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THE FOUNDATION FOR THE PEOPLES OF THE SOUTH PACIFIC

Child Survival VII Project:

**A Diarrheal Disease Control Program
in
Solomon Islands**

FIRST ANNUAL REPORT SUBMITTED TO

**THE UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
BUREAU FOR FOOD AND HUMANITARIAN ASSISTANCE
OFFICE OF PRIVATE AND VOLUNTARY COOPERATION**

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Contact Person: Julie McLaughlin, MPH, Health Program Officer

**The Foundation for the Peoples of the South Pacific
3550 Afton Road, San Diego, CA 92123
Tel: (619) 279-9820 / Fax: (619) 694-0294**

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1. Results in Year One

1.1 MAJOR RESULTS

We have had several major accomplishments this year. They are:

A. Developing a Program Presence

Within the year, we have developed productive collaborative relationships within the MCH unit and with other sections in the MHMS. Several examples follow:

a) We set up the National Diarrhoeal Diseases Control Committee. This has formally linked us with the hospital pediatricians, health education unit, nursing division and the national research institute (SIMTRI). The committee met 5 times in the year. They reviewed the results of the national survey and requested clarification and changes; reviewed diarrhoea policies and scheduled meetings for their review in November 1992; and arranged more staff for our national survey, and notified provinces of staff visits.

b) The CDD Adviser has his desk in the MCH/FP unit and participates in regular MCH/FP meetings with nutrition, EPI and family planning staff. This keeps us familiar with MCH priorities and potential areas of collaboration. We did, for example, learn about the production of child health handbook at one meeting and were able to have inputs into the section on diarrhoeal diseases. The EPI coordinator helped us supervise the collection of baseline data in the province of Choiseul.

c) Within the provinces the CMO MCH, National Diarrhoeal Diseases Coordinator and CDD Technical Adviser have introduced this program to the Directors of Health and Medical Services. The CMO MCH, during the 1991 national Directors of Health meeting, discussed the initiation of the project. The CDD Technical Adviser during the national malaria control meeting also held in late 1991 took the opportunity to informally meet with several Directors to discuss the role of diarrhoeal disease in their provinces and explain the objectives of the project. During tours in Malaita and Western province, the CDD Technical Adviser took the opportunity to meet with Directors to further encourage active participation in the project. The Director of Health, Guadalcanal is a permanent member of the National CDD Committee. The CDD national survey, in which all Directors provided staff for data collection, further established the activities and role of the CDD project in the provinces. During the baseline survey, we were able to meet with provincial health educators, trainers, registered nurses and assistant nurses.

d) Given our relationship with other sections after less than one year, the project has been able to show some tangible evidence of a national commitment. As noted, the MHMS has already established the National CDD Committee to which the Undersecretary for Health Improvement and the national Director for Communicable Disease Control are members. During our survey all 52 staff, over a period of three weeks, were provided by the nursing division and from the provincial directors of health. The MHMS is providing facilities for the Technical Adviser including office space, telephone, typists, photocopy facilities, etc. This year the National Diarrhoeal Disease Coordinator was provided with a motorbike for the project. By the end of the year, the Primary Health Care division has agreed to assign one additional member of their staff to work full time with the project. (See constraints below).

B. Linking with Other Organizations

Throughout the year, we have developed connections with other local NGOs and international institutions. We have contact with Save the Children (Australia), WHO, the South Pacific Commission (SPC), EEC, and National Council for Food and Nutrition. The South Pacific Commission, for example, has provided us with examples of posters/pamphlets available from them. More importantly, we provided technical assistance to David Clarkson of SPC and Russell Abrams of WHO on a baseline study of sanitation behaviors in Malaita. Data was collected by a British volunteer. A copy of that document is attached. We coordinated a collaborative effort between Save the Children (Australia), the National Food and Nutrition Committee and Vital in activities addressing Vitamin A deficiency. Some of the pamphlets and stickers developed for that program are attached. This is further discussed below under Vitamin A deficiency. We also assisted Save the Children (Australia) with analysis of their data for VHWs. This provided us with information on the VHW program while assisting them in analysis. An article from this research has been submitted to the "WHO Forum", a health development journal. A copy is attached.

C. National CDD Survey

Attaining our measurable objectives is based on having valid and reliable baseline data. During the year, we completed the project's baseline survey, the "1992-Solomon Islands National Diarrhoeal Disease Study". The survey design employed the WHO Household Survey Manual, 1989, and the resulting cross sectional study included a representative sample of 4,020 children in 40 clusters. Planning began in December, however, nearly all staff including the CMO MCH and National Director for Diarrhoeal Disease Control of the MHMS returned to their home provinces during the Christmas holidays and no

decisions could be made until mid-January. By mid-February the sampling frame and data collection strategy were selected. By mid March all 19 supervisors and 33 data collection personnel had been chosen in each province. However, a previously planned survey of Nurse Aids was scheduled for April. Many of the same data collection personnel would be used for this survey and our survey. We needed to wait until May to begin training and data collection. The results of this survey clearly showed that (1) the incidence of disease remained higher than in most South Pacific countries; (2) home treatment required substantial improvement; and (3) mortality from diarrhoea remains high. We are awaiting approval of the MHMS for printing.

D. National Diarrheal Disease Control Policy

A draft copy of the National Diarrhoeal Disease Control Policy has now been completed which reflects the results of the study and, as intended by FSP in the design of this project, the results have been included in setting national objectives. These objectives build upon and expand those first listed in the proposal. The national CDD committee will examine the objectives at the next meeting. The draft objectives are:

1. PRIMARY OBJECTIVES.

- 1.1 To reduce the morbidity from diarrhoea from 3.5 attacks per child per year to 2.5 attacks per child per year by 1997.
- 1.2 To reduce the proportional mortality for diarrhoeal diseases in children from 14% to 10% by 1997.

2. SECONDARY OBJECTIVES.

- 2.1 To increase the percent of children receiving packaged ORS for diarrhoea from 12.6% to 25% by 1995.
- 2.2 To increase the percent of children receiving coconut water for prevention of diarrhoea from 52% to 70% of all cases.
- 2.3 To increase the percent of children receiving oral rehydration therapy (i.e. coconut water or packaged ORS) to 80% of all cases.
- 2.4 To increase the percent of guardians making ORS correctly from 33% to 60% by 1995..
- 2.5 To insure that 95% of all mothers continue to breast fed during an attack of diarrhoea through 1995.

- 2.6 To increase the percent of guardians which continue to feed children during an attack from 66% to 85% by 1995.
- 2.7 To decrease the percent of children who received antibiotic therapy for watery diarrhoea from 6% to 3% by 1995.
- 2.8 To increase the number of guardians from 40% to 65% who know at least two reasons to refer a child with diarrhoea to health personnel.

E. Immunization Program

Immunization, especially measles immunization, is considered effective in reducing the incidence of diarrhoea. Other vaccine preventable diseases can also cause illness leading to lowered immunity or poorer nutritional status and, hence, increased incidence of diarrhea. In January of this year, an outbreak of pertussis was detected in Choisuel Province. The MHMS was concerned because reports showed that many cases occurred among previously immunized children. They postulated that there were inadequacies within the cold chain. Measles, a live vaccine, is more sensitive to heat. If cold chain problems were the underlying cause of this epidemic, then we could be fairly sure that measles vaccine would be ineffective in the province. We investigated that epidemic and ran an immunization campaign. While we could not show the protective efficacy of pertussis because of possible misclassification of vaccine status, we did find that the relative risk of disease was significantly ($p < .05$) lower in younger children. This may indicate a protective effect in the most vulnerable group. Additional research is needed. While this is only a limited activity, it helped involve us in the immunization program. An abstract of the results of this investigation is attached.

F. Vitamin A Deficiency (VAD)

Vitamin A is essential to the integrity of mucosal surfaces and, hence, is considered by many to be important to the prevention of diarrhoeal diseases. Although FSP did not originally intend to address VAD within the context of the Child Survival Project, in 1992, a cross sectional study performed VITAL and FSP in three provinces of the Solomon Islands, found that 1.5% of the survey population had one or more active clinical signs or symptoms of xerophthalmia. This is above the WHO criteria for a public health problem. To begin to address this issue, we have worked with Save the Children Fund (Australia) and the Solomon Islands National Food and Nutrition Committee to acquire assistance from USAID/Fiji and VITAL for Vitamin A education. The US\$5,000 provided will be used during World Food Day to educate community members regarding Vitamin A within the context of protective foods. Education activities including cooking demonstrations, radio spots,

pamphlet distribution, etc will be held in rural and urban areas. While this activity is limited, it helps to link diarrhoeal diseases with nutrition education.

G. Conclusions

This was an important year for the CDD project. The National Diarrhoeal Diseases Coordinator and CDD Technical Adviser established the program within the Ministry of Health and Medical Service (MHMS). We have made contacts with staff of both international and national organizations and have collaborated with them on several projects. Although delayed, we completed the national diarrhoeal disease survey within the first ten months. The results of this survey are currently being used to further develop the National Diarrhoeal Diseases Control Policy. Given the importance of immunization in primary health care and control of diarrhoeal disease, we tried to determine the effectiveness of the cold chain as evidenced by the efficacy of pertussis vaccine. Nutrition is an important component in the control of diarrhoeal disease and we have worked with local and international organizations to assist the nation of Solomon Islands in decreasing the prevalence of vitamin A deficiency.

1.2 CHANGES IN APPROACH TO INDIVIDUALS AT HIGHER RISK

The second year will see the CDD project moving toward training of MHMS staff, village health workers and community leaders. Hence, more activities will be directed at target populations. The Solomon Islands, unlike other developing countries, does not have an easily definable high-risk group. For example, in Bangladesh it would be desirable to concentrate on severely malnourished children from poor, landless families. In this country, poverty is more evenly spread and all families have access to some land. At this time, our definition of high-risk will include moderately to severely malnourished children in areas principally served by village health workers.

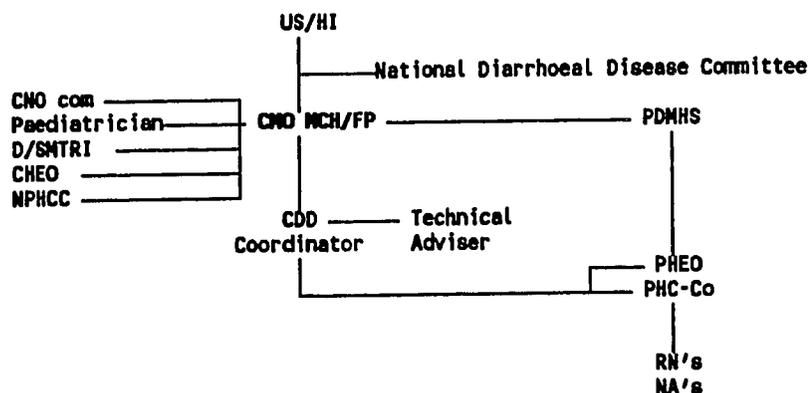
It became clear during provincial tours that two strategies will be necessary for reaching high-risk groups and this will be our two pronged strategy. The first strategy will deal with those groups that have access to health services. These individuals are often receiving inadequate education or care and seeking services too late during illness. For example, two urban deaths were reported when two severely dehydrated children were brought to a health center. The center was unable to provide IV's or nasogastric tubes. These children were referred to a hospital, but they did not survive the trip. Health care providers at all levels need to be better trained in case management, and provided with necessary supplies. Still, however, we will work to improve the prevention and treatment of early dehydration for these persons, so as to prevent the need for IV's. The national diarrhoeal diseases study clearly points out that use of packaged ORS and correct preparation of ORS is a national problem.

A second strategy will deal with persons not in contact with health services because they live in isolated areas. Currently, the provision of packaged ORS, antibiotic treatment and preventive measures is inadequate. To assist these individuals, we will need to link up with village health workers and non-traditional health care providers. Consideration will be given to the possible role of shopkeepers in distributing ORS packets. Social marketing of ORS has been discussed by USAID consultants with the MHMS, and FSP has strongly encouraged this enterprise. The provision of antibiotics to VHWs remains a sensitive issue, and will need to be further discussed by the National CDD committee. Save the Children is already providing training to VHW's and we will build upon their experience.

13 STAFFING

Except for the FSP Technical Adviser, we have not hired any additional technical staff for this project. Administrative assistance is provided by the FSP Country Director and an office accountant. All other staff are from the Ministry of Health and Medical Services. An organizational chart follows. The resumes of the Technical Adviser and National Diarrhoeal Disease Coordinator are attached.

