production figures are not publicly available.

^d For computational ease, we are assuming that the amounts consumed remain the same, implying zero price elasticity. In actuality, there would be some impact on consumption although this would be rather small since short-run price elasticity would be close to zero.

Source: Statistics Office, Ministry of Finance and Economic Planning and Customs and Excise Department.

(particularly medical officers, registered nurses and nurse aides) are ill defined and their current deployment is not demand driven. Opportunities exist to substitute health cadres which would yield staff salary savings. In this context it is probable that the introduction of a small number of other health workers, like primary health care practitioners, into the staffing structure would enable both cost savings and improved service quality.

Fourth, the current complement of headquarters staff in the MHMS is too large and too expensive because of the excessive number of senior level positions. Rationalisation of this structure and redeployment of many staff to provincial service delivery functions would yield overhead savings and improve service delivery capability. Systematic efforts to apply existing standard treatment protocols for health

problems, and to further rationalise pharmaceutical use also have the potential to produce savings. Finally, cost finding and management studies of hospital service delivery have the potential to yield savings. Improved delivery of public health and primary health care programs also have the capacity to reduce the pressure for hospital expenditure.

External aid, health planning and need for a public investment program

The lack of a public investment program for the health sector has resulted in a piecemeal approach in utilising external aid. As a consequence, health priorities have been distorted, and scarce domestic resources (human and financial) have not been strategically focused. Most planning has been undertaken at the headquarters level with very little involvement of institution/program managers. Better use of both external assistance and domestic resources could be achieved through the development of an effective sectoral planning capacity in the health sector which is able to draw on the knowledge of health managers scattered throughout the country.

The current planning unit is inadequately staffed and inappropriately focused on development of projects for donor financing rather than on the setting of resource allocation priorities. This in part arises as a consequence of the planning unit not being fully integrated into the budgeting and policy/priority setting framework of the Department. The current national health plan for Solomon Islands lists a large number of projects to be financed by donors. It does not set overall priorities for the development of the sector within a framework which links the capacity of the operating budget to sustain the proposed investments. It is important that financing of all projects and programs be sustainable in the aggregate.

A coherent investment program for health services delivery should emerge from a national health plan which establishes health sector priorities, program objectives and outputs. Priority and objective setting should be based on a rigorous analysis of morbidity and mortality patterns and cost effective analysis of opportunities for intervention(s) to justify the strategy adopted. Improvement in the planning of resource allocation will continue to be thwarted without strong efforts to improve the health information system. The budgeting system should not continue to allocate resources based on past priorities. Budgeting, planning and resource allocation exercises should become the focal point for the conduct of program-specific cost effective analysis. When public resources are scarce, they should, as a general rule, be targeted at those activities which have benefits accruing to more than the individual. Public health and primary health care activities which have the greatest cost effective impact should be underwritten by government. Curative care, where the main benefit is to the individual, should receive a lower emphasis in public spending and opportunities for increased cost recovery in this area should be exploited.

Once health sector objectives and outputs have been established, the management, human resource development and capital implications of the strategy need to be determined within the framework of an expenditure plan which aligns recurrent budget, development investments and donor resources to the plan. This may require changes in the government's budgeting and planning procedures. The responsibility for resource allocation priority setting, the establishment of a national health public expenditure plan and the coordination of donor assistance need to be institutionalised within MHMS. Once projects and programs have been approved, responsibility for implementation should be assigned to line/institution managers. This implies they should have responsibility and control over budgets and staff for their area of responsibility and be accountable to the Ministry for the agreed health outcomes.

Private sector

The scope for the private sector to expand in the future will in part be related to the nature of services able to be effectively provided by the public sector, the direct costs of publicly provided medical services and the niche market (or specialty) within which individual practitioners operate. There are currently no significant barriers to entry of medical officers to the private sector except for those who are public servants. There is, however, a need for recognition by government of the positive contribution an active private sector could make to the health care of the population. The reintroduction of user fees may encourage more consumers (and practitioners) to enter the market for medical services and stimulate development of private insurance.

