Republic of Palau
Family Health Unit/MCH Title V Program
2010 Needs Assessment

Vision: Healthy Palau in Healthful Environment

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2010 Palau MCH/Title V Program Needs Assessment Summary

Introduction

The 2010 MCH/Family Health Unit Program Needs Assessment began at the end of 2009. A model presentation called "Community Engagement" was developed, reviewed and approved by the collaborative members and presented to the various communities in the Republic of Palau. This presentation encompasses life cycle issues that are present in Palau (infants, children, children with special health care needs, pregnant women, men and women of reproductive age). Along with this presentation, other short presentation on bullying focusing on different audience that teaches bullying prevention. An evaluation component of this presentation has also enabled us to improve its content so that it is more relevant to Palau communities. Notifications to communities are through the offices of governors, CHC Councils, PTA's, schools and through public radios. Traditional means of community meetings notification systems are not used. The reasons being, this system is quite stratified and usually the "have-nots" become the group whose opinions are not voiced.

Public Input

The public input process for the Palau MCH/Family Health Unit is a continuous process which allows us to analyze data, present them to the various communities of Palau and based on their input, we organize services to meet the community needs. From the community presentations and discussions, comments and recommendations relating to services improvements are collected, analyzed and strategies are developed to amend changes to reflect community needs. One of the main focus that has been identified from various communities of Palau relate to parenting skills, issues, and practices. This engagement with our various communities has provided improved our ability to capture, analyze and report health status information back to the public has greatly improved our relationship with various communities and stakeholders. The format of the "Community Engagement" is similarly used in all communities that are visited. Because of the program's ability that has been built in the past, we are now able to feature "community-specific" information in our presentation.

Several forums were used in meeting the “public input” requirement for the MCH Title V Program. These forums are the Youth Conference which was held in March 2010. The Youth Conference also generated list of priorities that was communicated with FHU/MCH Title V Program. The Reproductive Health Workshop in May 2010 is also where assessment of services and SWOT Analysis was generated. From this SWOT, priorities and strategies were identified. In these two forums, decisions were made through discussion and consensual decision making process. For our population, we have found that this decision making process, although at times more lengthy, is the best way that stakeholders can continue to commit and strengthen working relationships.

In mid-2009, FHU, through funding from ECCS also conducted a national assessment on early literacy and learning. Assessment of the data indicated that there may be regulatory and legislative strategies that FHU/MCH Title V Program will need to spear-head to address safety of children in the various communities of the urban area of Koror. The Pacific Islands Health Officers Association (PIHOA) through their declaration of a state of emergency on Obesity for all of the U.S. Associated Pacific Islands also puts FHU/MCH Title V Program on notice to assure that Obesity related activities remain on our agenda for the next 5 years. At the end of 2009, FHU/MCH Title V Program, through the End-of-the-Year Meeting and Workshop also identified areas of needs that were in line with input from the larger community. However, their identified strategies were mainly in upgrading systems, skills and knowledge of staff so they can be more effective in the delivery of services and effective in improving the health status of Palau people.

These inputs from the communities largely drive our National and State Performance Measures including the design of strategies and activities to be undertaken in the up-coming years. We decided to use this method of capturing public input rather than a "public hearing" format, as in no one single person shows up, even though it is announced through newspapers and radio and television.

General Population

Palau is the westernmost island within the Micronesian Islands chain with the closest Southeast Asian neighbor nation being the Philippines (Figure 1).It is located about 5 degrees North latitude and 133 degrees East longitude. Palau consists of over 200 islands, of which only 9 are inhabited. Most of the islands are of volcanic origin, but others are of raised limestone. The average temperature is about 82

degrees Fahrenheit with an average monthly rainfall of 12.5 inches. The wettest months are from July to October with an average humidity of 76.5. Palau was first occupied by Spain, England, and then Germany. After the First World War, Germany sold the islands to Japan where it remained an entity under Japanese rule until the end of the Second World War. After the war, it became U.S. Trust Territory under the United Nations Trusteeship mandate. On October 1995, Republic of Palau became a Freely Associated States under the Compact of Free Association with the United States of America. Under this agreement, Palau is independent and free to handle all its domestic and international affairs, except in the area of national defense Palau is and will continue to be a protectorate of the United States.

Recent archeological findings in the north island of Babeldaob have established that the Republic of Palau was inhabited between 5,000 and 2,500 years ago by a mixture of people from the various Southeast Asian and Melanesian countries. Even prior to western contacts, people of western Micronesia, including Palau, had contacts with people from these nations to the west and south of Palau. With these contacts, the cultural and traditional exchange began to influence the formation of a unique culture and tradition that makes Palau unique. However, with recent western influence, changes that has had great historical impact on behaviors and practices of ethnic Palauans are much more pronounced than earlier interactions.

Today Koror is the center of the government for the Republic of Palau, however in 3-5 years, the government center will relocate to the Babeldaob state of Melekeok. The “Palau Master Economic Development Plan” targets “tourism” as the foremost viable economic means for the islands and its people. Various infrastructure development in place in Koror has allowed it to sustain a limited residential and tourist population. These infrastructure include paved roads, several major hotels, eateries, piped waterlines, and boating businesses geared toward serving the tourist population.

Figure 1 - Map of Oceania

The general population of Palau is mainly of Christian faith with majority being Catholic, followed by Protestant and Seventh Day Adventists. Approximately 10 % of the population is made up of people who practices the Palauan religion, Modekngei.

The maternal and child health population of the Republic of Palau, based on the recently completed National Census is 10,026 which is approximately 52% of the total population. Another portion of the population that needs consideration is the women over age 45 years. Although this population is outside the definition of "Maternal and Child Health Clients" as established by MCH Bureau and HRSA, it

remains a population that utilizes services that are deemed part of the "MCH Program" within the established Health System of the Republic of Palau and therefore, takes its toll on staffing, supplies, space and other resources that supports a comprehensive Maternal and Child Health Program.

Environmental & Sanitation Practices:

Environmental and Sanitation services are provided by the National and State Government. The Environmental Quality Protection Board (EQPB) reviews/approve/disapprove licenses for building, earthmoving, dredging and other function that generally interferes with environmental natural condition. This Board is semi-autonomous and its members are appointed by the President of the Republic of Palau and confirmed by the Senate (OEK). Another important function of this board is to assure that in major development projects, proper EIS are completed and public hearing conducted to assure that environmental impact and citizens health are protected under the law. Sanitation services are provided by National and State Governments. These services include household sanitation inspection, health education, eradication programs for rodents and mosquitoes, and ocean going vessels inspection.

Dengue and Leptospyrosis are endemic in Palau. Outbreaks of these two very serious and life threatening diseases occur occasionally in Palau. There has been three major epidemic of dengue, in 1988, 1995 and the recent one we continue to struggle with its containment this year, 2000. Suspected mortality from Dengue in 2000 is two (2) out of eleven (11) confirmed cases. One was a 9 years old child and the other was an adult male, Indonesian, who was a crew of a fishing vessel apprehended for illegal fishing at Helen's Reef. During the same year, one adult male farm worker died of Leptospirosis out of 22 confirmed cases.