Table I: Organisation Chart, CDD project



Abbreviations, Names and Titles:

- CDD Coordinator - Mr. W. Pitakomoki, Control of Diarrhoeal Diseases Coordinator, MHMS.
 CHEO - Mr. A. Lovi, Chief Health Education Officer, MHMS.
 CMO MCH/FP - Dr. J. Pikacha, Chief Medical Officer, Maternal and Child

	Health/Family Planning, MHMS
CNO com	- Mr. E. Daiwo, Chief Nursing Officer, Community, MHMS
Director FSP	- Tony Carmel, Director of Foundation for the Peoples of the South Pacific, Solomon Islands.
D/SMTRI	- Dr. J. Leafasia, Director of Solomon Islands Medical and Training Institute, MHMS
NA's	- Nurse Aids, MHMS
PDMHS	- Provincial Directors of Health and Medical Services, MHMS
Paediatrician	- Dr. Cyril P. Consultant Paediatrician, Central Hospital, MHMS.
PHC Co.	- Provincial Health Care Coordinator, MHMS.
PHEO	- Provincial Health Education Officer, MHMS.
RN's	- Provincial Registered Nurses, MHMS
US/HI	- Dr. E. Nukuro, Under Secretary for Health Improvement, MHMS
Technical Adviser	- Thomas F. Wierzba, Epidemiologist, Foundation for the Peoples of the South Pacific, Solomon Islands.
NPHCC	- Mr. T. Daonanita, National Primary Health Care, Coordinator

1.4 CONTINUING EDUCATION

The Solomon Islands is a small country, and unfortunately only training programs arranged through this project will be available to staff. We are pleased that the national CDD program coordinator will be going to Fiji in October, 1992 to attend a 10 day WHO workshop on clinical aspects of diarrhoeal diseases treatment.

1.5 TECHNICAL SUPPORT

Julie McLaughlin, FSP Health Program Officer from FSP's Headquarters in San Diego, visited the project in February, 1992 on a monitoring visit.

Drs. Guy Hawley, consultant, USAID and Pat Lowry, USAID, Fiji, visited the project in April, 1992. With the MHMS we reviewed the results of the 1991 xerophthalmia study. We also reviewed progress and constraints for the CDD project as described above.

A request was made for a consultant visit from Dr. M. Bennish of Tufts University, but this will probably occur in early 1993.

1.6 COMMUNITY PARTICIPATION

We will build community support for this project through two strategies. First, we intend to train 100 community leaders. Most of these leaders will be from women's groups which are affiliated with local churches. Many of these clubs

are organized at the provincial level as well as the village level, and the regional leaders will arrange the workshops. This workshop series will either be for CDD only, or also include other related subjects. At the workshop one or more members from each club will attend, and be trained on home treatment and prevention of diarrhoeal diseases. Training will be completed by primary health care trainers available in each province. After the course is completed, the mothers will return to their village to pass on the messages. We expect that the new staff persons (see constraints) will be responsible for this part of the program. We will place our emphasis on groups and clubs from areas without accessible health services (see high-risk section).

Secondly, we will use Village Health Workers. VHWs are chosen and supported by their community. They primarily work in areas without health centers such as areas serviced by nurse aid posts. The provinces provide only supplies and a small stipend for the VHWs. VHW's are expected to supply their own building for seeing patients and giving health education. This project will employ the VHWs to provide treatment and health education for diarrhoea patients. They will also be taught the importance of good nutrition and immunizations, particularly measles. We will train 100 VHWs in 1993.

1.7 LINKAGES TO OTHER HEALTH AND DEVELOPMENT ACTIVITIES

We have placed this project in the MHMS and within the context of their development strategy. The MHMS has directly linked the CDD project to their overall development plans through the 1989 national health plan.

2. Constraints, Unexpected Benefits and Lessons Learned

2.1 CONSTRAINTS

Staffing is the single major constraint that hinders the implementation of this project. While the MHMS has well-trained staff, educated persons in the Solomon Islands are in great demand, there are insufficient numbers of health personnel staffing the key technical areas of training, supervision and health education.

STRATEGY: The primary health care division will assign one additional staff member to this project. He or she will organize and implement provincial training courses specifically for women's groups and VHWs. The National CDD Coordinator and CDD Technical Adviser will train this individual. For health education, we are looking to utilize other NGOs' resources and experience. Independent graphic designers are being contacted to aid in materials development, and we will explore cooperation with the Solomon Islands Development Trust in

the coming months. Developing and strengthening links with other organizations will remain the single best method of finding the additional human and financial resources necessary to expediting this project.

In July, all physicians nation-wide resigned their post over a dispute with the government regarding wages, benefits and training opportunities. The CMO MCH/FP, for example, was out of the office for six weeks. The pediatrician working on the National Diarrhoeal Diseases Committee did not return to work and a new pediatrician was assigned to the committee. Many committee staff, MCH staff and senior administrative staff were assigned to work in the hospital to replace physicians. Review of the survey results and training plans could not be approved until their return.

STRATEGY: The majority of physicians returned to work in late August and we were able to continue with our work. The survey was reviewed shortly thereafter and sent to the National Diarrhoeal Diseases Control Committee.

2.2 UNEXPECTED BENEFITS

We achieved three objectives this year. We placed an epidemiologist in the MCH unit for CDD, completed the National CDD Survey, and built national level commitment to the project. The placement of the Technical Advisor and the implementation of the survey has led to more thoughtful analysis of the disease situation in the country. For example, ministry and provincial staff are considering studies to investigate the antibiotic sensitivity patterns of appropriate bacterial pathogens such as Shigella spp. and Campylobacter. The MHMS recorded two deaths in Guadalcanal Province from dysentery. Both had been treated with antibiotics. In a second example, the national Diarrhoeal Disease Coordinator is using new skills to better problem solve and identify problem causes. He has stated that he can now appreciate the need for research and surveillance, since assumptions may be very wrong. One of our findings was a 50% reduction in use of packaged ORS in the country. This was counter to the thinking of all staff.

2.3 INSTITUTIONALIZATION OF LESSONS LEARNED

The primary lesson learned is that to carry out the program, we will need to have strong links with other NGOs working in the area of diarrhoeal diseases, training and materials development. We need their experience. This will lead to improved quality of work as well as expedite the project. For example, the MHMS health education unit is unable to provide the materials for diarrhoeal disease originally promised. It is more practical, therefore, to use relevant education materials developed by the South Pacific Commission (SPC) then to

try to develop our own. To institutionalize this recommendation, we will add other NGO members to the National CDD Committee, or develop a subcommittee of NGOs. It is essential that the FSP Health Program join the governing body of NGOs, the "Solomon Islands Development Exchange" in the coming months.

The resignation of all the country's physicians, exemplifies the types of events which can so easily affect the project's schedule. In a country the size of Solomon Islands, and with its many isolated populations, national events can greatly impact upon the progress of the project. This is FSP's first activity working with the Ministry of Health and Medical Services, and we are learning how to cope with the great demands placed on few people in the MHMS which often preclude project priorities. Flexibility and innovativeness in accomplishing objectives are essential.

3. Changes Made in Project Design

3.1 CHANGES IN PERCEIVED HEALTH NEEDS

Before conducting the 1992 National Diarrhoeal Disease Survey, there was a perception among some Directors of Health and Medical Services and MHMS staff that diarrhoeal diseases were not a major problem. Staff considered a 1986 study to have given an overestimate of incidence and mortality. The 1992 survey established that diarrhoea is a serious concern with 3.5 attacks per child per year and 14% proportional mortality.

3.2 CHANGE IN PROJECT OBJECTIVES

We have changed our measurable, project objectives to reflect the outcome of the CDD survey. These objectives will be fully detailed in the revised Detailed Implementation Plan.

3.3 CHANGES IN PLANNED INTERVENTIONS

We have added some very basic vitamin A education activities which are intended to complement the CDD objectives. (See Vitamin A Deficiency).

3.4 CHANGE IN POTENTIAL AND PRIORITY BENEFICIARIES

We have not changed the project location, number or prioritization of services to beneficiaries.

4. Progress in Health Information Data Collection

4.1 CHARACTERISTICS OF THE HEALTH INFORMATION SYSTEM

4.1.1 The EEC began a surveillance system in three provinces. They designed this system to collect information on the incidence of diarrhoea and dysentery as well as presence or absence of dehydration. We have requested that data from rural health centers be provided to us. We intend to use this information to more carefully analyze high incidence areas and epidemics.

4.1.2 This surveillance system helps to describe the descriptive epidemiology of disease. It does not go beyond geographic location, age and sex. We intend to further analyze this data to identify high incidence areas and epidemics.

4.1.3 This system does report on clinic activities, but not on diarrhoeal disease services. There has been no changes to clinic activity reporting. We have recommended they include information on health education sessions for diarrhoeal diseases.

4.1.4 There is a system to monitor VHW activities, but it is not working. All VHW's are to maintain logs of patients seen, diagnosis and treatment. This information is to be brought to a rural health center or pick up by the local health center staff. A review of VHW activities conducted by Save the Children (Australia) may lead to changes in this system. We are awaiting the outcome of that review.

4.2 SPECIAL CAPACITIES OF THE HEALTH INFORMATION SYSTEM

4.2.1 The system does measure number of clinic sessions, but this indicator is not directly relevant to our project.

4.2.2 Surveys have been undertaken to measure drop out among community health workers and the CDD Technical Adviser has helped in the analysis of this data. A copy of that report is attached. Over the 13 years of the VHW program, the overall drop out rate was 62% with a mean annual attrition rate of 4.8%. Provincial attrition rates varied from 43-78%. Fifteen percent of VHW were upgraded to nurse aids or their VHW post upgraded to a nurse aid post. The average number of years worked was 4.9 years.

Given that the average number of years worked for a VHW was 5, it is important that CDD activities be integrated into all new VHW training programs. Recent curriculum guidelines drawn up by Save the Children

have included diarrhoeal disease control. These guidelines will need to be reviewed in light of the recent CDD survey and following the adoption of a National Diarrhoeal Diseases Policy.

4.2.3 The project does not investigate acute cases of paralysis.

4.2.4 This project will monitor the number of hours that are spent by community health workers taking CDD courses. Overall number of training hours is not applicable to this intervention.

4.2.5 With the initiation of the EEC surveillance system we have been able to get data on the person, place and time of disease. However, this system only covers 3 of 9 provinces and we are without information from other provinces. The expansion of the system to other provinces will occur in 1993.

4.3 MANAGEMENT OF THE HEALTH INFORMATION SYSTEM

4.3.1 About US\$15,000 went toward the largest diarrhoeal disease survey in the history of Solomon Islands. The National Diarrhoeal Disease Committee expressed their appreciation for the high quality of this research. The costs covered data collection for a representative sample of 4,020 children in 40 clusters of 9 provinces. Staff included 18 supervisors and 33 interviewers.

4.3.2 We reviewed program indicators on 9/25/92 with the National Diarrhoeal Disease Committee. This was a review of the results of the 1992 Diarrhoeal Diseases Survey.

4.3.3 We will circulate printed copies of the 1992 National Diarrhoeal Diseases Survey Report in late October 1992. We are currently awaiting permission to print the document from the Permanent Secretary, MIMS.

4.3.4 The CDD Technical Adviser for the project is an epidemiologist. He will monitor data reliability and validity.

4.3.5 The question assumes that data quality is deficient. EEC is now upgrading the national disease surveillance system. This system is achieving standards well above those in most developing countries. The surveillance system has already been used to identify a yaws epidemic.

5. Sustainability

5.1 RECURRENT COSTS

5.1.1 This is an appropriate project because it advances the time schedule of development and increases scientific knowledge without adding costs to the MHMS. Recurrent costs will include only salaries of staff who were already receiving pay from the government before starting the project. Facilities and supplies are already present or provided by outside donors such as UNICEF. The cost of recurrent services remains the information of the MHMS.

5.1.2 These costs will continue to be paid by the government.

5.2 STRATEGIES FOR INCREASING POST PROJECT SUSTAINABILITY

5.2.1 This is a project completed in full cooperation with the government. The Technical Adviser, for example, is stationed in the MCH unit of the MHMS. Most staff and recurrent supplies are already provided by them.

We stationed the Technical Adviser in the MCH unit, MHMS. This allows us to focus on strengthening the MCH unit's ability to implement national programs. These programs are complex and involve research, training, development of health education materials, surveillance and evaluation.

For sustainability, it has become clear that the "National Diarrhoeal Disease Control Committee" will be important. Members have already asked this committee to expand its role in diarrhoea diseases by examining further research questions, seeking additional funds and linking with other institutions.

We will also increase long term sustainability by development of a national diarrhoeal diseases policy. The MCH unit and other senior staff of the Ministry will collaborate in policy development. This policy will not only outline current initiatives, but also state future directions in the control of diarrhoeal diseases.

5.2.2. Efforts aimed at increasing efficiency are addressed above in Lessons Learned.

5.3 COST RECOVERY

We are aiding the government in developing affordable services based on low cost treatment such as packaged ORS and coconut water for home based rehydration, and we have stressed use of available resources, the project is not implementing any cost recovery activities.