Consideration of the role and function of the private sector is often limited to the role of medical officers, dentists and pharmacists. This perspective does not seem appropriate in the context of a health system which is dependent on other professional cadres, i.e., nurses, nurse aides and village health workers currently work without the direct supervision of medical officers. With a clear delineation of the range of medical problems which can be addressed by the different worker categories and the establishment of standard treatment protocols, there is no reason not to encourage some cadres to enter the private sector. The entry of other health professionals to the private sector could increase access to health services, especially in remote areas. However, such an approach would require registration procedures to be codified and other potential barriers to entry to the private sector to be addressed by the MHMS. The Ministry would also need to develop appropriate inspectorate/quality assurance programs for both the public and private sectors.

While there is not likely to be a rapid change in the composition of health care delivery between the private and public sector, a clear signal for its development would possibly both reduce the burden of health care to public finance and improve access to health services. Another potential role for the private sector would be for specialist

medical officers to be encouraged to enter the private sector and be employed on a sessional basis in the public system when their skills are required. This may enable specialist incomes to be increased, but would guarantee specialist skills for the public sector.

Conclusions and future directions

The discussion so far shows that while the present system has led to considerable gains, it is at risk of becoming increasingly inappropriate to health needs in Solomon Islands. Solomon Islands government has several options through which it can pursue alternative health priorities and sector needs. These are summarised below.

System and workforce

The health care system needs to alter its current pattern of allocating most resources to hospitals at the expense of rural health services. Further, ensuring quality services, especially in the rural areas will require adequate and timely provision of drugs and medical supplies and equipment. There is also a need to reassess the focus of rural health services to provide adequate priority to public health and outreach activities. To achieve this goal, the content, staffing, and resource requirements for each level of the system will need to be reviewed.

What services should be provided through the government's health care system? Perhaps the most important criteria for deciding what services to deliver is the relative impact of the service on health status.²⁷ Priorities for the system should be selected based on the magnitude of the problem (both its severity and prevalence), its susceptibility to interventions, and the economic feasibility of the intervention (i.e. cost-effectiveness). Within this framework, public health interventions (e.g., immunisation, information and selected services for family planning and nutrition, health education), and some basic clinical services (e.g., pregnancy-related care, family planning service, tuberculosis control, control of STDs, care for common serious illnesses of young children—ARI, diarrhoeal diseases, and malaria), especially in the rural areas will likely have a high priority. Further, this priority setting exercise should be used to redefine health system needs and inputs. The inputs should include facilities, staff (numbers and skills), supplies, training, and transport.

Workforce and human resource issues need to be addressed in view of the likely reorientation of the system. In order to address workforce planning issues, there is a need for a workforce study analysing the major issues, including system needs and the definition of the roles and functions of the different workers, and leads to a clear

definition of training requirements. There is also a need to address in-service training requirements for existing staff to allow them to acquire any new skills and capacities needed. This is in addition to reversing the existing trend of de-skilling, particularly for those working at the periphery. Moreover, in view of the possible phasing out of donor financing for provincial health directors, and if local medical staff cannot fulfil this need, it will be critical that consideration is given to the creation of a new group of professional administrators within the health system.

Management and structure

Assertion of the primacy of rural health services will imply changes in the role of the centre and its role in supporting service delivery in rural areas. The centre should mainly provide resources and support to provincial level service delivery. The mix of skills needed to fulfil this new role should determine its structure and staffing requirements.

At the provincial level, the primary role of the health office should be the management of health services in a way that responds to local needs. To achieve this, major changes in budgeting and deployment of workers are needed. Moreover, greater emphasis on responsibility for management of resources at the provincial level also requires increased emphasis on both the provision of relevant health information and the resources to analyse and utilise it quickly.

Resources

Health financing. The reorientation of the health sector will require significant reform of health sector financing. This will imply changes in the government planning and budgeting procedures to ensure that resources match program priorities, and that crucial recurrent expenditures for the program are adequately financed. Options for health financing include cost recovery, improved use of foreign assistance, targeted import levies, promotion of private sector service delivery (including the cautious exploration of health insurance options), encouragement of non-government organisations (particularly missions) to run and/or manage health services, and improved use of existing resources (budget and human resources).