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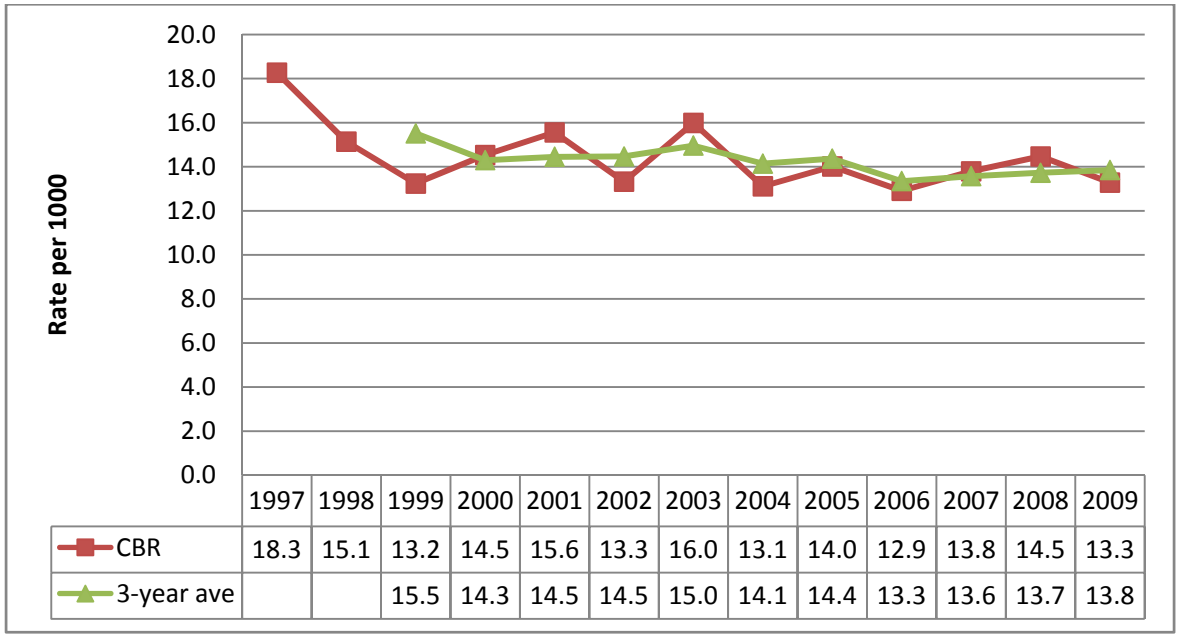
Palau's projected population in 2007 and 2008 are 20,227 and 20,389 respectively. About 70.5% of the population resides in Koror. The rest of the people are thinly distributed to the other states.

There are more males at 116 to every 100 females. Half of the population is in the productive years (15-45). The proportion of 0-9 years old is lower compared with the productive age groups. This reflects a stationary population growth. Palau is expected to double its population in 87 years or in 2093. Children through the age of 19 in Palau represented 31.4% of the total population, adults aged 20-64 accounted for 63% and persons who are 65 years and over represented 6% of the total population.

Another important reproductive health indicator is the age specific fertility rate and the total fertility rate. The **total fertility rate** in 2008 was 2.1 or a Palauan woman in reproductive age would have 2.1 children at average in her lifetime[1]. Reviewing the eight-year trend, the line is almost stagnant and shows that there are no significant changes in the total fertility rate since 2000 (Figure 3). Worldwide, the total fertility rate stands at 2.7 per woman[i]. Whereas, total fertility rate in developing and industrialized countries is 3 and 1.6 births per woman, respectively. The total fertility rate of 2.1 in Palau is similar to the 2.1 birth for population replacement.

In 2009, the Crude Birth Rate (CBR) of Palau is 13.3 per 1000 population. CBR of 18.2 in 1997 has decreased in the years thereafter. CBR has been decreasing by approximately 1.05%. On the other hand, the Crude Death Rate (CDR) in 2009 is 8.4 per 1000 population. This rate has been increasing for the past three years with CDR of 8.4 in 2008; 7.5 in 2007 and 6.8 in 2006 (Figure 2).



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
CBR	18.3	15.1	13.2	14.5	15.6	13.3	16.0	13.1	14.0	12.9	13.8	14.5	13.3
3-year ave			15.5	14.3	14.5	14.5	15.0	14.1	14.4	13.3	13.6	13.7	13.8

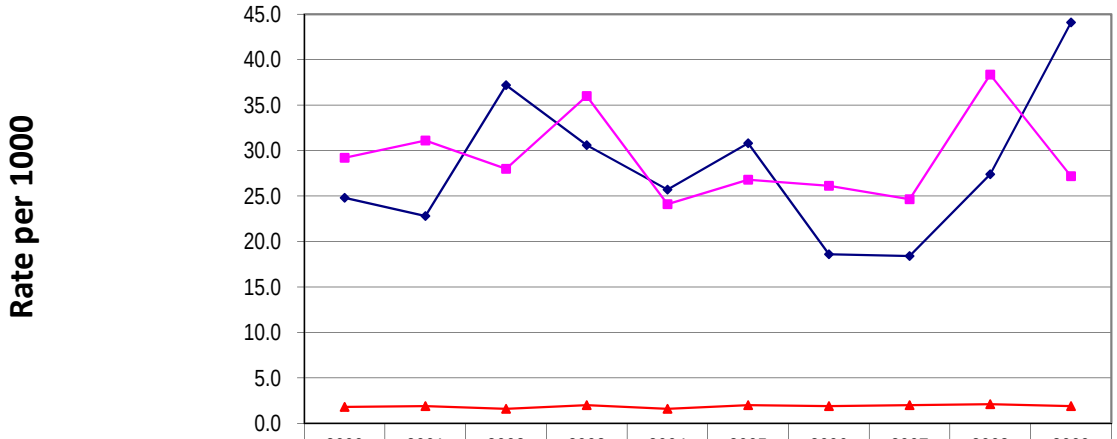
Figure 2: Annual CBR 1999-2009, Republic of Palau

The Infant Mortality Rate in 2009 is 22 (6/273) for every 1000 live births. The five-year average since 1995 of 18.9 has increased by 2.6 in 1996 (21.5), gradually drops to 10.4 in 2001 and in 2002, the average increased steadily to 15.6 in 2005 and slightly drops to 13.0 in 2009. Computed percent change of the IMR shows that Infant Mortality Rate has been decreasing by approximately 1.8%. The causes of

[1] There are basic assumptions in this conclusion: 1) that the woman would reach the age of 50; and 2) that the woman experienced throughout her reproductive life exactly the ASFRs observed for the year in question.

infant mortalities continue to be prematurity due to pre-term delivery and congenital anomaly. In 2009, aspiration came up as a cause for fetal and infant mortality.The 5-year average gives a better picture of the IMR since there are few live births in Palau to come up with a more stable computation of the IMR.

While the TFRs are not as powerful in gauging the direct impact or success of family planning programs, there is strong empirical evidence that high contraceptive prevalence is associated with a low TFR and that increasing contraceptive prevalence is related to lowering the TFR. However, it is clear that the Family Planning programs can reduce total fertility by reducing unintended as opposed to intended fertility.



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
15-19	24.8	22.8	37.2	30.6	25.7	30.8	18.6	18.4	27.4	44.1
35-49	29.2	31.1	28.0	36.0	24.1	26.8	26.1	24.7	38.4	27.2
Total Fertility Rate	1.8	1.9	1.6	2.0	1.6	2.0	1.9	2.0	2.1	1.9

Figure 3: Comparison of the Age-Specific Fertility Rate of the High Risk Groups and the Total Fertility Rate, 2000-2009 Deliveries, Republic of Palau

With regard the **age-specific fertility rates** of the high risk groups, there is an increase among the 15-19 years old from 18.4 to 27.4 per 1000 women in 2007 and 2008, respectively (Figure 3). This age-specific fertility rate of 27.4 is higher compared with the same rate in the industrialized countries at 24[i].