6. Project Expenditure and Justification for Budget Changes

6.1 A Pipeline analysis has been submitted to USAID under a separate cover as requested.

6.2 There are no significant changes to the budget.

7. 1992 to 1993 Work Schedule and Budget

The final work schedule for the year will be approved by the National Diarrhoeal Diseases Control Committee. However, activities and expected months of completion are shown below:

- a. development in the MCH unit by Technical Adviser and national counterpart of training materials to be used for RNs, nurse aids, VHWs and womens' clubs and provincial trainers by December 1992.
- b. Training in Honiara by national counterpart of 18 provincial trainers for nurse aid training and VHW training by January 15th, 1993.
- c. Revision by Technical Adviser, principle nursing officer and national counterpart of 3 CDD, nursing school curricula by January.
- d. Seminar by consultant for 12 Doctors in Honiara on advances in diarrhoea case management for 1 day by January.
- e. Training for 185 registered nurses from 9 provinces by Technical Adviser and national counterpart on diarrhoea case management and health education for 2 days by September.
- f. Training of 100 nurse aids from 9 provinces by provincial trainers on diarrhoea case management and health education for 3 days by September.
- g. Training of 100 VHW by provincial trainers on diarrhoea case management and community education by September.
- h. Training of 100 village or group leaders in 9 provinces by provincial trainers by September.

- i. One outbreak investigation of diarrhoeal diseases by CDD Technical Adviser, national counterpart and provincial medical services by June 1992 and a second investigation by September.**

- j. Establish one rehydration corner in one provincial center by principle nursing officer, national counterpart and Technical Adviser by July 1992.**

- k. Development and distribution of 5,000 pamphlets, 5,000 posters and 300 radio spots on ORS, referral and feeding practices during diarrhoeal disease by health education office and MCH unit by September 1992.**

APPENDICES

Thomas F. Wierzba
4913 Berryhill Circle
Perry Hall, MD 21128
Phone:301-931-0951

Personal

Birth Date: July 28, 1953 Languages: Malay, Bengali
Citizenship: United States Married, three children

Experience

Epidemiologist/Chief, Biostatistics Section, Henry M. Jackson Foundation, Rockville, Maryland, October 1989 to present. Conduct HIV research with the US Military. Established and, now, supervise Biostatistics Section. Collaborating in the design of a phase 2, clinical trial for HIV subunit vaccine. Examining DTH skin test antigens as a measure of cellular immune status in vivo among HIV+. Examining changes in neuropsychological functioning in HIV+ cohort.

Research Analyst, Department of Epidemiology, Johns Hopkins School of Hygiene and Public Health, January 1989 to December 1989. Employed by the Deputy Director of the Epidemiology Department. Studied effects of risk behaviors on time to AIDS among participants in the Baltimore HIV (SHARE) cohort. Completed matched case-control study on changes in risk factors for HIV before and after 1986.

Intern, Department of Biostatistics, Academic Data Center, Johns Hopkins School of Hygiene and Public Health, October 1987 to January 1989. Provide training and technical assistance for statistical programming among staff and students. Taught courses on SAS and CMS.

Coordinator, RDRS Health Program, Lutheran World Service, Lalmonirhat District, Bangladesh, October 1982 to February 1987. Supervised 500 health staff with a budget of \$500,000 annually. Expanded program from 750 to 900 thousand persons served. Developed active case detection system for diarrhoeal diseases and reduced fatalities for dysenteric illnesses from 1.5% (76/4896) to 0.4% (28/6728). Expanded coverage of vaccines until 93% of children <18 months were immunized with measles, DPT, polio and BCG. Established midwives' clinics serving 2000 pregnant women. Introduced short course therapy for leprosy among 75% of 1200 cases. Set up system to monitor morbidity and mortality in working area. With International Center for Diarrheal Disease Research, Dhaka, researched sensitivity and specificity of treatment algorithms for dysentery, resistance patterns and transport mediums.

Health Education Officer, Medical and Health Department, Kelantan, Malaysia, December 1979 to September 1982. Trained rural health staff serving a population of 870,000 in health education methods. Developed and directed education activities for control of 1981 cholera epidemic. With local counterparts, began a rural nutrition education and intervention program for moderately malnourished children.

Training Specialist, Office of International Services, United States Centers for Disease Control, Atlanta, Georgia, May 1979 to August 1979. Administered and evaluated seminar for foreign professionals on epidemiology and public health administration in disease control.

Education

September 1988 to present, PhD expected 1993, Infectious Disease Epidemiology, Johns Hopkins School of Hygiene and Public Health, Baltimore, Maryland.

Completed all courses in epidemiology, microbiology, immunology, pathology and statistics. Post certified by June 1991.

Teaching Assistant, Department of Epidemiology, Johns Hopkins School of Hygiene and Public Health, September 1988 to November 1988. Teaching Assistant for course on the "Acquired Immune Deficiency Syndrome" given by Dr. K. Nelson, Infectious Diseases, Department of Epidemiology.

MPH, July 1987 to May 1988, Infectious Disease Epidemiology, Johns Hopkins School of Hygiene and Public Health, Baltimore, Maryland.

MS, September 1977 to July 1979, Community Health Education, Southern Illinois University at Carbondale, Carbondale, Illinois.

BA, July 1973 to May 1976, Social Psychology, Southern Illinois University at Carbondale, Carbondale, Illinois.

Articles, Abstracts and Presentations

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Martin A, Law WA, Salazar AM, Kampen D, Wierzba TF, Willaims J, Roller T, and Coats M. Neuropsychological functioning in early stage HIV infected individuals: The Walter Reed Study. Manuscript in preparation.

EDUCATION

Graduate Study

1. July 1979, Master of Science, Community Health Education, Southern Illinois University at Carbondale, Carbondale, Illinois, 62901.
2. May 1988, Masters of Public Health, Infectious Disease Epidemiology, Johns Hopkins School of Hygiene and Public Health, 615 North Wolf Street, Baltimore, Maryland, 21205.
3. Expected 1993, Doctor of Philosophy, Infectious Disease Epidemiology, Johns Hopkins School of Hygiene and Public Health, 615 North Wolf Street, Baltimore, Maryland, 21205.

Completed all course work in epidemiology, statistics, health information systems, immunology, virology, tropical diseases, etc. Completed all written exams and presentations. Currently completing departmental and school oral examinations.

14 October 1992

Bio-data

National Diarrhoeal Diseases Coordinator

Winston Pitakomoki, RN

Mr. Pitakomoki, RN graduated from the School of Nursing, Honiara in 1980. Following graduation, he was posted as a general nurse practitioner from 1980 to 1985 in Malaita. In 1986, he was promoted to Primary Care Coordinator for the Province. Activities included supervising, monitoring and evaluation of primary health care programs including EPI, CDD, nutrition, etc. In 1989, he was again promoted to the post of National Diarrhoeal Diseases Coordinator for the Ministry of Health and Medical Services. He continues to hold this position and is stationed in the Maternal and Child Health Unit. Besides in service training, Mr Pitakomoki, attended a one month course on primary care in Hawaii in 1988. This was sponsored by the World Health Organization. In 1990, he attended a CDD and ARI program orientation sponsored by WHO for 2 weeks in Fiji. In 1991, he attended a two week in service training held by the United States Centers for Disease Control. Mr. Pitakomoki is currently a part time student in the University for the South Pacific. His training will lead to a certificate in Community Development. As National Diarrhoeal Diseases Coordinator, he is responsible for supervision, training, monitoring and evaluation of all CDD activities. Mr. Pitakomoki is secretary for the National Diarrhoeal Disease Control Committee.

ABSTRACT

Pertussis Outbreak in Choiseul Province Solomon Islands - 1992

In January, we investigated an outbreak of pertussis in Choiseul Province. We defined a case as cough more than 2 weeks, nasal discharge and, for children older than 1 year, presence of whoop. Children without health cards were considered unimmunized. Of 258 children younger than 13 years, we detected 63 cases for an attack rate of 24.4 (18.4-30.4)^a per 100. Other case characteristics included: 71% fever, 76% puffy eyes, 81% apnea, 91% vomit after cough and 64% subconjunctival bleeding. The median number of whoop days was 52 (interquartile range:30-73). Children aged 5-12 years were 2.2 (1.4-3.7) times as likely to be infected as children less than 5 years. The protective efficacy of 3 DPT doses vs none was not statistically significant (p=.46) with a relative risk of 0.84 (0.5-1.4). There was no age interaction.

The protective efficacy of DPT was not established, possible due to misclassification of vaccine status among children without health cards. However, age data support the view that DPT is having an impact in younger children. The predisposition to pertussis in older children could be due to waning immunity or cold chain inadequacies in earlier years. TW, BH, CC - MCH/FP unit, MHMS, Solomon Islands. ^a()=95% Confidence Intervals.

Sept 1997

SANITATION PROJECT
WARD 28 & 29 MALAITA PROVINCE

BASELINE INFORMATION REPORT

INTRODUCTION

This sanitation project proposes to provide a modified VIP latrine toilet for each household within Wards 28 & 29 Malaita Province.

The modifications are the provision of a cement toilet 'bowl', lined with a preformed plastic insert, together with an optional plastic waterseal trap.

In order to promote the benefits of this form of sanitation, and the concurrent need for good personal hygiene, an appropriate health education campaign is also to be carried out.

The specific purpose in collecting, organising and interpreting baseline information in the early stages of this project was therefore:

1. To assist in the design of an appropriate health education programme;
2. To ensure that the proposed sanitation facilities will be culturally acceptable, and also;
3. To provide criteria for future evaluation of the project.

BACKGROUND

A female volunteer (VSO) was recruited from England to live in one of the villages within the project area and co-ordinate the baseline information study, together with the subsequent health education programme and toilet construction.

As the only person assigned full-time to the project, the type and quantity of information gathered, and methods for doing so, were inevitably strictly limited by conflicting demands on her time and skills; language and cultural barriers; inadequate accommodation and communication facilities; prevailing weather conditions.

Invaluable assistance was, however, volunteered by a number of local people without whose help this study could not have been completed.

INFORMATION SOUGHT

1. Demographic:
 - Location of each village
 - Population
 - Language
 - Education

2. Health:
 - Common diseases
 - Incidence of diarrhoea and intestinal parasites
 - Role of the clinics and village health workers
 - Health information sources

3. Water supply:
 - Access to safe water sufficient to daily needs

4. Excreta disposal:
 - Constructed toilets currently available
 - Current custom and practice
 - knowledge and beliefs
 - Perceived benefits/problems of VIF toilets

5. Personal Hygiene
 - Handwashing practices
 - Knowledge and beliefs
 - Use of soap

6. Environmental
 - What and how livestock is kept
 - Refuse disposal
 - Waste water

7. Decision making
 - How and by whom in the community

8. Commitment
 - Relevant indicators

9. Appropriate Media
 - What is effective

METHODS USED

1. Group discussions

took place in all of the 26 villages located within the project area. Both formal and informal discussions occurred within single and mixed gender groups led by the VSO with the use of a local interpreter. Numbers attending varied from 6 to approximately 50, and lasted 1 hour to 3 hours depending upon the number of questions asked.

Topics covered were :- existing toilet arrangements

- access and availability of sufficient clean water
- advantages and disadvantages of the proposed VIP toilets (with or without plastic water-seal)
- current custom and practice regarding toilets and defaecation among women and children.
- personal hygiene practices observed by women and children
- health concerns of mothers
- perceived health status of children

2. One-to-one discussions

These, of necessity, varied depending upon the gender of the person, their age, status within the community, linguistic skills, circumstances of the encounter, and familiarity with the VSO. Such discussions did not take place in all communities visited and were, inevitably, more frequent in the VSO's village base and neighbouring communities.

Generally, the same topics were discussed but from a more personal viewpoint.

However, it was possible to explore a greater range of issues in more depth and helped to clarify misunderstandings due to language and/or cultural differences. For example, custom and practice regarding 'poisoning' (i.e. sickness due to 'magic'); appropriate language when speaking of defaecation habits; tabus related to food and food preparation.

3. Questionnaire

A copy of the questionnaire (in English) is attached as Appendix 1.

It was translated into local language for work in the field in the belief that

- a) there would be less chance of misinterpretation of the questions;
- b) by doing so it showed respect for the local language;
- c) the interviewers would be local women, not necessarily literate in English.

Severe constraints of available time, finances and personnel, together with difficulties of travel, limited the use of the questionnaire to a 'sample of convenience' of 6 communities within the project area and a total of 95 women interviewed.

A number of questions were asked regarding handwashing beliefs and practices; attitude to the proposed VIP toilet; incidence of diarrhoea and parasitic worms.