Cost recovery is a largely unexploited tool for health financing in Solomon Islands. Increased resort to patient fees, payments for medication and other charges are feasible options. Estimates indicate that about 7 per cent of recurrent expenditures can be generated through cost recovery mechanisms. Moreover, consumption of sugar and related products, tobacco, high salt and/or fat content foods, and alcohol is significant and rising, and is contributing to a range of emerging high-cost health problems. Thus, from a health status point of view, increasing the excise taxes on those items which

directly contribute to the rising cost of health care provision may be prudent. Health insurance is another health financing option that could be considered for further cautious development. Before this option is pursued, however, the government needs to establish an appropriate regulatory framework for the industry in order to ensure fair practices and protection for consumers.

The MHMS should also explore options and opportunities for cost savings and for more efficient use of resources. Several alternatives are available to realise cost savings. These include

- reducing excessive staffing in some parts of the sector (e.g., MHMS central office and the malaria program)
- exploring possibilities to rationalise service delivery points in some areas through a systematic mapping of the catchment areas for each health facility—especially where utilisation rates of health facilities are low
- improving deployment practices and clarifying the definition of roles and skills of the different health staff
- cost finding and management studies of hospitals to identify areas for cost savings.

Private sector. The private sector, despite its relatively small size, has a potentially important role in health care delivery. The development of this sector should be encouraged since it could both reduce the burden of health care to the public purse and enhance access to health services. Future roles for the private sector could include providing specialised medical services. Specialists could be employed on a contract basis in the public system when their skills are required.

Donor assistance. Donor assistance will probably continue to be a significant part of health care financing in Solomon Islands. The allocation of donor funds has been less than optimal, partly due to the lack of a strategic plan and a public investment program for the health sector. By developing such plans, the government could direct donor assistance to complement its own efforts and resources while ensuring sustainability of the different interventions. Following the development of such strategic plans, the government and the donors could then direct external assistance to the sector in accordance with national priorities. Of course, for such an exercise to succeed a significant effort to coordinate donor assistance is needed.

Health planning and need for a public investment program

A set of options and recommendations has been put forward here. The adoption of these recommendations is likely to have a significant impact on health status. The first step should involve integrating the different recommendations through a priority setting exercise that should be used to develop a coherent expenditure program for the sector. The exercise will have major corollaries for other aspects of the system, like

health information and budgeting. All of the information needed for this exercise may not be readily available in the country. Hence, the exercise may require collection of new data, reliance on informed guesses, and drawing on other countries' experiences. Even with these limitations, it is crucial for Solomon Islands to initiate this process and to define national priorities and needs for external assistance in a way that optimises use of resources and ensures institutionalisation of key programs.

Endnotes

- ¹ See Appendix, Table A1 for population distribution by province.
- ² While considerable effort, by both donors and Ministry of Health and Medical Services, has been expended on establishing a Health Information System, accurate, consistent and timely information is not available. Further, with the exception of estimates reported by the National Nutrition Survey, there are no population based health indicators.
- ³ The IMR is based on the World Bank projections and is comparable with the 1989 Maternal and Child Health survey estimate of IMR (42.9 deaths per 1,000 live births). Statistical Office (Solomon Islands, 1986 Population Census, Report 2.B: Data Analysis, Statistical Office, Ministry of Finance, Honiara, 1989) estimates IMR at lower levels of 40 for males and 36 for females for the period 1977-86. Although the latter estimate is low, both sources show a declining IMR trend.
- ⁴ Maternal mortality estimates range from 100/100,000 live births (service statistics) to 549/100,000 live births (based on the Sisterhood method; 95% Confidence Interval is reported as 431-684 deaths per 100,000 live births).
- ⁵ The data for 1990 (MHMS, 1992 vital statistics Report) cover only 13 per cent of deaths. Other population based data sets on mortality and/or morbidity were not available.
- ⁶ One study in Guadalcanal reported that 51 per cent of all children less than 5 years had been infected with Hepatitis B.
- ⁷ The available information is limited and screening of blood for transfusions is not national but confined to Honiara.
- ⁸ Since the preparation of this paper the number of provinces has increased to nine with the creation of Rennell Bellona Province, formerly part of Central Province.
- ⁹ The experience in Solomon Islands as well as in other countries like Papua New Guinea shows that in those countries an eradication strategy is not feasible given the nature of the disease and available technology.
- ¹⁰ Data on hospital admissions were available for Western province only. The information is presented in Appendix, Table A.6.
- ¹¹ Data were available for an 11 week period from May to September, 1993.
- ¹² See also Appendix, Table A5 for information by province.
- ¹³ Health Economics in Solomon Islands: Introduction of a Cost Recovery System, Final Draft Report, EEC Rural Health Project, 1993.