In 2008, the ASFR for the 35-49 years old is 38.36. From 2000 to 2003, there is observable increase in ASFR in this age group. However, in 2004 a rapid decrease is observed and sustained up in 2008.

- **Annual Growth Rate and Population Doubling Time**

Taking into consideration the important factors of population growth (i.e., death, migration and birth), the Annual Growth Rate of Palau is 0.8%. This Annual Growth Rate was computed from the past two censuses in 2000 and 2005 using exponential method[i]. It is lower than the 2001 AGR of the United States (1.0), Fiji (2.7) and Marshall Islands (1.5)[ii]. With this Annual Growth Rate, Palau is expected to double its population in 86 years or in 2092.

- **Adolescent Contraceptive Prevalence (15-19 years old):**

Pregnancy during adolescent years tends to be unintended and premature. It is also associated with greater risks of dying in pregnancy and complications during delivery. Consequences are also dire because babies born to teenagers run a higher risk of low birth weight, serious long term disability. Having a child during teenage years also limits girls' opportunities for better education, jobs and income.

General Population Summary:

- Stationary to negative trend population
- Doubling time is expected in 87 years
- Gender differences indicate more male to female in all age groups except for ages 65+.
- Half of the population is within the reproductive age group (15-44)
- 31.4% of the population is children 19 & Under
- Population Growth Rate is 6.3 (2007) per 1000 population.
- Migrants constitute a significant proportion of the population
- Greater than majority of the population utilizes public health care facilities for their health care needs

Health System Overview:

Health services in the Republic of Palau continue to be heavily subsidized by the Government. However, a great proportion of this budget goes into funding of secondary and tertiary medical services. Almost all funding that goes into supporting Title V-MCH basic services are derived from U.S. Federal and other bi-lateral and multi-lateral sources. Below is Budgetary Distribution by Level of Care

Health Budget as a Percentage of Total National Budget 11.2%

Per Capita Expenditure on Health) $372

% of household earning less than $2,750 per anum (Poverty)* 15%

% of household earning less than $5,500 per anum (Economically Vulnerable)* 10%

MOH Expenditure on:**

Medical Referral (N-143) = $6,768

Hospital Admissions (N=3,190) = $1,630

Primary, Preventive & Promotive Services (N=100,000) = $11

Primary and preventive services are provided through the Bureau of Public Health. Family Health Unit and the Community Health Center Programs are two service delivery systems for primary and preventive services (Figure 4).

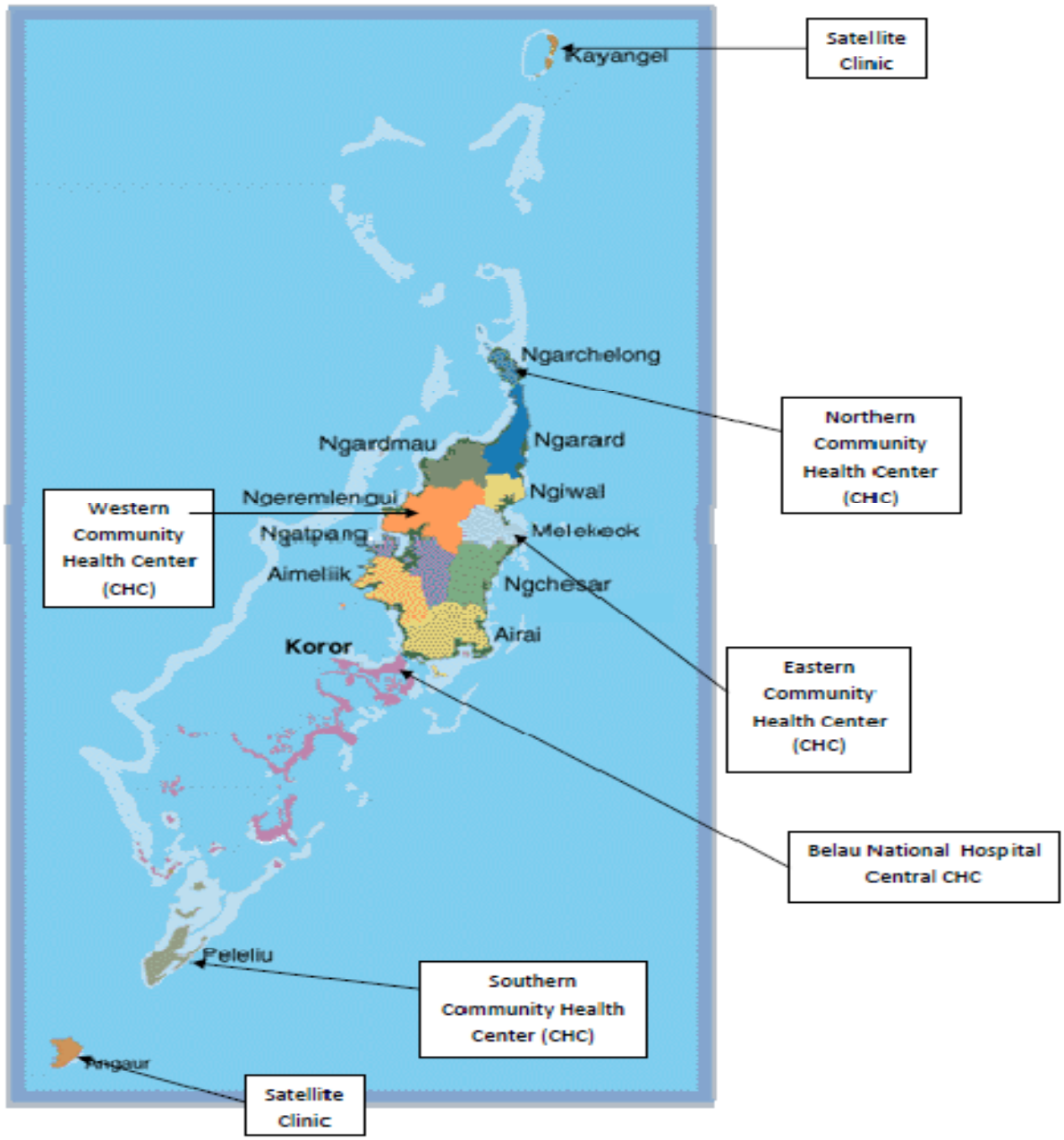


Figure 4: Map of Health Centers in the Republic of Palau

Available services by Level of care:

Under the most recent organizational structure of the Ministry of Health, Bureau of Public Health, the Maternal and Child Health Programs is under the direct management of the Chief of the Division of Primary Health Care (Figure 5). This division has two Administrators, Administrator of Preventive Services and Administrator of Primary Health Care Services. MCH is

in a unique position in that in relation to administrative matters, the program receives its directives from the Administrator of Preventive Services and on more programmatic and service delivery wise, it is directed under the Administrator of Primary Health Care Services.