Due to a variety of circumstances, approximately two thirds of the interviews were conducted by a man, often in the presence of the interviewee's husband and/or children.

4. Clinic Records

Two clinics are located within the project area, at Sa'a and Tawa'aro. Statistics for the year 1991 were taken in relation to Malaria, Acute Respiratory Infections (mild, moderate, severe); Gastroenteritis (diarrhoea and other - usually parasites); and Skin Complaints (including abscess, fungal infections, sores)

In addition, a Village Health Worker is located at Herenesi and Uara.

5. Observation

Living, working and touring within the project area for 7 months enabled the VSD to observe local customs and practice on a day-to-day basis: thus providing a valuable (albeit informal) complement to the other information gathering methods.

6. Population List

The leaders of each village were requested to provide a list of all heads of household, together with the numbers within each household. The purpose of this being to

- a) provide accurate data as to the potential maximum number of toilets likely to be required (at the rate of one per household) and
- b) indicate rate of population increase by comparison with existing records

FINDINGS

1. Demographic

a) Location of each village

The attached sketch map shows the siting of the villages in Wards 28 & 29 Malaita Province.

12 are directly accessible by outboard motor during high tide. 6 can be reached by a short (10-15 minute) walk from the sea. 8 require more demanding uphill walking (1/2-3 hours)

b) Population

Total population is estimated at 5280 persons; 1214 households, based on the figures supplied from village leaders between Nov 1991 and May 1992 for half the villages in the project area. Compared to 1986 population figures (3303 persons; 557 households) the rate of increase in just over 5 years is:

population: 60%
households: 102%

However, only during the Christmas holiday is the total population likely to be resident, since many heads of household are employed in Honiara or Provincial Capitals, and secondary school students are boarded at their schools during term-time. The estimated population in permanent residence is 65% although this does vary village to village.

c) Language

Two different local languages are spoken in the area - Lau on the islands of Walande and Fatalei (and to some extent Tawa'aro); and Sata everywhere else.

In addition, the majority of men and secondary school students are confident in the use of pigin, but only approximately 25% of all women.

d) Education

6 primary schools serve the area, providing education from Standard 1-6

There are no secondary schools located in the project area.

Of the questionnaire sample, only 25% of the women had received any formal education.

The importance of a good education was frequently expressed in informal discussions with both men and women. Respect was often shown to those who had received such (and embarrassment by those who had not).

Particular effort is made by members of the community to raise money for the school fees of their children.

2. Health

a) Common diseases

Malaria, gastroenteric conditions, skin complaints (including sores and scabies), colds/cough/flu were quoted every time by the women's groups as being the most common illnesses among their children - with malaria considered the most serious. Clinic statistics and discussions with the nursing officers partly confirmed this:-

No. of cases 1991 in children less than 5 years old:

	Sa'a	Tawa'aro
presumptive malaria:	178	
gastroenteric:	50	67
skin complaints:	126	123
ARI:	250	406

b) Incidence of diarrhoea and intestinal parasites

i) The women's groups widely expressed the view that diarrhoea ("bele ran" or "sor bele") is very common among small children and babies; with the knowledge how to treat it possessed by most women. Treatment methods varied widely, however.

For example 1) withholding all food and liquid;
2) giving boiled water, coconut water, or rice water only;
3) feeding soft, moist foods only;
4) feeding dry foods only;
5) continuing usual diet;
6) reconstituting ORT formula from Clinic

The sample questionnaire revealed 30.5% of 2-5 year olds having suffered diarrhoea in the preceding 2 weeks (75% of which were severe)

11.6% of babies had diarrhoea, 45% of which mothers considered were severe.

Few cases of diarrhoea in children under 5 years were recorded at Sa'a Clinic in 1991 (10 only); whereas the figure was somewhat higher at Tawa'aro Clinic (60 cases) which also serves the area used for the questionnaire sample.

ii) Little seemed to be known in detail about intestinal parasites, although at least 2 or 3 women from each group were familiar with thread or roundworm.

There were 14 positive responses (9.7% of the sample) to the question about intestinal worms in the 2-5 year old age group; and 6 cases (4% of the sample) in 0-2 year olds.

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Clinic statistics for 'Other Gastroenteric Conditions (often intestinal parasites) were:

1991	>1yr	1-4yrs	<5yrs
Sa'a	1	39	95
Tawa'aro	1	6	38

The Village Health Workers were of the opinion that they treated at least 1 case of parasitic infestation each week - adults and children.

Personal observation by the VSO indicated that in any group of 10 young children, at least 1 showed signs of severe worm infestation.

c) Role of Clinics and Village Health Workers (VHWs).

Not surprisingly, the two Clinics are used most by those living closest to them, pregnant women and families with small babies. The more difficult access is, the more likely that custom medicines are tried first and recourse to the clinic only if such treatment is unsuccessful after 2 or 3 days. Knowledge of custom remedies for minor ailments appears general among both men and women with the "strong" medicine administered by just 1 or 2 older individuals within each family/tribal group.

Lack of staff prohibits regular touring by nursing officers.

The clinic often act as an informal meeting place for people of all ages in the immediate vicinity.

Village Health Workers are, by the nature of their training and availability of supplies, limited in their ability to treat more than minor ailments, but act as a valuable first reference point for the sick.

c) Health Information

The prime sources of health information are the local clinics, and those people within the community perceived as having specialist knowledge. These latter may be the Village Health Worker, an exnurse, traditional healer, local teacher, or particularly well-educated or knowledgeable individual within the family/tribal group.

Secondary schools provide health information and advice to their students although the Health Education syllabus for primary schools has yet to be approved and is therefore not currently taught.

Dissemination of health information between individuals, social groups and different communities often appears to be ineffective, although it is difficult to say quite why. This is offset to some extent, however, by the work of the Mothers Union (Anglican), Womens Band (South Sea Evangelical Church)

and Seventh Day Adventist Church who consider health issues of major importance within their communities. In addition, health-related programmes are broadcast regularly by the Solomon Islands Broadcasting Company. Topics covered include Family Planning, Malaria, Dental Health and AIDS/HIV.

In discussions with both men and women, the desire was repeatedly expressed for information on three main topics of health:-

Health of Children
Nutrition
Family Planning

3. Water Supply

2 of the 6 primary schools in the project area have piped water supplies.

62% of villages have no piped water supply and strongly voiced the view that provision of such is as important (if not more so) than improved sanitation.

The other 38% consider their piped supply inadequate for the current needs of the communities served, due to an increase in population & household numbers and lack of maintenance to the supply.

However, drinking quality water is available within a maximum of 1 kilometre walk for all people, apart from Fanalei where a 30 minute return journey by paddle canoe is necessary.

Collection and storage of drinking water in closed containers takes place at least twice a day (more often if the need requires)

Where a piped supply is lacking (or considered inadequate) bathing and washing of clothes and cooking pots takes place variously in the sea, river, stream or spring. The choice of venue is very much up to the individual and depends upon the siting of the house within the village and the number of water sources available.

In these circumstances drinking water supply is always separate and was never observed to be polluted, whereas pot washing commonly occurred down-stream of bathing and/or clothes washing areas.

4. Excreta Disposal

a) Constructed Toilets Currently Available

None of the mainland villages have constructed toilets or latrines available for public use, although one of the largest villages had had pit latrines (of bush materials) in the past. These had fallen into disuse due (it was said) to lack of

maintenance and cleaning. However, a particular family has adopted one for its exclusive use and this was functioning satisfactorily.

A pit latrine (of bush materials) has been constructed by 1 household each in 2 other villages, for their exclusive use, while 2 households have done the same in a third village. All members of the households confirmed that they used them. One of the 2 island communities has timber and metal public 'over sea' toilets - one for each gender.

More than half (58%) of those questioned have never used a 'improved' toilet before.

None of the primary schools have any form of constructed toilet.

b) Knowledge and Beliefs

75% of the women believe that faeces contain disease-causing organisms of some sort. The language word "maamaa" can mean germ, worm, bacteria, virus, fungus etc.

Faeces are considered "dirty" and that flies cause sickness.

c) Current Custom and Practice

Apart from the above exceptions, each community has separate gender 'toilet' areas located variously in the sea, on the beach, in mangrove swamps or the bush depending upon the siting of the village or group of houses. These are used by the adults and older children.

In discussion, approximately 85% of people expressed the view that sharing of one toilet by both sexes of the same household would be acceptable.

In the 'sample of convenience' 49% of the women buried babies' faeces; 26% threw them into the sea and 17.8% threw them into the bush. From observation and discussion, it is estimated that 15-20% use cloth nappies which are washed out when dirty.

The chosen method of anal cleansing by the majority of women (58%) is leaf; coconut or corn husk are also commonly used (21%); sometimes stones. Sea-water is the cleansing agent where defaecation takes place in the sea.

There is a marked reluctance to take food products from areas used for defaecation or the disposal of waste water.

d) Perceived Benefits/Problems of VIP Toilets

The project proposals were enthusiastically received at all meetings, the views expressed being that the VIP toilets are "a very good idea" and that the community will benefit in a number of ways:

- * improvement to health
- * reduction in fly population
- * removal of faecal contamination to the environment
- * privacy
- * convenience (particularly for the sick and elderly)
- * step towards development of rural areas

The questions/concerns raised most commonly were in respect to:

- * possible smell
- * blockage of the waterseal
- * lifespan of the pit
- * future maintenance
- * water requirement for flushing, handwashing
- * method of cleaning
- * payment of \$20 contribution (see para 8. below)

The first 4 points above were clarified through further discussion, with the water and cleaning issues included in the questionnaire survey. The results of which were:

100% of households agreed to carry water to the toilet, although only 47% had a suitable receptacle in which to keep handwashing water.

One person did not know if anyone in her household would clean the toilet daily. Everyone else thought there would not be a problem.

63% of the women had never cleaned a toilet before but the majority thought they would do so with soap and water (60%) Others preferred to use husk or leaf and water (28%), water only (2%), stone and water (2%). 8% did not know. A frequently mentioned method of cleaning (not included in the questionnaire) was "sweeping and weeding"

In discussion, the water-seal type toilet was favoured by people since it is likely to reduce smell and flies more than the dry type. However stones and husks used for anal cleansing will cause it to block, so the advice given has been to fit the water-seal first and then remove it should constant blockages occur.

5. Personal Hygiene

a) Handwashing

Of the women questioned 95% washed their hands before eating
93% before cooking food
95% after defaecating
95% after touching the baby's faeces

However, when asked "always or just sometimes" the responses were:

Before eating: 31% always
69% sometimes

Before cooking food: 41% always
59% sometimes

After defaecating: 47% always
53% sometimes

After touching baby's faeces: 44% always
56% sometimes

Observation in the field indicated more like 75% of the women specifically washed their hands after defaecating (washing legs and feet as well) while only approximately 20% did so before cooking or eating. However, a lot of washing takes place in preparing food, when the hands are frequently in and out of water.

It was rare to observe a separate container of water for handwashing kept in kitchen or sleeping house. Where piped water exists, handwashing took place at the standpipe, otherwise the nearest stream was used.

The most commonly quoted reasons for not washing hands were:

"forgot"
"too busy"
"the children wanted their food quickly"

b) Knowledge and Beliefs

In discussion, washing hands has been frequently described as:.

"a good thing"
"stops sickness"
"something I/everyone should do"
"something I've been told to do"
"is healthy"

When asked to choose from a list of reasons for washing hands after defaecating:

75%	chose 'germs live in faeces'
11.5%	chose 'they are dirty'
10.5%	chose 'they smell'
2%	chose 'evil spirits live in faeces'
1%	didn't know

A similar question was asked in relation to washing hands before eating:

68.5%	chose 'germs live on hands'
27.5%	chose 'they are dirty'
3%	chose 'they smell'
1%	didn't know

c) Use of Soap

In any discussions on hygiene (formal, informal, group or one-to-one), the issue of soap invariably arose.

It is available for purchase in all communities - the problem being the ability to pay for it. The cost varies slightly from place to place, but is usually \$7.00 for laundry soap (10 pieces) and \$0.50-1.20 for a bar of bathing soap.
From observation:

i) An estimated 35% of women used soap for bathing themselves and babies, while small children used water only. Stones or mud are commonly used (with water) as a soap alternative by the women.

ii) For handwashing only, the number using soap appears less (approximately 20%). This seems to be partly due to whether soap is conveniently accessible at the time it is needed - a matter particularly relevant where handwashing takes place at a nearby stream rather than a standpipe.

iii) Fire-ash, used for cleaning cooking pots, is sometimes also used for handwashing.

In discussion, the women were keen to use soap if they had it and 2 groups specifically asked the WSO if she knew how to make soap from local materials.

In the questionnaire sample 44% of women possessed soap for handwashing on the day questioned.