- ¹⁴ The discussion in this section is largely based on budget allocations because disaggregated expenditure information and post 1990 expenditure information are not available, particularly for provincial expenditures. Available information suggests that health has overexpended budgets by about the same proportion as national budget aggregates but that this has largely been on national functions while provincial allocations have been kept under relative control. See also Appendix, Table A8.
- ¹⁵ It increased marginally in real terms in 1993 but on a per capita basis continued to decline.
- ¹⁶ The estimate of salaries and wages for provincial functions is based on the distribution (share) in 1991 in the absence of detailed budget break downs for latter years. This methodology will underestimate the actual share to salaries and wages in latter years because of the real salary increases which occurred in 1992.
- ¹⁷ It should be noted that purchase, maintenance and allocation of transport are controlled by the Ministries of Works and Finance.
- ¹⁸ Most expatriates are covered by their employers in the country of origin.
- ¹⁹ This figure is likely to be increased in the near future.
- ²⁰ Made up of SI\$100 for private consultation coverage, SI\$200 for prescription coverage and SI\$15 for malaria slides. The benefits cover 80 per cent of a private consultation (max SI\$20) and malaria slides (max SI\$5) and SI\$12 per prescription. A total benefit cap of SI\$1,000 per annum applies for the rider premium of SI\$315.
- ²¹ These aggregate figures of donor financing mask a large degree of diversity in the level and scope of donor assistance.
- ²² This is true for the health sector with the exception of malaria which has been included in the development budget over most of the recent past, although funding is recurrent in nature and has been treated as such above.
- ²³ Oil palm and forestry projects often have such arrangements as part of project agreements.
- ²⁴ In this report, "rural health services" refer to services delivered at the sub-provincial level: i.e., excluding central and provincial administration functions and hospitals.
- ²⁵ Based on the estimates for service delivery costs in Malaita Province in 1992 and presented in the Malaita Province Health and Medical Services Report of 1992. It is estimated that cost of one clinic visit was SI\$1.87. Drug costs were the equivalent of an additional SI\$1.33 per visit giving a total cost per visit of SI\$3.20.
- ²⁶ Import data are not available for latter years. Imports of beer in 1993 will be significantly lower than in 1991 because of the establishment of a domestic brewing capacity in late 1992. Excise rates on domestic brew is significantly lower than on imports.
- ²⁷ Decision on health priorities for the public sector should not be considered in isolation from other options of service delivery available to the population. The analysis should also consider the determinants of demand for health care in the community. Without a clear understanding of why people seek health services and what kind of services they want, the system may not succeed.

Appendix

Table A1 Population distribution by province, Solomon Islands, 1992

Province ^a	Number	Per cent
Central	21,654	6.4
Guadalcanal	63,633	18.8
Choisuel	16,180	4.7
Honiara (HMA)	39,633	11.7
Isabel	17,061	5.0
Malaita	87,258	25.7
Makira	26,070	7.7
Temotu	16,867	5.0
Western	50,777	15.0
Total	339,133	100.0

^a Since the preparation of this report, Rennel Bellona Province, formerly part of Central Province, has been established. Figures for Rennel Bellona are included in Central Province.