Organizational Structure:

Based on this organizational chart, MCH Program provides direct services such as services for Children with Special Health Care Needs and high risk prenatal mothers, population services such as Prenatal and Postnatal care, Childhood Immunization Program, Family Planning, Gynecological and Cancer Screening Services, Well-child services and school health screening & intervention are also part of the Unit's services. In relation to other necessary services to improve health care for mothers and children, MCH collaborates with other divisions within the Bureau of Public Health and the Bureau of Clinical Services to provide these services. These services include mental health, dental services, promotive health services such as communicable disease prevention, nutrition education and general health education services. It also collaborates with the Bureau of Clinical Services in relation to hospital-based services such as delivery, pediatric services, and specialty and tertiary medical services. MCH Also collaborates with Head Start Program and the Ministry of Education in the provision of children's promotive health services.

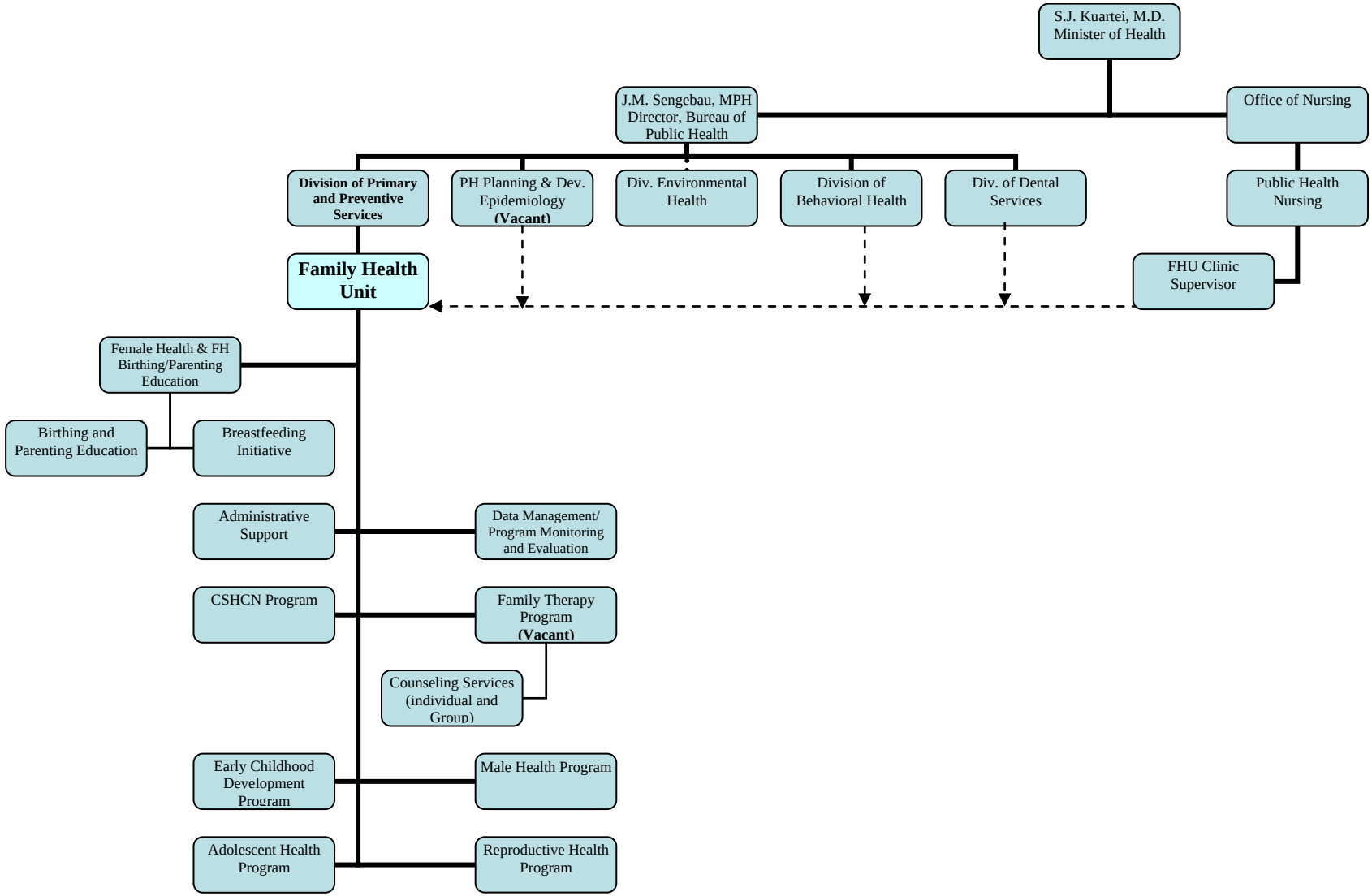


Figure 5: Family Health Unit Organizational Chart

Health Resources and Distribution by Level of Care:

The Ministry of Health receives its revenue from annual congressional appropriations from the Olbiil Era Kelulau. In accordance with traditional usage of health budget, population based services such as those provided by the Bureau of Public Health receives the least amount of revenue. At least three fourths (3/4) of the Bureau's budget for implementation of preventive and primary health care programs and services come from external sources through US Federal Grants, WHO funding and other multi and bi-lateral sources. As evident in the above analogy, local revenue that supports health care have their most concentration on hospital and tertiary medical services. MCH direct services, being part of the Division of Primary Health Care under the Bureau of Public Health competes for local resources that funds primary health care. Looking at the above chart, it is the $.9 million dollars that supports close to 100,000 encounters each year.

Available Primary and Preventive Services in the Family Health Unit (Title V-MCH Program) - All service sites.

- Preventive/Promotive Activities
- Childhood Immunization
- Prenatal Services
- Birthing/Parenting Activities
- Postpartum Services
- Women's Health Services
- Male Health Services
- Family Planning
- Well-baby Services
- CHSCN Services
- Home Health & Geriatric Serv.
- Behavioral Health Services
- School Health Services including annual health screening and intervention

Available specialties and sub-specialties in Family Health Unit:

- Physicians (Pediatrician/ObGyn)
- Interns/Residents (General Practice)
- Nurse Practitioners (Women's Health)
- Nurses
- Social Workers
- Health Educators
- Nutritionists
- Counselors
- Lab Technicians
- X-Ray Technicians
- Clerks
- Psychiatry (referral basis)

Hospital Based Services

- Delivery
- Neonatal Services
- Universal Newborn Hearing Screening
- Genetic/Metabolic Screening
- Pediatric Services - hospital based
- Audiology/ENT Services
- Specialty Clinics
- Emergency Medical Services
- Urgent Care Services
- Infrastructure and Capacity Building
- Medical Records
- Data Management
- Financing/Finance Management

Tertiary Medical Care – Medical Referral off-island

- Pregnant Women, pediatric, Adolescents and women

Medical Referral Sites – Off island:

- Tripler Army Med. Center – Hawaii under the Pacific Islands Health Care Program
- Philippine Hospitals (St. Lukes Hospital, Medical City Hospital, Makati Medical Center)

The Family Health Unit/MCH Program has improved its services to its population by strengthening the following screening programs:

The Universal Newborn Hearing Screening program recognizing that ear infections (otitis media) and hearing loss are significant health problems, a universal newborn hearing test has been implemented and begun screening newborns prior to discharge for hearing problems. Recognizing that hearing problems can hinder a child's development, learning and social skills this program has been expanded and integrated into the school health program. Interventions are provided through referral to specialized services in the Hospital, Behavioral Health Department and through home visitation. We have also revised our well-baby services requirements to screen annually from age 3 years old until school entry. The Newborn Genetic and Metabolic Screening has also been implemented in the Belau National Hospital along with the Newborn Hearing Screening. Under this screening program, Palau screens for 5 conditions: Congenital Hypothyroidism (CH), Congenigal Adrenal Hyperplasia (CAH), Phenylketonuria (PKU), Glucose-6-Phosphate Dehydrogenase Deficiency (G6PD), Galactosemia (GAL).