6.Environmental

a)Livestock

25 of the 26 villages keep pigs and chickens. Although the pigs are frequently penned or tied, it is unusual NOT to see at least 1 or 2 pigs walking freely in and about any village. In 3 communities a large number were seen to do so. Chickens are rarely kept fenced and are regularly chased out of kitchen houses.

Cats and dogs (kept for rat-catching and hunting) invariably live in the sleeping house with their owners.

b)Refuse Disposal

The sea is used for refuse disposal by coastal communities; and a designated area of bush for those villages located inland. The resultant debris from brushing and weeding is burnt.

Keeping the environs of a house clean and rubbish-free is the responsibility of the individual householder. However brushing, weeding and sweeping of communal areas (by the women) form part of the communities' planned work programmes - decided upon by the Village Committee each week.

Standards of community housekeeping vary from village to village (and individual to individual) of course, but are generally good.c)Waste Water

Where standpipes exist, there is frequently a problem of waste water collecting around the concrete slab, despite soakways or run-off channels. This may be a fault in the original construction, but is certainly exacerbated by the heavy usage standpipes receive and poor maintenance of fittings.

The 'pooling' water seems to be replaced often enough to prevent mosquito breeding but does encourage flies.

At a rough estimate, 30% of all piped water supplies require some type of remedial maintenance work, leading to an unnecessary loss of clean water and possible contamination of the supply.

Waste water generated in the kitchen houses is thrown outside or into any nearby watercourse.

Ownership of water sources (as with land) dictates which community uses what. There is little likelihood, therefore, of waste water from one community contaminating that of another; but only a complete water survey of the area can provide truly accurate information.

7. Decision-making

a) Each community has its Chief(s), and Village Committee with Chairman, Secretary and Members who carry out the formal decision-making for the village as a whole. All Village Committees within the project area are made up of men only.

Although village meetings are open to all, the debate and discussion invariably takes place amongst the men with the women observing.

Decisions regarding each community as a whole are, therefore, taken almost exclusively by men.

Similarly, within tribal/family groups.

At 3 separate womens group meetings, women said that their opinion regarding the proposed toilets was irrelevant since;

i) the decision for building them rested solely with the men and,

ii) if the men wanted the toilets used by the whole family, they would be.

b) A Women's Band, Mothers Union, or Seventh Day Adventist Womens group exist in all villages with membership open to all married and single women. Their activities are dictated both by local circumstances and Church policies, but are primarily concerned with the well-being of the family.

Womens Clubs are also run in some villages with the main emphasis on income-generating projects.

c) Daily child-care and good health practices are the responsibility of the women - but not exclusively so.

Many men actively participate in child-rearing and concern themselves with the health status of their family. The degree to which they do so varies from household to household, of course. Where the head of household is working away from home (approximately 35% overall) his influence in these matters is least.

B. Commitment

a) As stated in 4d) above, many positive views were put forward at meetings regarding the proposed toilets. However, the willingness to pay \$20 per toilet is perhaps a more accurate indicator of commitment than words alone.

Organising collection of the contributions is the responsibility of each village committee. So far only one community has done this, with another 2 actively doing so (they hope to be ready shortly) All 3 villages are located away from an open coast-line.

12/6

A view often expressed is that the need for VIP toilets is greater in bush (inland) communities than those located on the coast where the sea regularly removes faeces.

The ability to pay the contribution varies greatly from household to household, but is considered by most of the men to be affordable.

Many individuals have expressed the desire to pay their own \$20 direct to the VSO.

In contrast, however, is an observed reluctance by many to invest time, energy and money into anything where there is no obvious immediate personal gain. Money is a very strong motivator for action and leads to 'income generating' community work receiving priority over 'health improving' work.

Additionally, is the widely-held belief that overseas aid is 'free' and does/should not require financial contribution from the community.

b) An opinion voiced on several occasions was that, until use of the toilets had been experienced, it was difficult to judge their suitability.

One community also suggested constructing 'model' (or demonstration) toilets.

As a consequence 4 were constructed at Mehulio, 2 at Sala Clinic with 2 more planned for Tawa'aro Clinic.

Work progressed rapidly at Mehulio and was carried out willingly and enthusiastically. This was not the case at Sala where the leaf toilet houses have yet to be constructed over the cement slabs.

9. Appropriate Media

Medium wave radios are owned by at least 1 or 2 households in each village. The ability to pay for batteries, and what free time is available, dictates how often the radio will be heard - usually lunchtime and evening.

Storytelling is an important part of South Malaitan culture. As a consequence, aural memories are excellent, with little emphasis on the written word as a method of communication.

That said, magazines and newspapers (when available) are popular with those who can read English.

Pictures, particularly of people or food, generate much interest, too.

Music and drama ('action') are very popular forms of entertainment and always enthusiastically received. As are video film shows.

Lecturing (pigin word is 'preaching') appears to be the expected manner of receiving information from 'experts', with little experience of participatory group work.

CONCLUSIONS

SANITATION FACILITIES

Despite the project aims requiring a major change in people's defaecation practices, the idea of improved sanitation appears to be very attractive to the majority, with recognition of its benefits, and a stated willingness by the women to undertake the additional cleaning and water-carrying responsibilities.

However, the indications are that sanitation is not necessarily the first priority for many communities:-

- a) Very few latrines have been constructed by individuals or communities in the past.
- b) Long delays are being experienced in the collection of community contributions.
- c) There is a strongly-held belief that disposing of faeces in the sea reduces the risk of infectious disease; and, by correlation, the need for improved sanitation is also reduced in coastal communities.
- d) The need for an improved water supply is often quoted as of greater importance to the community than sanitation, with income-generating projects having highest priority.

It would appear that 3 options could usefully be considered at this stage.

1. Accept contributions from individuals.

This would offer several advantages. Firstly, those individuals with a strong desire for their own toilet will not be kept waiting by those less enthusiastic, thereby creating a pool of 'satisfied customers'

Secondly, if proved successful, the completed toilets may act as encouragement to others.

Thirdly, one of the specific aims of the project will have been met.

The obvious disadvantage is the severe difficulty (and expense) of collecting contributions, transporting materials and carrying out construction work at a number of locations at unpredictable times. Particularly given the prevailing poor transport and communication facilities.

However it may be possible to proceed in this way by dividing the project area into small geographical areas; timetabling the construction work on an area-by area basis (with priority given to inland villages); collecting contributions within a defined time limit. For example:-

Area	Construction	Contributions
Hote Rorono Likimae	during Jan 1993	by 31st Dec 1992
Herenesi Iolo Heupotasi New Valley	during Feb 1993	by 31st Jan 1993
etc.	etc.	etc.

2. Waive the \$20 contribution

Construction work can then be timetabled to suit the availability of materials, transport and Health Workers, and planned to progress on a village-by-village basis.

There are 2 distinct disadvantages however.

One, is that project funds are insufficient to provide toilets for every household. There are approximately twice the number of households in the project area than originally estimated (and budgeted for). A selection criteria would therefore be necessary which could lead to a number of disappointed people.

Additionally, decision-making by the community would be further reduced, with the risk of individuals losing a sense of 'ownership' of their toilets.

3. 'Wait and See'

Communities have been informed that at least half its members must make their \$20 contribution to their Village Committee before construction work can start. It may be that individuals and/or Committees are not yet sufficiently motivated to organise this and will be more enthusiastic following implementation of the health education programme.

Delays are, of course, frustrating and cause problems for all involved in co-ordinating delivery and transport of materials and implementation of construction work. However, the 2 year intended life of the project is very short in the life of a community, particularly where major changes in custom and practice are involved. Given the constraints imposed by weather conditions, transport and communication difficulties, together with lack of sufficient field staff, a more realistic time-scale to consider is 5 years.

HEALTH EDUCATION

An appropriate health education programme must of course both relate to the needs of the community, and be meaningful, in order to be effective.

Therefore, focussing exclusively on sanitation and personal hygiene may be an error in South Malaitan culture where the production of food in its many forms is of central concern to the women.

Further, the health of their children is of major importance to both men and women and, of course, many external factors affect health apart from sanitation and personal hygiene.

A multi-disciplinary health education programme which includes nutrition, family planning, a clean environment and maternal health is likely to be more meaningful to the community, than sanitation and personal hygiene alone.

In any event, whatever the finally agreed content of the health education programmes, certain points must be noted regarding its implementation:-

- a) All villages must be visited to ensure that the programme reaches all members of the community - particularly mothers of young children who find travel difficult.
- b) Primary schools must be targeted separately.
- c) Visual and spoken material will be the most appropriate media.
- d) Translation/interpretation into local language will be necessary for the majority of women.

The primary difficulty of implementing any such programme is that (apart from 2 nutrition workers from Danchurchaid) the VSO has so far been the only health worker available to visit all villages. At least one full-time health educator would be needed to implement an effective health education programme, together with payments available for local part-time workers and additional to the existing post of project co-ordinator.

RECOMMENDATION

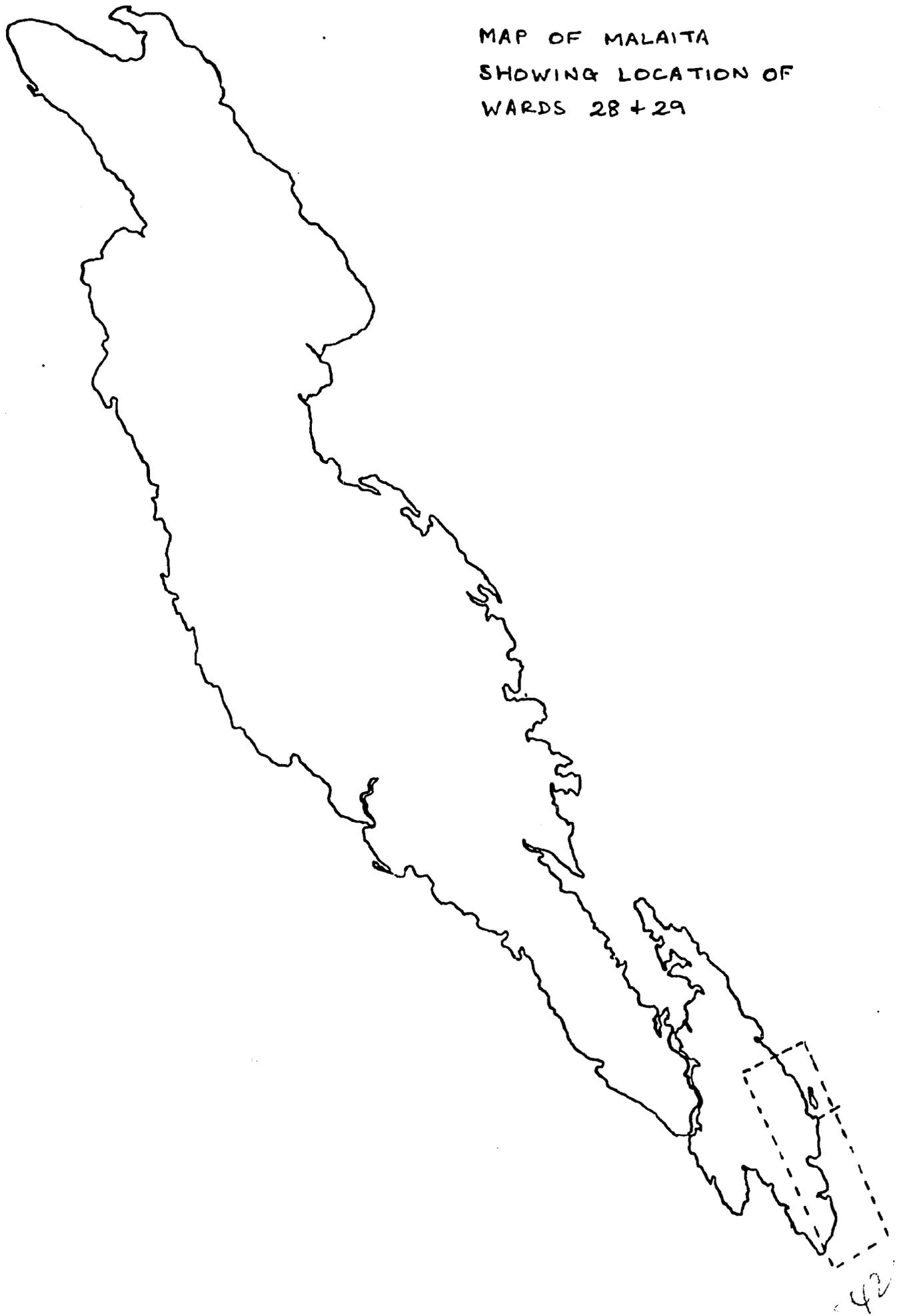
That this report be considered by appropriate members of South Pacific Commission, Solomon Islands Ministry of Health, Malaita Provincial Government and VSO Field Office so that the future implementation of the project can be clarified.