Note: World Bank population projections estimate the population size at about 335,000 in 1992.

Source: National Statistics Office, Solomon Islands, Honiara.

Table A2 Staffing status of rural health clinics by province, Solomon Islands, 1992

Province ^a	Number of rural health clinics in data base	Number of rural health centres with 'adequate' staffing ^b	% of rural health centres with 'adequate' staffing
Central	10	4	40
Choisuel	10	7	70
Guadalcanal ^c	24	10	42
Makira	12	7	58
Malaita	21	12	57
Isabel	7	4	57
Temotu	4	1	25
Western	18	9	50
Total	106	54	51

^a Since the preparation of this report, Rennel Bellona Province, formerly part of Central Province, has been established. Figures for Rennel Bellona are included in Central Province.

^b 'Adequate' staffing is defined as a rural health clinic with at least 2 staff, one a registered nurse.

^c Guadalcanal exclusive of Honiara.

Source: Health Information System, Manpower database, MHMS, Honiara.

Table A3 Distribution of facilities and posts (seconded and direct employees) by type and province, Solomon Islands, 1992

	No. facilities	Doctors	Reg. nurses	Nurse aides	Total
Central* (1992 pop. 21,654)					
Hospital/administrative	0	1	1	2	4
Area health centre	2	0	12	7	19
Clinic	10	0	7	12	19
Nurse aide posts	12	0	0	12	12
Total		1	20	33	54
Pop./staff		21,654	1,083	656	
Choiseul (1992 pop. 16,180)					
Hospital/administrative	0	1	0	0	1
Area health centre	1	0	5	1	6
Clinic	10	0	14	13	27
Nurse aide posts	6	0	0	6	6
Total		1	19	20	40
Pop./staff		16,180	852	809	
Guadalcanal (1992 pop. 63,633)					
Hospital/administrative	0	2	2	1	5
Area health centre	2	0	5	2	7
Clinic	24	0	32	35	67
Nurse aide posts	3	0	0	3	3
Total		2	39	41	82
Pop./staff		31,817	1,562	1,552	
Honiara (1992 pop. 39,633)					
Hospital/administrative	1	26	112	30	168
Clinic	8	5	29	10	44
Total		31	141	40	
Pop./staff		1,278	281	991	
Makira (1992 pop. 26,070)					
Hospital/administrative	1	1	13	6	20
Area health centre	3	0	5	6	11
Clinic	12	0	17	7	24
Total		1	35	19	
Pop./staff		26,070	745	1,372	

(continued on next page)

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	No. facilities	Doctors	Reg. nurses	Nurse aides	Total
Malaita (1992 pop. 87,258)					
Hospital/administrative	2	7	46	21	74
Area health centre	2	0	9	4	13
Clinic	22	0	28	16	44
Nurse aide posts	25	0	0	22	22
Total		7	83	63	153
Pop./staff		12,465	1,051	1,385	
Isabel (1992 pop. 17,061)					
Hospital/administrative	1	1	13	6	20
Area health centre	4	0	4	3	7
Clinic ⁷	0	13	2	15	
Nurse aide posts	14	0	0	10	10
Total		1	30	21	
Pop./staff		17,061	569	812	
Temotu (1992 pop. 16,867)					
Hospital/administrative	1	1	17	6	24
Area health centre	1	0	6	3	9
Clinic	4	0	3	3	6
Nurse aide posts	4	0	0	4	4
Total		1	26	16	43
Pop./staff		16,867	649	1,054	
Western (1992 pop. 50,777)					
Hospital/administrative	2	5	36	32	73
Area health centre	2	0	3	2	5
Clinic	18	0	29	18	47
Nurse aide posts	13	0	0	12	12
Total		5	68	64	137
Pop./staff		10,155	747	793	
Solomon Islands total (1992 pop. 339,133)					
Hospital/administrative	8	45	240	104	389
Area health centre	17	0	49	28	77
Clinic	115	5	172	116	193
Nurse aide post	77	0	0	69	69
Total		50	461	317	828
Pop./staff		6,783	736	1,070	

^a Since the preparation of this report, Rennel Bellona Province, formerly part of Central Province, has been established. Figures for Rennel Bellona are included in Central Province.