We are screening for prenatal and post natal depression. Treatment and intervention are also provided onsite or through referral. In recent "Schizophrenia" studies of the Palauan population, Palauans are 2 to 3 times more at risk for this mental health problem than the rest of the world population.

The FHU/MCH Program is partnering with HIV/AIDS and Breast and Cervical Cancer Screening Program on the formulation of a male health program. This program is in its early stages of providing services and will be integrated with on-going health program for the MCH population.

There is an initiative to integrate important cultural values in our school readiness program for early childhood. This is a much larger initiative that has been undertaken by an interagency collaborative group. In recent discussion, the adolescent and early childhood collaborative would like to merge and create a larger group that will play an advisory role for the MCH

program. This program as it grows and matures, will invite more community participation in its effort to respond to community needs.

Under the Adolescent Health Collaborative, we have partnered with all the schools in the republic, both public and private to work on ways that health and physical activity classes can be merged in terms of delivery. This has been going on for the last five years and classroom teachers are beginning to integrate lesson planning processes whereby both curriculum and physical activity are integrated into daily lesson plans.

MCH/FHU Program Capacity:

The Interagency Project within the MCH/Family Health Unit coordinated the completion of the MCH Needs Assessment and 5-Year Strategic Plan (2010-2015). In the last 5 years, the main activities of the Interagency Office was to ensure that Palau MCH Program implement infrastructural systems that will enable the program to attain an ability to improve services to children with special health care needs through interagency collaboration and resource sharing. Although the issue of data sharing was also a part of this collaborative process we were more concerned with improving actual service delivery. At this point in time, it is becoming more important that additional infrastructures are put in place to see how have these past systems have impacted on the lives of the MCH population. The Family Health Unit through the Interagency Project will be charged in implementing these systems to assist the program in being able to obtain the health indicators that will enable Family Health Unit to strategize and direct its health funding to improve to reporting of the Title V Core and Negotiated Performance and Outcome Measures. Through past efforts to improve data gathering and analysis and reports, the Title V/MCH Program (Family Health Unit) has improved its position in profiling health and risk factors not only the MCH population, but the total population of Palau. The Palau MCH/Title V Program, through the Interagency Project, takes lead in organizing community discussions, planning and strategic development that influences the direction of Family Health Unit. In the past 10 years, it has been instrumental in developing tools (detailed

under section: Publications) for data gathering that are now routinely used to meet the needs of the MCH population and the strategic direction of the program

Impact:

The impact of changes that has been implemented in the FHU/MCH Program has been dramatic. These changes have been based on evidence generated through mechanisms implemented in the past years. We have been able to expand children and adolescent health services in the community and implemented school-based programs that include health screening, on and off-site intervention, referrals and follow-up. These changes mean that in Palau, children are monitored through well-baby services from birth to 5 years old and when they enter school, the monitoring occurs for every child, every two years until they exit the school system. With the mandatory education law, Palau's school enroll indicate that 98% of all children between the ages of 6 and 18 are enrolled in school. Our school health screening assesses 70% of all children enrolled in all schools (both public and private) of Palau every year. All these improvement are in response to evidences revealed in program monitoring and evaluation that are now integral part of our program implementation. Because of program reviews, indication has led us to divert our resources to create a hospital-to-home care for post-partum mother. These services include reviewing neonatal screening and their results, breastfeeding coaching and instructions, infant care and sleeping practices (following AAP recommendations) to prevent infant mortality relating to Sudden Infant Death Syndrome (SIDS). In these home visits, at 4 months, the social worker and a nutritionist make mandatory visits to homes of post-partum mothers to assess depression related behavioral/mental health problem including eating and nutritional practices. These are Palau's MCH/Title V initiative to reduce maternal BMI and screening and treatment for post-partum depression.

Resources and Capabilities

Over the years, through resources from other than MCH Title V Program, Palau has built the capacity of Family Health Unit to meet the health needs of MCH population. These development include improvement of infrastructure and capacity within the Program to

address the changing needs of the population. Through initiatives mandated of the Palau Interagency Project, systems of care were developed and implemented within the MCH Program to be more responsive to the needs of CSHCN. This agency collaborative and services coordination between MCH CSHCN Clinic and its partners to address needs of CHSCN and their families has become the "way of doing things" for Family Health Unit. CHSCN Objectives and Activities are monitored through the regular monthly meetings of the Interagency Team. The various sub-committees also meet on a monthly basis to assess their progress on objectives and activities that pertain to them. The CHSCN Clinic is now working as an integral part of services that are provided by the MCH clinic. The members of collaborative team represent agencies that work with children special health care needs and their families. It is no longer a "special clinic" but a regular clinic that is on permanent schedule and routinely conducted every two weeks.

Staff development activities are part of MCH Program capacity building efforts to assure that staff, community partners, and parents take part in. The Palau MCH Program, have implemented newborn screening services at the Belau National Hospital in the last two years. These services are hearing and genetic/metabolic screening. The nurses in the newborn unit were trained to collect blood spots and the laboratory packages the cards and send them to the University of the Philippines newborn screening lab. Due to that lab's capability, Palau only screens for 5 metabolic disorders at this time. Within the two years of the screening, 1 false positive for CAH was identified but later ruled out to be negative, and 1 positive for G6PD. This child is now under clinical management with professional support from the UP Lab and a pediatric consultant from St. Lukes Hospital, Philippines. Also, within the first 2 years of our newborn hearing screening, an infant with congenital hearing loss was identified and referred to early intervention program. This program is implemented by Palau's Special Education program. Our nurses, doctors, social workers work with parents and service providers at Special Education to assure that care for the child and parents are as comprehensive as possible.

Other services that have been implemented are relating to school enrolled children in general. Knowing that over 90% of Palau's children will be enrolled in school from year to year, the

School Health Screening and Intervention Program was implemented to combat early on-set of health problems in children. Some of the leading pediatric risk factors are identified in the Needs Assessment Section. We also expanded our services for pregnant women, in mental and behavioral health component. From these screening, we find around 3-5% of pregnant women who will need some form of intervention from year to year.

Funding History

The Family Health Unit/MCH Title V Program receives majority of its funding from HRSA. Because of our government's inability to fund indicated improvement from year to year, other funding streams from HRSA and other external agencies are used to initiate improvement directed at MCH Program. Through these changes in the program we are now able to develop more evidence-based program strategies and activities that are effective in addressing needs of the Palau MCH population. Government of Palau's funds are usually used to pay staff salaries, fringe benefits and other costs related to direct patient care. It is also used to fund secondary and tertiary care rather than public health related services. Palau FHU/MCH Program has traditionally been funded through bi-lateral and multi-lateral funding sources. Some examples of these funding sources are UNFPA, UNICEF, Title V MCH Program, and from time to time, direct in-kind assistance from other sources such as Japan, Korea, Taiwan and other countries. Palau is considered developing island nation with limited financial resources and therefore at this stage of its development, relies mainly on these funding sources for preventive, promotional and primary health care.

FHU/MCH Program as an Evidence-based Program:

In mid-2002 we implemented the survey in the central FHU clinic for post-natal mom at 6 months after delivery. This time line was chosen also to look at breastfeeding compliance of mothers at 6 months. We have worked in the past with the University of Hawaii, John Burns School of Medicine, Epidemiology Department on the data analysis. We also worked with the University of Washington, where a student from the program worked with us to analyze our data on P-PRASS (Palau PRAMS-like Survey) and make recommendations on improving the questionnaire. We had an epidemiologist on board but after a year, a more lucrative post opened up in Malaysia and he had to take that post.