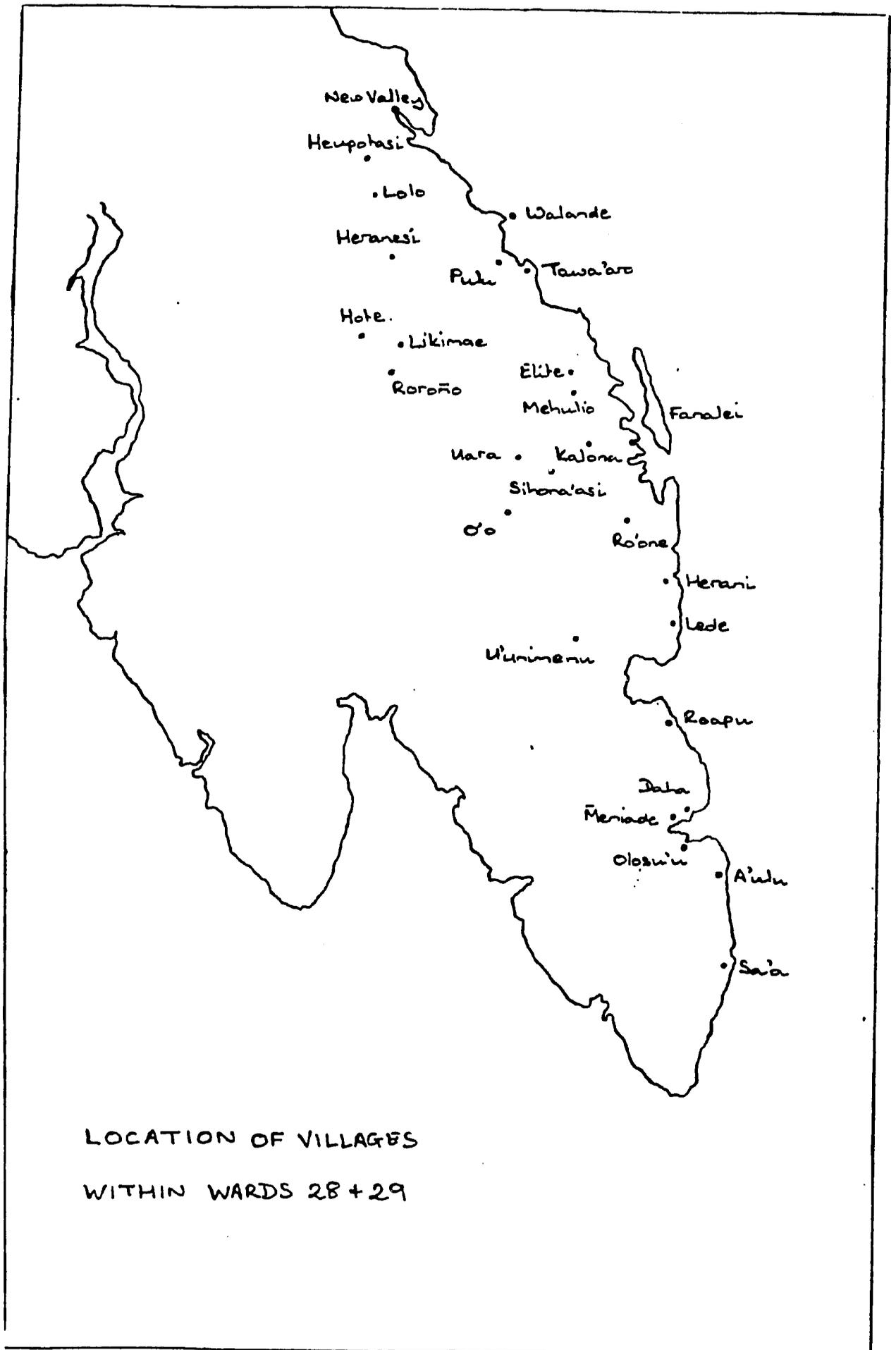
copies to:

Lennard Naemu (Permanent Secretary MH & MS)
Ezekiel Nakuro (Undersecretary MH & MS)
Honourable David Orta (Premier Malaita Province)
Jack Watelah (PS Malaita Province)
Robinson Fugui (Chief Health Inspector MH & MS)
Russell Abrams (Public Health Engineer MH & MS)
Alby Lovi (Chief Health Education Officer)
Colin Bisafa (Senior Health Inspector Malaita Province)
David Clarkson (EH Adviser SPC)
David Rosario (H.Education Specialist SPC)

Ref:VB/BASREF

MAP OF MALAITA
SHOWING LOCATION OF
WARDS 28 + 29





LOCATION OF VILLAGES
WITHIN WARDS 28 + 29

AR

WHERE HAVE ALL THE VHW's GONE ?:

**Attrition rates of Village Health Workers
in Solomon Islands**

Authors:

**Christopher Chevalier RN
Save the Children Australia**

**Amos Lapo RN
VHW Coordinator,
Ministry of Health and Medical Services**

**Jim O'Brien MFPHM
Director of Health
Guadalcanal Province**

**Thomas F. Wierzba MSc MPH
Foundation of the People of the South
Pacific**

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WHERE HAVE ALL THE VILLAGE HEALTH WORKERS GONE?:**Attrition rates of VHW's in Solomon Islands**

C.Chevalier, A. Lapo, J. O'Brien, & T.Wierzba

Abstract

Data on attrition and causes of drop out amongst village health workers can provide crucial information for selection, monitoring and evaluation of VHWs. A study in Solomon Islands reveals that dissatisfaction with payment of allowances, lack of regular payment, lack of community support, promotion of VHWs and upgrading of health posts were the most common causes of drop out. The most significant factors associated with risk of drop out were VHW's being too young when selected for training and irregular pay.

Introduction

The primary health care (PHC) approach to the organisation and delivery of health care is enshrined in the health policies of most developing countries (1). The development of village health worker (VHW) programmes has become the innovation most associated with the PHC approach. The concept of the VHW is simple and attractive but to date there is little conclusive evidence that they have had any effect on the health status of the communities that they serve (2). Evaluating the effectiveness of VHW's is fraught with methodological difficulties and this may explain why most studies which have been published reflect monitoring processes and seldom give indications of quality. Notwithstanding the difficulties of measuring effectiveness, one important process measure of the cost efficiency of VHW programmes is examine attrition rates and the reason why VHWS

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leave. This also provides valuable indicators for planning and detecting problems with a VHW programme. There is a surprising lack of published data on annual and overall attrition rates among VHW's (2).

VHW's have been an established feature of the Solomon Islands PHC system since 1978. At the time of the survey in 1991, Solomon Islands had 8 provinces with a rural population of 300,000. Each province is responsible for its own VHW programme and since 1978, 335 VHWs were trained. VHW's are part time health workers who provide a simple range of curative and preventive services, including treatment of fever, malaria, diarrhoea, cough and dressings, plus health education (although this is often minimal or non existent). VHW's are paid a small stipend (average US \$13.67 per month) but the method of payment, amount and source of funds varies between provinces.

We report here on aspects related to the attrition rate of VHWs. Apart from a review carried out by WHO (3) in 1982 which revealed a 10% drop out in the first three years of the programme, little was subsequently known about the drop out rates, conditions of service or supervision of these workers. This study is part of an overall review of the VHW programme conducted by Solomon Islands Ministry of Health and Medical Services PHC Unit and Save the Children Australia (4).

Method

From a list of 335 VHW's known to have worked, a questionnaire survey was conducted among a stratified sample of 64 currently working (50% of all working VHW's) and 66 non-working VHW's (32%)

4/6

of non-working VHW's). The sample frame was stratified to select equal numbers of working and non-working VHW's in each province. It was then stratified further by sex and year of training. Of the 140 VHW's selected, 10 (6 working, 4 non working) were not available for interview at the time of the survey. In order to validate information given by VHW's and to gather opinions of local villager 238 key observers (one male and female per village) were also interviewed. The questionnaires were designed to compare the differences between the working and non-working group in order to analyse the variables associated with drop out and length of service. Questions were also asked in relation to VHW training, characteristics at time of selection (i.e. selection criteria), supervision, conditions of work, regularity and source of payment.

Statistical analysis was performed on the data using EPI Info (5.1, USD Inc., 1990) and SAS (6.04, SAS Institute, 1991). Chi square tests were used to compare differences between groups. Selected population characteristics such as sex, age at training, salary and others were analysed. The relative risk of drop out was then calculated using a proportional hazards model (5), a form of survival analysis. Variables affecting drop out were analysed separately and then in a multivariate model which controls for confounding between variables.

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Results

Available records show that 128 (48%) of 266 health posts established since the beginning of the programme in 1978 were operational. Of 335 VHW's known to have, 128 (38%) are currently working and 207 (62%) have since stopped. Over the 13 years of the programme, the overall drop out rate was 62% with a mean annual attrition rate of 4.8%. Provincial attrition rates varied from 43 - 78%.

Fifty one VHWs (15.2%) have left to become nurse aides or their VHW post has been upgraded to a nurse aide post. Excluding promotion of VHW or VHW post, the attrition rate was 47%. Although 64% of VHWs trained have been male there is no significant difference in drop out rate between males and females (M=63.6% \bar{y} F=60.7%).

From the survey of 130 VHW's the average number of years worked by VHW's was found 4.9 years. Based on the number of years worked and the number of VHW's available for work after each year, Fig.1 displays their working life profile.

[Figure 1]

By 5 years of service, 49% of VHWs had dropped out and by 10 years 67%. As expected, the longer the period of follow up, the higher the cumulative attrition rate. However the annual rate of drop out was highest in the first 5 years of service averaging 10% per year but between 5 and 10 years, the drop out rate fell to 3.2% per year.

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Factors associated with drop out

[Table 1].

Table 1 shows the relative risk of drop out using analysis of single variables. After analysing the data in a multivariate model, it was found that the two significant characteristics related to an increased drop out were:

VHW's trained before 20 years old, relative risk of drop out 1.9 (95% C.I. 1.1 - 3.3, $p=0.027$) and irregularity of pay, relative risk of drop out 1.7 (95% C.I. 1.02 - 2.87, $p=0.4$).

The source of payment was a significant factor in whether VHW's were paid regularly or not. 94% of VHW's paid by provincial governments were paid regularly as opposed to 47% of VHW's paid by local councils ($p=0.005$). Overall, 58% of VHWS surveyed were paid regularly (working VHW's 67%, non-working VHW's 50%, $p=0.47$). VHW's who were paid regularly worked longer than VHW's who were paid irregularly (mean 5.7 \bar{y} 4.2 years, $p=0.024$).

Reasons given by VHWS for leaving

[Table 2]

Many VHW's gave multiple reasons for leaving but the most common categories were pay related (38%), lack of community support (32%), upgrading of VHW staff or post (26%), family reasons (23%),. Of the total of 66 non working VHW's surveyed, half left for reasons related to pay. Overall, 92% of all VHW's surveyed thought that their allowances were inadequate. On average, VHW's thought that an allowance of US \$27 per month, double the current amount, was desirable.

Discussion

Attrition rates and causes of drop out are important indicators for village health worker programmes. Published data on drop out rates amongst VHW's is scanty and does not usually indicate average length of service and causes of drop out. A review of published articles show a range of attrition rates between 3.2% to 77% (mean 35%), (2,6,7,8,9,10,11,12). Volunteer health workers are generally associated with higher drop out rates (2). Annual drop out rates are often difficult to ascertain (average 11.5% in published articles) because of imprecise dates.

Since 1978 the VHW programme in Solomon Islands has shown an overall attrition rate of 62% with an annual rate of 4.8%. The annual drop out rate was 10% in the first 5 years of service by VHW's, falling to 3.2% per annum after 5 years. This confirms a WHO review in 1982 following the first 3 years of the Solomon Islands programme which found a drop out rate of 10.3% with a significantly higher attrition rate in VHW's under 25 years of age.

The survey of 130 working and non-working VHW's provided data on key variables associated with VHW attrition.

a) Inadequate, irregular and non payment of VHW's

A major issue in many programmes is whether VHW's should be paid or not. This depends on the historical, cultural and economic context of each VHW programme. Payment of allowances has been an accepted feature of the Solomon Islands programme since its inception. The vast majority of VHW's reported dissatisfaction with the level of allowances. It proved to be impossible to

establish any relationship between the level of allowances paid to VHW's and attrition rates due to rising and falling levels over time and between provinces. However because payment is an agreed part of the programme, payment has to be regular or it becomes a cause of VHW dissatisfaction and drop out. Local area councils have a weak administrative and financial base and were responsible for payment of VHW allowances in five out of the provinces and this was significantly associated with unreliable payments and a higher risk of drop out.

b) Selection criteria for VHW's

Age of VHW's at start of training proved to be the single most important factor associated with drop out. VHW's who were less than 20 years old at the start of training had the highest risk of drop out and worked on average 1.2 fewer years. Unmarried status was also associated with an increased risk of drop out but in the multivariate analysis this became non-significant in the presence of age. Younger candidates are less likely to be married and have children and when they do so after training, they are more likely to move away from the village, seek other paid employment, or give up work to look after their family.