Source: MHMS service statistics, Solomon Islands, Honiara.

TableA4 Health workforce distribution by type and province, Solomon Islands, 1992

Staff Type	MHMS (HQ)	Central Hospital	SIMTRI	HTC	Malaita	Western G/Canal	Isabel	Central ^a	Makira	Temotu	Choisuel	Total	
Doctors	4	26	1	5	7	5	2	1	1	1	-	54	
Reg.nurses	14	112	0	29	83	68	39	30	20	35	26	19	475
Nurses aides	0	30	0	10	63	64	41	21	33	19	16	20	317
Dental	0	16	0	1	2	1	0	1	1	2	1	-	25
Pharmacy	0	26	0	0	1	1	0	1	0	1	0	-	30
Lab technicians	0	18	0	0	3	2	0	1	0	1	1	-	26
X-ray	0	12	0	0	2	1	0	1	0	1	1	-	18
Rehab./physio.	0	5	0	0	0	0	0	0	0	0	0	-	5
Health inspectors	5	0	0	4	6	10	2	4	2	2	10	1	46
Health educators	5	0	0	3	3	3	2	2	2	2	2	-	24
Social welfare	5	0	0	1	1	0	0	0	0	0	0	-	7
Malaria technicians	1	3	27	0	23	16	20	8	6	9	5	-	118
Women & dev.	2	0	0	1	1	1	0	0	0	1	0	-	6
TB/Leprosy	1	0	0	0	0	0	0	0	0	0	0	-	1
Nutrition	2	0	0	0	0	0	0	0	0	0	0	-	2
Hospital support	-	14	-	-	-	-	-	-	-	-	-	-	14
Administration	15	-	-	-	-	-	-	-	-	-	-	-	15
Planning	5	-	-	-	-	-	-	-	-	-	-	-	5
SIMTRI/research	-	-	4	-	-	-	-	-	-	-	-	-	4
Accounts	9	-	-	-	-	-	-	-	-	-	-	-	9
Statistics	3	-	-	-	-	-	-	-	-	-	-	-	3
Total	71	262	32	54	195	172	106	70	65	74	63	40	1,204

^aSince the preparation of this report, Rennel Bellona Province, formerly part of Central Province, has been established. Figures for Rennel Bellona are included in Central Province.

Note: All figures for nurses and doctors include provincial direct employees and private companies and missions.

Source: MHMS, Service Statistics.

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Table A5 Water supply facility status by province, Solomon Islands, 1991

Province ^a	Facility type	Number	Per cent of total facilities			
			Fully operating	Operating but requires maintenance	Not functional	Insufficient source
Western	Gravity	117	82	15	3	0
	Rain catch	31	90	10	0	0
	Well/hand pump	1	0	100	0	0
	Other	8	60	13	14	13
	Total	157				
Isabel	Gravity	82	70	15	13	2
	Rain catch	3	67	0	33	0
	Well/hand pump	1	100	0	0	0
	Other	3	67	0	0	33
	Total	89				
Makira	Gravity	92	54	29	10	7
	Rain catch	7	14	72	0	14
	Well/hand pump	9	33	33	33	0
	Other	6	50	17	33	0
	Total	114				
Temotu	Gravity	35	94	0	6	0
	Rain catch	52	94	0	3	3
	Well/hand pump	8	25	2	36	37
	Other	3	66	0	34	0
	Total	98				
Central ^a	Gravity	69	61	9	22	8
	Rain catch	30	86	2	12	0
	Well/hand pump	26	8	0	92	0
	Other	1	100			
	Total	126				
Guadalcanal	Gravity	73	96	0	3	1
	Rain catch	36	94	0	6	0
	Well/hand pump	55	100	0	0	0
	Other	12	58	17	17	8
	Total	176				
Malaita	Gravity	162	77	7	0	16
	Rain catch	20	95	5	0	0
	Well/hand pump	1	0	100	0	0
	Other	8	25	40	0	25
	Total	191				

Since the preparation of this report, Rennel Bellona Province, formerly part of Central Province, has been established. Figures for Rennel Bellona are included in Central Province.