By 2009, the Interagency Project, as a system/infrastructure building project for Palau FHU/MCH Program, was involved in implementing various components of the Republic of Palau, MCH Program, from health education to policy development. Additionally, the Interagency Project works with the Division of Primary Healthcare to assure that the CHC grants meet reporting mandates for the MCH population. Most recently, the Interagency Project was a key player in the Disability Policy Development Initiative. It is a collaborative project between the Ministries of Health, Education, Community & Cultural Affairs, State, Justice, Resources & Development, Industry and Tourism, and Judiciary. The project was a lead agency in the organization and agenda development for the workshop that was held in Palau. The purpose of this workshop was to develop internal capacity and to prepare Palau to become a signator to the International Convention on the Rights of Persons with Disabilities (ICRPD). It was supported by United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), Pacific Islands Forum Secretariat (PIFS) and the Pacific Disabilities Forum (PDF). Because of Palau Interagency Project's long track record of work with children with disabilities/special health care needs and their parents, it was identified as the focal point for convening this working group to enable national discussion on issues with disabilities/social justice.

With the current pattern of staff migration, staffing for the FHU/MCH program has seen a change in management and staff in the latter half of 2009. Ms. Berry Moon Watson former Administrator of the Unit has transitioned out and moved into the Research and Publication arm of the Unit at the end of 2009 and Ms. Sherilyn Madraisau (former Adolescent Health Coordinator) assumed the role of Administrator for the program in January 2010. Due to staff movement and expanding role of the Unit, we began the process of filling much needed positions to address the expansion and needs of the growing unit. There are three full time Administrative Specialists (one of whom is stationed at the School Health Office), two Newborn Screening Technicians, a Male Health Coordinator, a Reproductive Health Coordinator, an Adolescent Health Coordinator (to assume the position that was vacated by Ms. Madraisau), a School Health Counselor, two IT (Information Technology) personnel to help with the expanding

database and two part-time parent advocates for Children with Special Health Care Needs. A New Born Screening Coordinator is being recruited to help with the coordination and screening needs of the Newborn Screening program. With the expanding personnel we envision that the unit will be better equipped in providing health care providers and national leaders with current and accurate information that is pertinent to the management and future care of the MCH population.

In July 2009, a Presidential Executive Order established a committee to create a Healthy Lifestyle Curricula for elementary and high schools students that will teach them to incorporate good eating habits, appropriate nutrition, and safe physical activity in their daily lives. This order was to establish a model curriculum for schools and incorporate this model curriculum for the next five years. As of today, this model curriculum has yet to be published and incorporated into the school system, however work to establish such model is ongoing and forecasted for the next school year. Family Health Unit/MCH Title V Program has been appointed as one of the 6 members of this national committee to develop the curriculum.

Over the years, the Family Health Unit has built a reputation as being data driven and evidence based which has become a good public health model. The Unit has become an information powerhouse for the direction of the maternal and child health in the Republic of Palau. The Unit is in a position to look into more data driven strategies and inform national leadership of the status of health of men and women of reproductive health age and the future of the children of Palau. It has also attracted local doctoral candidates to use such data in research on the Maternal and Child Health Population and quite possibly publish these findings. It has now achieved the ability to do research on data that has been gathered throughout the years and extend its capacity to those that are indicative in the findings of such data. Our strategic direction for the next five years includes the expansion of the unit into the research and publication arm of not only the Unit but of the Ministry of Health. We are also in a position to offer training and workshops relating to the care and management of men, women and children. We are also in a position to provide better service coverage with our collaborative

partners through innovative and intuitive funding streams and donations from local entities that have a vested interest in the health and future of the FHU/MCH programs.

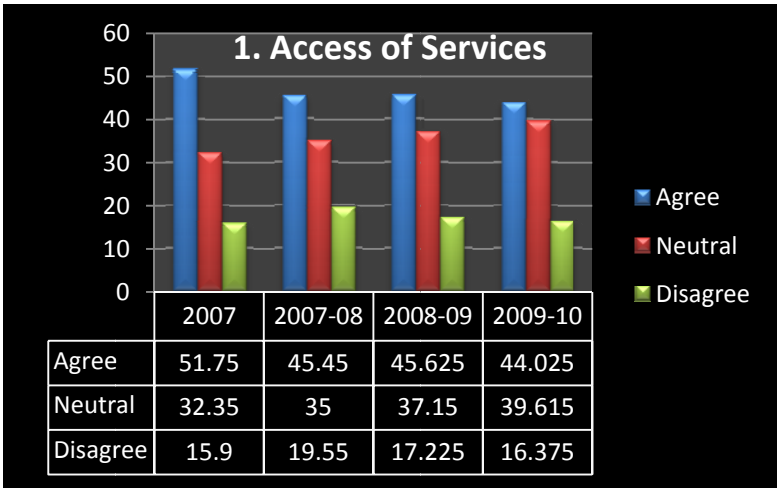
Evaluative Measures

Outcome Evaluation: The past several years, the Palau SSDI/Interagency Project has worked with FHU/MCH Program to implement the programs capability to monitor and evaluate itself. Through implementation of SLAITS-like, PRAMS-like, YRBS-like surveillance systems and surveys, the FHU/MCH Program now has on-going systems to monitor and evaluate the effectiveness of its services, health status of its population…it is now in a position to fully implement the public health planning model from planning, intervention, monitor, evaluation and back to the planning. The various monitoring and evaluation designs are based on instruments and tools that are used in U.S. nation-wide. We in Palau made slight adaptations to these tools and used them. These changes were necessary to assure that we address issues that reflect our culture and nation, however, we stayed in the boundary of instrument/tools science-based integrity. Data generated from these tools are also used in meeting data reporting requirements for MCH and other HRSA funded projects. We also use these information to create reports that are now used to educate our population and to meet national, regional, international reporting requirements.

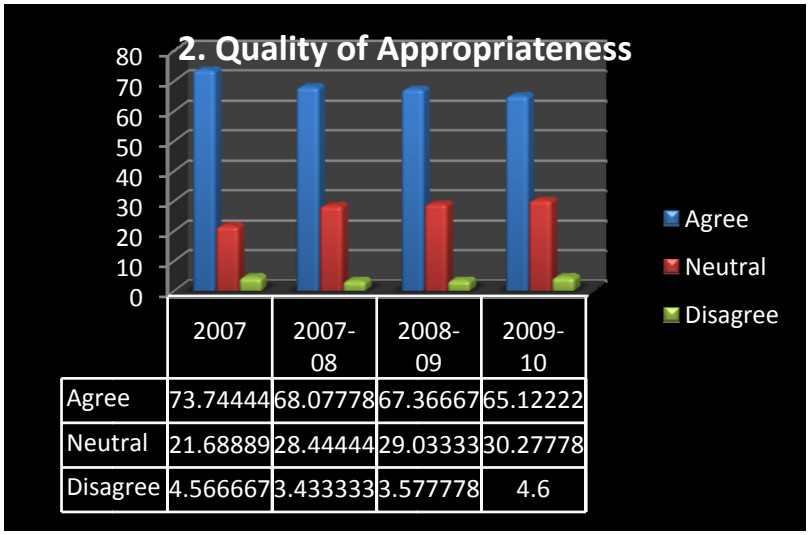
Process Evaluation: Another monitoring document is the monthly agency report consolidation reports produced each month by all member agencies. Agencies use these report to assess their progress toward meeting the individual need of each child and family. Through these reports, agencies are able to identify service needs for each child and take action based on the reports. The Interagency Data System to be developed by the end of fiscal year 2001 can be used as a monitoring instrument on the progress of activities for each child. It will be improved to the point whereby clinic, home visit and related agency services provided information can be made available to service providers. When this capability becomes available, we will be able to track children better as to assure that each child receive the maximum services that the Republic of Palau has to offer.