Communities in Solomon Islands are often keen to see their younger, better educated village youth selected as VHW's. Programme officers find that school leavers with 3 years or more of secondary school are easier to train. The position of VHW is often seen as a career step towards full time employment, particularly in the health field. Younger candidates are the most likely to have ambitions to become nurses. This is one

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direct consequence of having a system with paid VHWS who are perceived as government health extension workers both by the authorities and communities. The concept of a community health worker is difficult to maintain in these circumstances.

c) Promotion of VHWS and upgrading of VHW posts

Communities also often hope to see the VHW post upgraded to a full time clinic. Retraining or promotion of VHW's to become full time nurse aides (after one year of training) has been a frequent cause of drop out which might be termed "drop up". This has been accepted in Solomon Islands as a natural and acceptable development for the person, community and health service which should improve the quality of health care. It is thought that restricting this avenue of promotion may cause more drop out through frustration or lack of career prospects.

Conclusions

Establishing a data base of all VHW's who have been trained and those who are still working is relatively simple. Monitoring of attrition rates of VHW's can be done by accurate keeping and updating of VHW database records and by retrospective reviews. Information on causes of drop out are important additional data which can be used for planning manpower requirements and to develop the most appropriate criteria for selection. These criteria need to be clearly articulated and understood by communities and programme organisers. Selection of young single candidates should be tempered by the expectation of higher drop out rates. If VHWS are paid rigorous efforts must be made to ensure that they are paid satisfactory allowances regularly.

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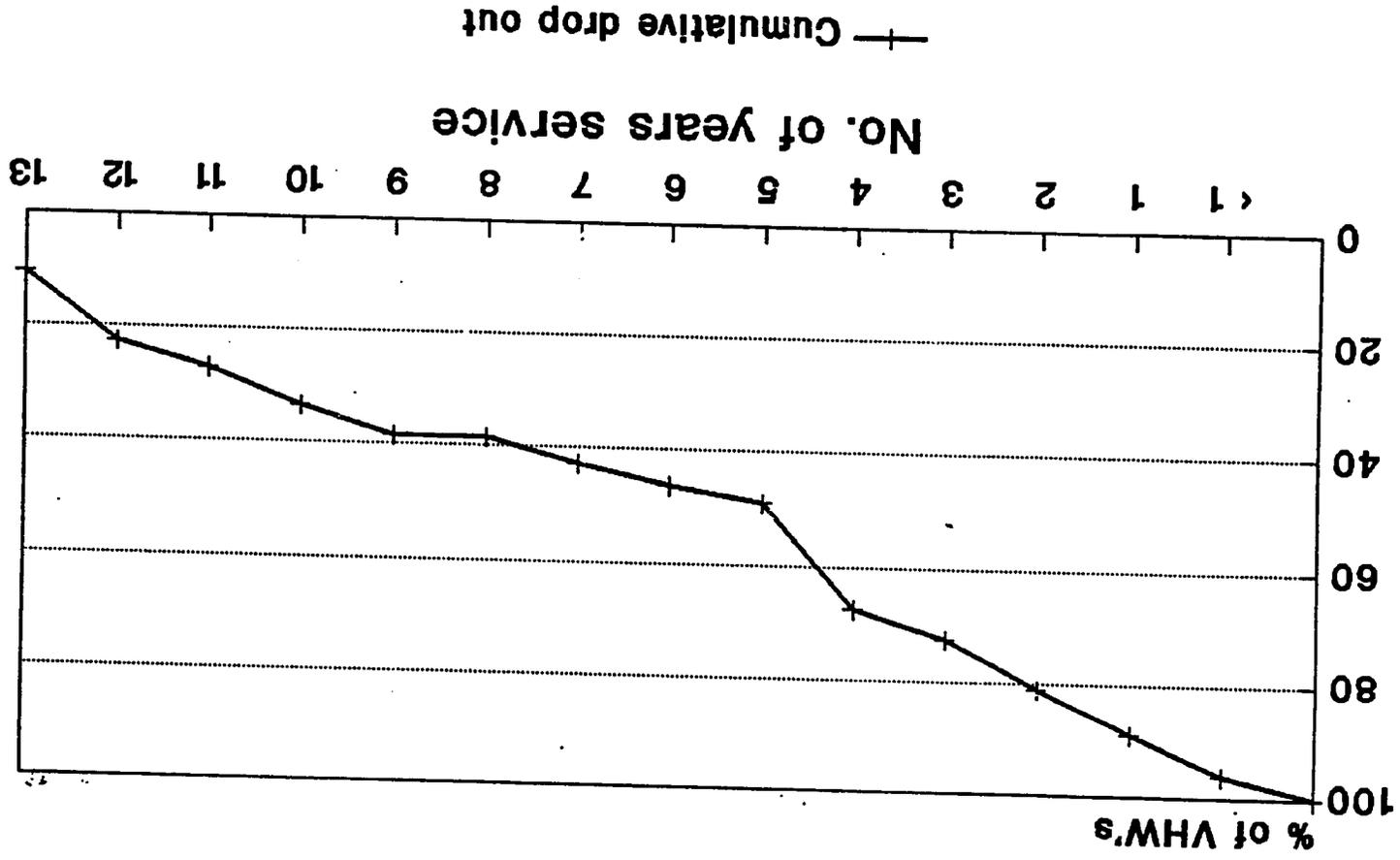
**Table 1. Risk of drop out for selected variables (n=130)
Univariate Results**

Variable	Relative Risk	P-value
Female y Male	1.2 (.70-1.9)	.58
Not chosen by community y Chosen by community	1.3 (.80-2.1)	.28
Unrelated y Related to Chief	1.5 (.87-2.6)	.14
Left school after form 3 sec.school y Left school before form 3 sec.school	1.7 (.93-1.9)	.09
Less than 2 children y 2 or more	1.6 (.97-2.6)	.07
Unmarried y Married	1.7 (1.0-2.9)	.05
Paid Irregularly y Paid regularly	1.7 (1.0-2.7)	.04
Age at training <20 y >20 years old	2.1 (1.3-3.5)	.003

Table 2. Reasons why VHWs leave (n=66)

Reason	No	% VHW's	
Not enough salary/Better pay elsewhere	25 (38%)		Pay Related 50%
Irregular pay	8 (12%)		
Community dissatisfied/uncooperative	13 (20%)		Lack of community Support 32%
VHW post nonexistent/not maintained	8 (12%)		
Upgraded to Nurse Aide/RN/Other	12 (18%)		Drop Up 26%
Health post upgraded	5 (8%)		
Family reasons (married, children)	15 (23%)		
Retired	4 (6%)		
Other	3 (5%)		

Fig 1. Working life profile of VHWS



No. of years service

—+ Cumulative drop out

**MATERIALS CREATED
FOR ADDRESSING VITAMIN A DEFICIENCY
AT WORLD FOOD DAY**

51



EAT MORE LOCAL

33

FRUITS AND VEGETABLES

Theme : **GROWING & EATING
MORE PROTECTIVE
FOODS**

Date : 15 Oct 1992

Time : 9:00 am

Venue : Opposite market .

IT IS YOUR

STEP

TO

GOOD HEALTH

This is your invitation to World Food Day



ACTIVITIES FOR WORLD FOOD DAY

Day One: 15th October 1992

OPENING PROGRAMME

March/Parade from Town Ground arrives at 8.00am

1. **NATIONAL ANTHEM**

2. **PRAYER:** Rev. Marietta Tahu (United Church)

3. **WELCOME:** Mrs Serri Lowe (Chairperson WFD committee)

4. **REMARKS:** Abraham Baeanisla (SIDT Director)

5. **KFYNOTE ADDRESS:** Mr Leonard Maeru'u (PS for MHMS)

6. **PERFORMANCE:** Students - (St. Josephs Tenaru)

7. **OFFICIALS TO VISIT THE STALLS**

8. **REFRESHMENTS**

MISTRESS OF CEREMONY: Pauline Boseto
(Nutritionist MHMS/ Secretary WFD committee)

8.00am **March/Parade from Town Ground to Main Market
Led by St. Martins**

9.00am **Opening Programme
Performance by St. Josephs**

10.30am **Introduction of Stall Activities**

10.45am **Brief Interview with stall organisers**

11.00am **Display and Judging of the Womens Printing competition**

12.00pm **Health Talk - Florence Ghaoko, Village Education Program**

1.00pm **Displays and activities continue**

3.00pm **Closing of displays and activities for Day One**

7.00pm **PUBLIC LECTURE
"Natural and Home Grown Diets are for Life's Nourishment:
A Plea for Home Grown Foods."
Presented by: Mr Joini Tutua
Venue: USP Centre**

THANKING YOU ALL FOR YOUR PARTICIPATION

DO COME BACK AGAIN TOMORROW FOR DAY TWO

CLOSING PROGRAMME

Closing of the World Food Day starts at 12.00pm

1. **PRESENTATION OF PRIZES:** Ms Ruth Liloqula
(Director of Dodo Creek Research Centre)
2. **WORD OF THANKS:** Atterbun Taheri (Senior Health Educator, HMA)
3. **CLOSING:** David Kausimae (Chairman, Honiara Municipal Authority)



ACTIVITIES FOR WORLD FOOD DAY

Day Two: 6th October 1992

- 8.00am **Outline of Activities - Atterbun Taheri (Senior Health Educator, HMA)**
- 8.30am **Health Talk - Pauline Boseto (Nutritionist, MHMS)
- Daniella Zae (Womens Training Officer, MAL)**
- 9.00am **Demonstration of Local Fruit Juices - Doris Bava
(Womens Assistant Officer, HMA)**
- 9.30am **Cooking Demonstration 1 - Village Education Programme**
- 10.00am **Cooking Demonstration 2 - SupSup garden, HMA**
- 10.30am **Displays and Activities continue**
- 12.00pm **Presentation of Prizes**
- 12.30pm **Word of Thanks - Atterbun Taheri (Senior Health Educator, HMA)**
- 1.00pm **Closing - David Kausimae (Chairman, HMA)**
- 2.00pm **Closing of all Displays/Activities for World Food Day**

THE WORLD FOOD DAY COMMITTEE WISHES TO THANK YOU ALL FOR YOUR PARTICIPATION.

WE DO HOPE WORLD FOOD DAY GAVE YOU SOME NEW INSIGHT AND MEANING.

VITAMIN A AND YOU



*Vitamin A helps protect against
blindness, diarrhoea and chest
infection.*

INFORMATION FOR ALL PARENTS

FACTS ABOUT VITAMIN A

Lack of Vitamin A is the leading cause of blindness in children.

Vitamin A protects children against diarrhoea and chest infection.

Vitamin A comes from breastmilk, Dark Green leaves, and orange or yellow fruits such as pawpaw, mango and pumpkin. Foods such as milk, eggs, fish and liver also have Vitamin A.

When a child has diarrhoea or measles, Vitamin A is lost from the body. It must be replaced by breastfeeding more often, and by feeding the child more fruit and vegetables.

Blindness can be prevented by eating foods rich in Vitamin A even when night blindness or white spot are already present.



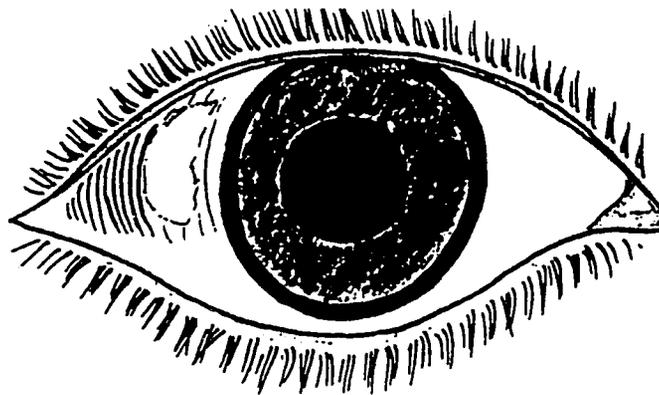
VITAMIN A IS NEEDED FOR HEALTHY EYES

The early sign of lack of Vitamin A is night blindness. A person with night blindness can not see well when it is dark.

If this person eats Vitamin A rich foods his/her eyes will be normal again.