Source: Joint review of Solomon Islands rural water supply and sanitation program, MHMS, Honiara.

Table A6 Hospital discharges for Western Province, 1990 and 1991 (Gizo and Helena Goldie hospitals)

Disease category	1990			1991				
	Adult male	Adult female	Child	Total	Adult male	Adult female	Child	Total
Infectious and parasitic	260	224	349	833	331	376	487	1,194
Neoplasms	15	9	-	24	13	9	3	25
Allergies, endocrine, metabolic & nutritional	15	21	23	59	18	26	21	65
Blood	5	10	6	21	12	22	26	60
Mental disorders	10	8	-	18	23	16	-	39
Nervous system & sense organs	17	16	30	73	15	19	35	69
Circulatory system	14	15	11	40	28	16	17	61
Respiratory system	72	59	232	363	70	58	200	328
Digestive system	107	91	223	421	120	102	128	350
Fenti-urinary system	35	90	14	139	37	116	15	168
Pregnancy and childbirth	-	1,018	-	1,018	-	1,134	-	1,134
Skin and subcutaneous tissue	131	81	163	375	123	86	173	372
Musculo-skeletal/ conn. tissue	26	14	18	58	24	23	12	59
Congenital anomalies	-	-	21	21	2	-	18	20
Perinatal	-	-	73	73	-	-	44	44
Ill-defined conditions	29	35	34	98	33	69	55	157
Injury and poisoning	168	50	84	302	159	69	91	319
Total	904	1,741	1,292	3,937	1,008	2,141	1,315	4,464
Total (less preg./childbirth)	904	723	1,292	2,919	1,008	1,007	1,315	3,330

Source: Western Province Provincial Health Report, 1992.

Table A7 Rural water and sanitation expenditures by source, Solomon Islands, 1979-92 (SI\$000)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993*
Australia	65.8	65.8	65.8	65.8	45.8	90.0	-	450.0	550.0	500.0	1055.1	-	450.0	-	1000.1
New Zealand	7.5	25.0	25.0	25.0	-	80.0	167.0	700.0	200.0	350.0	270.0	286.0	270.0	270.0	270.0
UNDP/WHO	-	319.4	325.1	121.6	121.0	157.0	-	-	384.0	334.5	417.0	300.0	350.0	350.0	150.0
NGOs	-	-	14.0	30.0	20.0	80.0	80.0	100.0	94.9	126.4	111.0	72.8	191.3	121.9	30.0
Others	13.0	30.5	27.1	162.0	-	98.8	469.0	81.0	107.1	163.7	227.3	257.7	301.0	335.0	108.0
S. Islands Gov't	100.0	250.0	275.0	300.0	350.0	400.0	450.0	750.0	830.0	875.0	875.0	900.0	920.0	940.0	940.0
Total	186.3	690.7	732.0	704.4	536.8	905.8	1166.0	2081.0	2166.0	2349.6	2955.4	1816.5	2482.3	2016.9	2498.1
Percent Gov't	53.7	36.2	37.6	42.6	65.2	44.2	38.6	36.0	38.3	37.2	29.6	49.5	37.1	46.6	37.6
Pop. connected (water)	8,000	15,025	15,345	19,411	19,025	7,246	19,096	19,318	13,071	11,188	12,572	15,416	16,236	16,528	10,189
Cost/per capita/ connected (SI\$)	23.3	46.0	47.7	36.3	28.2	125.0	61.1	107.7	165.7	210.0	235.1	117.8	152.9	122.0	245.2

*Planned

Source: Joint review of the Solomon Islands Rural Water Supply and Sanitation Program: working papers, table 1; Ministry of Health and Medical Services Documents and Mission Estimates.