Other monitoring methods that are built-in to the objectives are the regularly scheduled chart

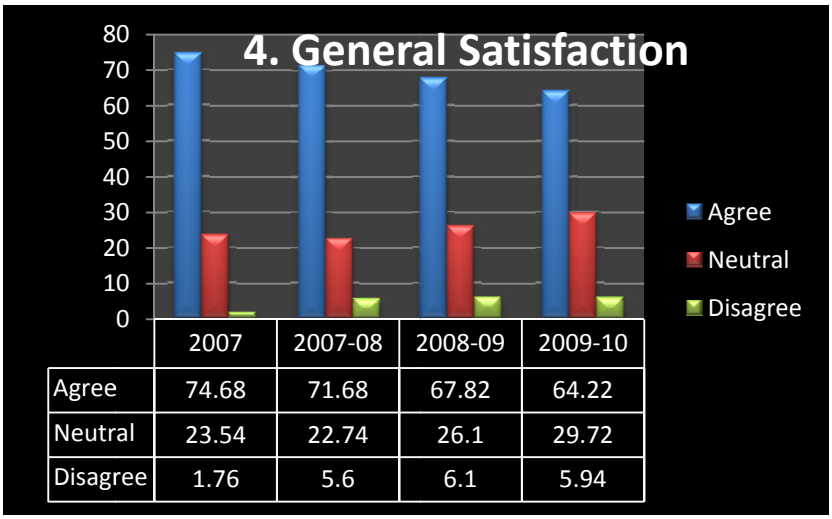
audit for children with special needs and any service recipient of MCH services. These audits are performed on a random basis and assess the following service criteria: completion of client assessment, intervention plan development, follow-up care, and inclusion of other services components. Assessment of the program is done through annual client survey. This client survey looks at access, quality & appropriateness of care, client satisfaction and service outcome. The charts below show the changes in the last five years of these care components that are assessed annually.



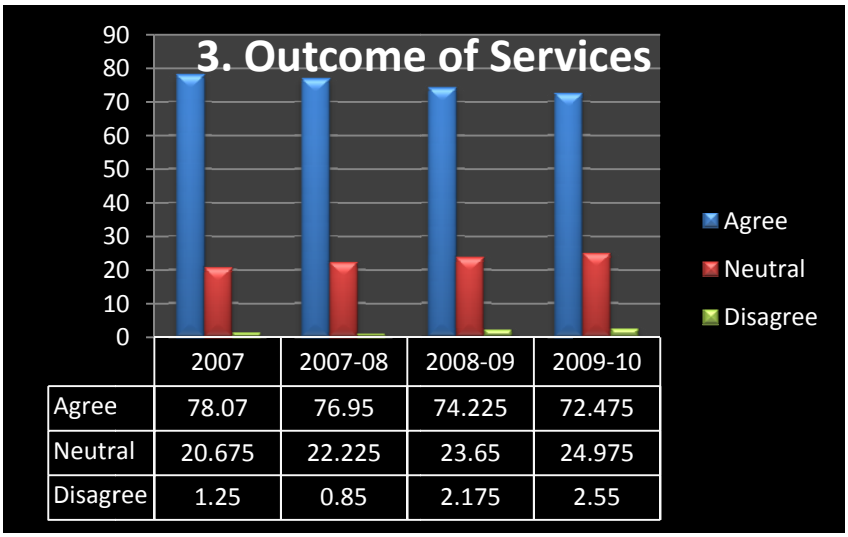
	2007	2007-08	2008-09	2009-10
Agree	51.75	45.45	45.625	44.025
Neutral	32.35	35	37.15	39.615
Disagree	15.9	19.55	17.225	16.375



	2007	2007-08	2008-09	2009-10
Agree	73.74444	68.07778	67.36667	65.12222
Neutral	21.68889	28.44444	29.03333	30.27778
Disagree	4.566667	3.433333	3.577778	4.6



	2007	2007-08	2008-09	2009-10
Agree	74.68	71.68	67.82	64.22
Neutral	23.54	22.74	26.1	29.72
Disagree	1.76	5.6	6.1	5.94



	2007	2007-08	2008-09	2009-10
Agree	78.07	76.95	74.225	72.475
Neutral	20.675	22.225	23.65	24.975
Disagree	1.25	0.85	2.175	2.55

All these changes in the perception of clients indicate a general change in services and finances of healthcare that has impacted on our services. Cost of care has greatly determines the "access, quality and satisfaction" issue. Due to cost containment initiatives, many medical supplies and pharmaceuticals were made to be "not available" in the government operated pharmacy and therefore, clients are informed to purchase medical supplies and drugs from private pharmacies. While this decision may have contained government costs, a main concern is that a great majority of people may not be able to purchase these essential pharmaceuticals and supplies and therefore may go without the necessary care. This issue is being debated within our country and we are not sure the direction of this debate.

The FHU/Palau MCH Program has in the last two years, initiated a two-day community forum each year. The Program uses this forum to garner public input into its services, intervention strategies and activities, use of funds and other concerns that may have impacts on the effectiveness of the Program in addressing the MCH population needs. It is also a forum where the health status of the nation's population is communicated to the public and the nation's leadership. The forum is also used to meet the MCH Title V public input requirement.

The Palau Interagency Project continues to work with the Ministries of Education and Justice to improve their skills data collection and interpretation on under-age arrests and drop-outs so that the information can be used to improve services for children and young adults. All other referenced social programs listed under HSCI 9 (A), are services that are not available in Palau and therefore, when we report on this measure, we do not report on them. It becomes part of our narrative where we discuss other "state related" services that are available in Palau for this population.

Other MCH/FHU Capacity:

The Ministry of Health receives its revenue from annual congressional appropriations from the Olbiil Era Kelulau. In accordance with traditional usage of health budget, population based services such as those provided by the Bureau of Public Health receive the least amount of revenue. At least three fourths (3/4) of the Bureau's budget for implementation of preventive and primary health care programs and services come from external sources through US Federal Grants, WHO funding and other multi and bi-lateral sources. As such, local revenue that supports health care has its' most concentration on hospital and tertiary medical services. MCH direct services, being part of the Division of Primary Health Care under the Bureau of Public Health competes for local resources that funds primary health care that supports close to 100,000 encounters each year.