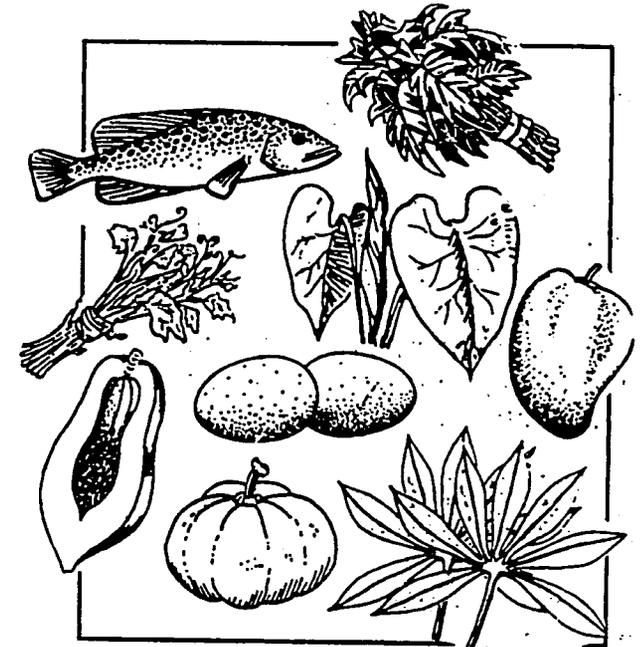
If this person does not have enough of foods rich in Vitamin A than his/her eyes will get worse. The surface of the eye will become dry and rough, white spots will form and eventually ulcers will form on the eyes.

This then causes permanent damage and blindness.



This is a picture of an eye with white spot. White spot is sometimes hard to see. It grows on the white part of the eye. It is raised and looks foamy.

WHAT FOODS ARE RICH IN VITAMIN A



Adding coconut milk to foods helps the body use the Vitamin A in foods.

WHO NEEDS MORE VITAMIN A FOODS

.Everyone needs vitamin A for healthy eyes, skin and lining of the lungs and gut and for normal growth and bone development.

.Pregnant and breastfeeding mothers need more Vitamin A rich foods.

When a woman is pregnant she passes Vitamin A to her baby. After birth the baby gets Vitamin A from the mothers milk.

.When a child first starts to eat food he/she needs foods rich in Vitamin A.

PRIME MESSAGES

A pregnant woman needs to eat more Dark Green Leaves, orange and yellow fruits like mango, pawpaw and pumpkin, fish, eggs and liver.

Breastfeeding should continue well into the second year of a child's life and for longer if possible.

Choose a variety of foods for infants and young children. All children need foods rich in Vitamin A everyday.

It is important to continue breastfeeding when your child is sick.

After diarrhoea, sickness or measles a child needs to be given more foods rich in Vitamin A.

Good eyesight can be restored in a child with night blindness or white spot if given foods rich in Vitamin A.

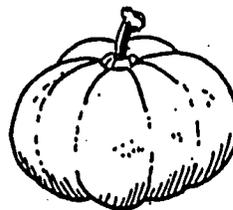


RECIPES

PUMPKIN SOUP

YOU WILL NEED: 1/2 a Small Pumpkin
3 cups coconut milk
1 small spoon oil
onions or shallot
1 spoon ginger
pinch of salt

METHOD: Heat oil in a pot. Fry crushed ginger and chopped shallots in oil. Chop the pumpkin into small pieces and stir in with onion and ginger. Add coconut milk and bring to the boil stirring all the time. Turn heat down and beat the pumpkin until smooth. Simmer until soup is thick. Add salt to taste. Curry, cinnamon or coriander can be added for extra flavour.



LAP LAP

YOU WILL NEED: 4 cups grated cassava
1 cup thick coconut cream
1/2 cup finely chopped shallots
1 cup chopped nuts
pinch of salt
1 cup finely cut cabbage

METHOD: Collect enough banana leaves and soften them over fire. Mix all ingredients well, parcel in banana leaves and bake or steam in a pot.



Produced by -
The Nutrition Unit, Ministry of Health & Medical Services
P.O. Box 349, Honiara; Solomon Islands.
Funded by -
USAID

**Meals can be delicious and
nutritious at the same time.**

Find

4 Recipes

in this folder

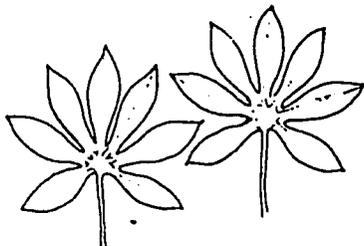


WORLD FOOD DAY 1992

CASSAVA LEAVES

What to use:

Cassava leaves (only young leaves)
shallots
tomatoes
1 cooked fish
1 coconut



How to do:

- Wash cassava leaves and cut them finely.
- Put cassava leaves in a pot, cover with water and boil for 5-10 minutes.
- Scrape coconut, add little water and squeeze.
- Clean and cut shallots and tomatoes.
- Throw the water away and add coconut cream to the cassava leaves.
- Add cooked fish, shallots, tomatoes and heat.
- Serve with cassava.

Cassava leaves -and especially the dark green parts of the cabbage- are rich in iron. Iron is needed to keep the blood strong, and therefore especially important for persons who have had malaria or hookworms, for pregnant women and women after child birth

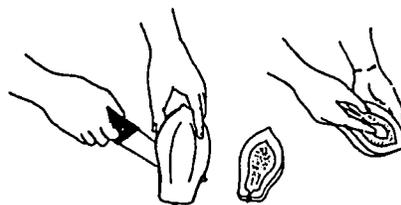
PAWPAP SPAGHETTI

What to use:

2 medium pawpaw
meat
1 bundle shallots
10 tomatoes
2 coconuts

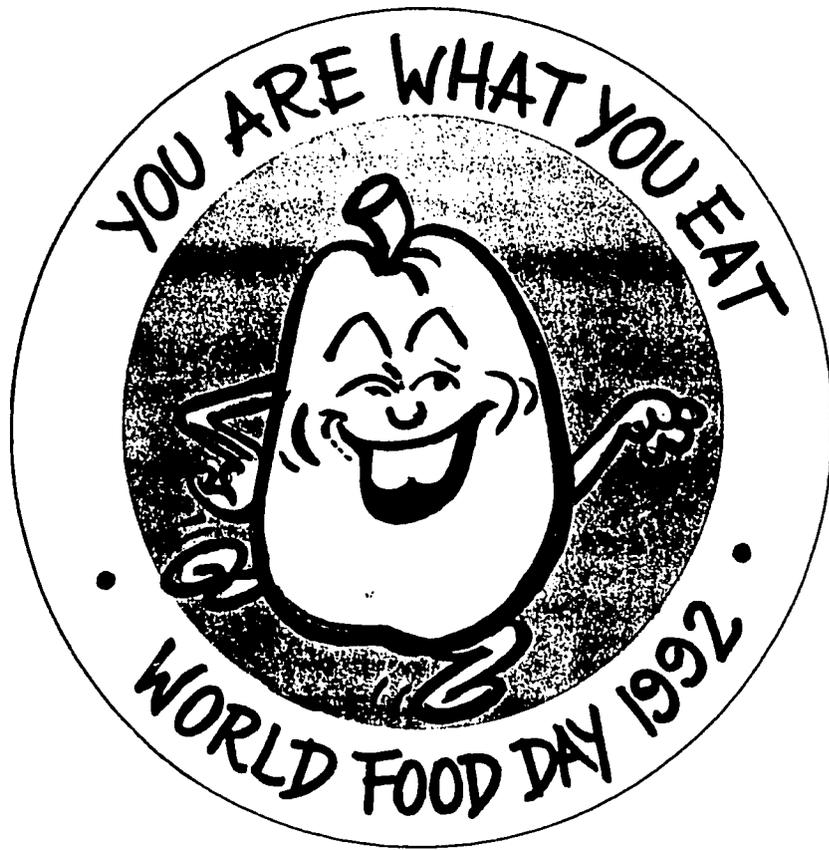
How to do:

- Cut the pawpaw into half, remove the seeds and scrape the pawpaw with a spoon.



- Grate coconuts, add water and squeeze.
- Boil the coconut cream with pawpaw.
- When boiling add meat and cook until soft.
- Add tomatoes and shallots and heat.
- Serve with kumara.

Pawpaw is rich in vitamin A.
This meal is good for everybody in the family, also good as a first food for babies.

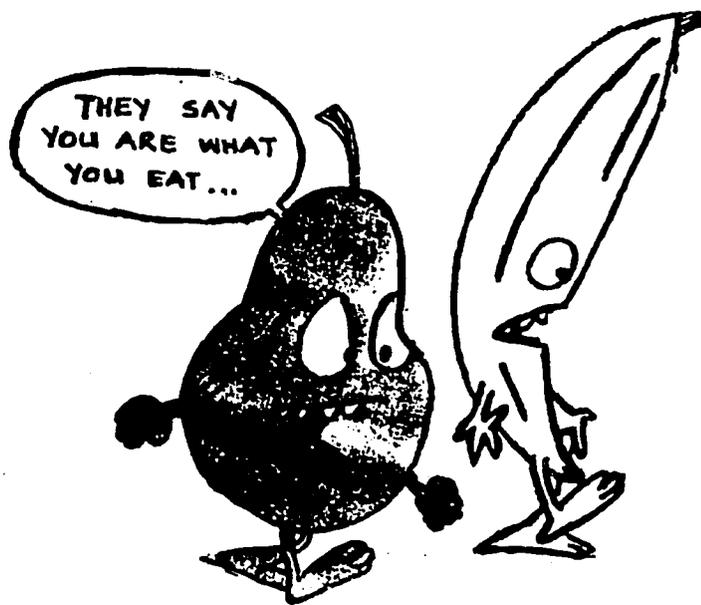


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Did You Know that:

"Lack of Vitamin A is a Leading Cause of Blindness Amongst Children"

"Vitamin A Helps to Protect Children Against Diarrhoea and Chest Infections"



"SO WHAT THEN IS VITAMIN A ?"

**Turn the Page, Do Read on
and
Find Out.**

WHAT IS VITAMIN A

Vitamin A is a vitamin that is found in orange and yellow fruits like pawpaws, mangoes, pumpkins and yellow kumara. Vitamin A is also found in dark green leaves like slippery cabbage, taro and kumara leaves.

It is also found in foods made from animal fat like milk and butter, and in liver and oily fish.

Vitamin A in animal foods is called **retinol**, and vitamin A in fruits and vegetables is called **carotene**.

"What does vitamin A do for the body?"

There are many things that vitamin A does for the body. It helps to fight infection by keeping the inner linings of the body parts like the nose and the throat moist (watery) and healthy. It is very important for the skin. All surfaces of the skin, both inside and out, are healthy and smooth with the help of vitamin A. The most important thing that vitamin A does is to keep the eyes healthy, and hence see better.

"Eat More fruits and Vegetables for Good Healthy Eyes"

"Is lack of Vitamin A a Health Problem in the Country?"

A study was carried out to find out if lack of vitamin A is a health problem in the country. The study was carried out in 1991 on Guadalcanal, Western and Malaita Provinces.

The results from the study showed that children are not eating enough of foods that are rich in vitamin A, and that, there are some children who show signs for not having enough of vitamin A rich foods. Lack of vitamin A is a health problem.

"Why is lack of vitamin A a health problem for children in the country?"

If children do not have enough of foods that are rich in vitamin A, then they are likely to suffer from a disease called night blindness. Night blindness is when a person is unable to see when it is dark. It is first noticed when a child bumps into things at night.

"So Eat More Fruits and Vegetables for Good Healthy Eyes"

"How do I Know that I have Enough Vitamin A?"

There are several things you could do to make sure that you have enough vitamin A. These are:

- that your mama prepares you a good healthy breakfast meal that contains foods rich in vitamin A
- that you take to school a good healthy packed lunch that is rich in vitamin A
- that your mama prepares the family good healthy meals for dinner
- that you have at least a piece of fruit in between the main meals where-ever you may be.



TRY OUT A RECIPE

"Pawpaw Drink"

You will need:

*1 ripe pawpaw
4 - 5 bush lime
2 - 3 Tbspn sugar
fresh water*

What you will do:

*Peel and seed pawpaw
Squeeze lime juice
Blend lemon juice and pawpaw
until mashy
Add water
Add sugar as needed*

"Syruped Pawpaw"

You will need:

*Pawpaw (not too soft)
2 - 3 Tbspn Sugar
Water*

What you will do:

*Cut fruit into even slices
Boil water and sugar until it
thickens
Put fruit slices into syrup and boil
for about 15 minutes.
Take out Pawpaw slices, cover and
leave to dry in hot sun.*

***"Eat More Fruits and Vegetables For
Good Healthy Eyes"***

"Eat More Fruits And Vegetables"

Your

Step

To

Good

Health

FURTHER INFORMATION

maybe obtained from the Nutrition Unit,
Ministry of Health and Medical Services, P.O
Box 349, HONIARA