Table A8 Ministry of Health and Medical Services Budget, 1989-93 (per cent)

National	1989	1990	1991	1992	1993
Headquarters	3.5	3.8	4.2	4.9	4.8
Central hospital	26.8	27.0	22.9	25.5	26.1
Dental	2.1	1.9	1.8	1.8	1.6
X-ray	1.4	1.2	1.3	1.2	1.1
Laboratory	2.4	2.0	2.1	1.9	1.8
Pharmacy & stores	5.9	14.9	19.6	18.5	16.6
Health education	0.7	0.9	0.7	0.7	0.6
Health environment	0.9	0.8	0.9	0.8	0.8
Med. research & training	2.4	2.4	2.3	2.5	2.3
Social welfare	1.5	0.9	0.7	0.7	0.6
Malaria: recurrent	-	-	2.5	7.9	7.3
(SIG) development	8.9	7.4	5.2	4.9	3.6
Total malaria	8.9	7.4	7.7	12.8	10.9
Total national	56.5	63.2	64.2	71.3	67.2
Total provincial	43.5	36.8	35.8	28.7	32.8
Total budget	100.0	100.0	100.0	100.0	100.0

Note: SIG=Solomon Islands Government

Source: Approved Recurrent Estimates and Solomon Islands Government Development Budgets (various years).

Table A9 Provincial Health Grants, Solomon Islands, 1991-92

Province ^a	1991	1992	1993
Central			
Salaries & allowances	320.0	198.2	304.4
Health service grant	193.6	203.9	223.4
Total central	513.8	402.1	527.8
Per capita grant	24.5	18.6	23.7
Isabel			
Salaries & allowances	338.1	384.5	482.7
Health service grant	261.4	268.2	286.1
Total Isabel	599.5	652.7	768.8
Per capita grant	36.2	38.2	43.8
Makira			
Salaries & allowances	507.8	430.7	575.1
Health service grant	283.7	293.9	379.1
Total Makira	791.5	724.6	954.2
Per capita grant	31.4	27.8	35.5
Guadalcanal			
Salaries & allowances	481.2	395.1	529.3
Health service grant	302.9	312.1	419.8
Total Guadalcanal	784.1	707.2	949.1
Per capita grant	12.9	11.1	14.3
Malaita			
Salaries & allowances	1,073.5	917.2	1,219.5
Health service grant	642.9	498.8	688.5
Total Malaita	1,684.1	1,538.1	2,027.4
Per capita grant	25.5	30.1	34.2
Western			
Salaries & allowances	1,004.4	1,044.1	1,062.6
Health service grant	642.9	498.8	688.5
Total Western	1,647.3	1,542.9	1,751.1
Per capita grant	25.5	30.1	34.2

(Continued on next page)

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Province ^a	1991	1992	1993
Choisuel			
Salaries & allowances	n.a.	44.2	338.9
Health service grant	n.a.	155.1	155.1
Total Choisuel	n.a.	199.3	494
Per capita grant	n.a.	12.3	129.8
Temotu			
Salaries & allowances	361.6	376.2	451.7
Health service grant	250.1	256.3	256.3
Total Temotu	611.7	632.5	708.0
Per capita Grant	37.1	37.5	41.0
Total provincial			
Salaries & allowances	4,086.8	3,790.2	4,964.2
Health service grant	2,545.2	2,609.2	3,216.2
Total	6,632.0	6,399.4	8,180.4
Nom. Per capita grant (exc. Honiara)	22.8	21.4	26.5
Real per capita grant	10.3	8.6	9.8
Real total provincial			
Salaries & allowances	1,838.4	1,527.1	1,838.6
Health services grant	1,144.9	1,051.3	1,191.2
Total	2,983.4	2,578.3	3,029.8

^a Since the preparation of this report, Rennel Bellona Province, formerly part of Central Provinces, has been established. Figures for Rennel Bellona are included in Central Province.

Source: Approved recurrent estimates and development budget, Solomon Islands Government, various years.

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