The Palau Family Health Unit has the ability to work with other external agencies, NGO's to broaden the coverage of the MCH program, in such it has worked with the Ministry of Community and Cultural Affairs in developing a National Policy on Youth and have also begun discussion on a national disability framework, in which these documents contain many issues that require the Family Health Unit to work in partnership with inter-government agencies and NGO's for its success and implementation. The Unit has also developed a Memorandum of Agreement with seventeen (17) agencies outside the Ministry to

create the very first of its kind in Palau an Adolescent Health Collaborative. The Unit has also developed a Policies and Procedures for the Unit. The Unit has taken the lead in implementing both Newborn Hearing and Genetic Screening Programs and has been providing these services for the past two years. The Unit has organized and conducted training on hearing screening and intervention with our other neighbors in the Federated States of Micronesia (FSM) and the Republic of the Marshall Islands (RMI). We also conduct an annual training of teachers in the area of Health and Physical Education as a strategy for improving the BMI status of Palau children. We have presented papers in regional conferences on the status of obesity and health risk factors in children. Two papers have been submitted for editorial review for publication. One is on health status of pregnant women in Palau (from Palau Prams-like survey) and the other paper is on schizophrenia and adopted children. The second paper is a collaborative project between key FHU staff and the Palau Youth Project. Because Otitis Media related hearing problems is very high in Palau, it is in the planning stages to do an in-depth study on it for the region.

A Memorandum of Agreement with seventeen (17) agencies outside the Ministry to create the very first of its kind in Palau an Adolescent Health Collaborative has been active and going strong for the past five years. From this agreement, Palau High School (the country's only public high school) has agreed to provide space to house the Adolescent Health Program along with the Division of Behavioral Health. From this central location, the program offers its services to all other schools within the Republic. This program is supervised by the Chief of the Division of Behavioral Health and works to address the individual needs of students/families including group work and counseling services. School health programs have been expanded with the launch of the annual Health and Psycho-Social screening for all children preschool through-high school. This program includes traditional physical, dental, and vision screening and has been expanded to also include screening for hearing impairment, mental health related problems and health behavioral risk factors. This collaborative works to implement within each respective school initiatives that are tailored for the students and their environments in response to results that are coming out of their school health screening data.

Coming out of the school-based health screening initiatives - major issues continue to be substance abuse, mainly tobacco and depression. This is a concern as the Palauan population is high risk for schizophrenia. Main issues in physical health relates to higher percentage of children in the overweight/obese stage. For this particular issue, we have initiatives with the schools. These initiatives are Health/PE collaboration whereby classroom teachers in both classes are being assisted to integrate

both topics in their classroom instruction. The other initiative is the classroom BMI initiative. Under this initiative, all classrooms of Palau (both private and public) will have scales, BMI charts and BMI tables. Teachers in classrooms will be assisted to be able to weigh children, convert weights/heights into BMI and finding and translating the BMI into the charts and tables. The teachers work with each child in the classroom to understand this process. Another initiative in the screening is the urine test for protein, glucose and occult blood and we do this through urine dipstick on-site. We are finding that we have a rate that is much higher than developed nations such as Japan. Through this information, in partnering with the schools we are able to tailor intervention programs more appropriately.

FHU's external partners undoubtedly play a significant role in FHU's success in providing comprehensive services to meet the needs of the MCH population. A major accomplishment that the Unit has achieved is increasing expansion of health initiatives in schools through the annual Health and PE teachers workshop organized and conducted by FHU. Through this Health and PE workshop, schools have begun key initiatives within their schools to address health problems common to students as indicated in their respective school screenings. Since the inception of the annual school health screening, eight schools have developed and implemented initiatives within their respective schools. FHU has been an active supporter in planning and implementing these school initiatives. The following are the school initiatives that are currently ongoing:

1. Peleliu Elementary School- Implemented a water only drinking policy in school. Students and teachers are encouraged to drink water. Students and teachers are prohibited from bringing sodas and other drinks to school. The purpose of this policy is to heighten awareness for students on the importance of drinking water. This policy was implemented after the annual school screening showed that a significant number of students at Peleliu elementary had high levels of protein, glucose, and occult blood in their urine sample.

2. Ngarchelong Elementary and Community Project on Physical Fitness- Ngarchelong began a pilot project to increase the level of physical activity of their students and families through creation of different sport activities and fitness exercise conducted on a daily basis. The purpose of this initiative is to increase the level of family participation in children's physical health.

3. Melekeok Elementary Initiative- this project aims at increasing level of physical activities for students. Through this initiative, students are encouraged to walk to and school and home. This

small community encouraged active walking of students to and from school. Other physical and sporting activities for after schools were created for students and parents.

4. Ngardmau Elementary Initiative- This initiative focuses on suicide prevention through teaching and incorporation of life skills strategies into daily instructions in English class. Activities are designed to promote resiliency factors in children by engaging and encouraging students to take a proactive stand in dealing with conflict issues.

5. Airai Elementary Initiative- This initiative aims at promoting healthy eating habits. The school developed a gardening project whereby students plant vegetables and fruits to be part of the lunch program. Parents are encouraged to help their children in planting of fruits and vegetables.

6. Koror Elementary School BMI Initiative- this initiative aims at addressing the issue of overweight and obesity through careful monitoring of students BMI. Teachers develop a variety of health activities that that are incorporated into core subjects in the schools. In addition, after school physical activities were developed and students were encouraged to partake in these activities. Teachers would monitor children's BMI progress and report to parents during PTA's.

7. Maris Stella Elementary Initiative on Bullying Prevention- School developed and implemented an anti-bullying policy that increases parent participation in bullying prevention in the schools. Parents become partners with the school in addressing bullying. In addition to this, FHU supported the school in creation of age appropriate health education materials on bullying.

8. Belau Modekngei High School Summer Camp Initiative- This initiative targets high school students. It aims at developing and reinforcing positive youth development through incorporation of life skills into culturally relevant activities. Student campers partake in activities that teach craft skills, weaving fishing, gardening, storytelling, dancing, and music.

We have also completed a Mental Health Screening Tool in collaboration with the Division of Behavioral health and have begun implementing this tool in our prenatal and post natal clinics. This tool is used to help identify pregnancy and post pregnancy related depression and other health problems that require behavioral health intervention before they become lifelong problems of women in Palau.

Recognizing that ear infections (otitis media) and hearing loss are significant health problems, the Unit has implemented a universal newborn hearing test and has integrated hearing screening into the school

health program. This program has also been implemented and begun screening newborns prior to discharge for hearing problems. Continuation of this screening up to year two of the child's life is being implemented to assure that Otitis Media related hearing problems do not develop into lifelong problems that will prevent children from entering schools, hinder their learning process and even become a burden to their growth into adulthood. A plan for information development within this program to be integrated with the CSN/High Risk (Medical Home), Hearing Screening and the development of Birth Defect Surveillance System. An agreement with the University of the Philippines Genetic Screening Program to do screening specimens are sent to the University by the Unit in compliance with shipment/cargo (transport of blood (contaminated products) in commercial planes that cross borders of nations) polices. This has been a major accomplishment for the Unit as intermarriages among Filipinos and Palauans is increasing with some neonatal genetic disorders being more prevalent in the Philippines that it has been to our advantage to see this initiative established in Palau.

Recognizing the need for child care services to support working parents and to address various issues surrounding early childhood education, representatives from health, education, churches, and NGOs have established a Palau Early Childhood Care Initiative. The purpose of this initiative is to develop national framework legislation that will regulate childcare and early childhood centers to ensure quality and safety and to provide training in the psycho-social development needs of young children to the people who serve preschool and lower elementary children including school teachers. A model center was established by the Ministry of Health and is currently operating through the Palau Community College. A couple of private centers are known to have been established but there is no requirement for licenses, certification, or supervision of such facilities.

The Tripler Army Medical Center in Hawaii has been an instrumental piece of our newborn hearing program wherein technicians and medical personnel that work with the newborn hearing screening have benefited from the generous training time and opportunities that Tripler has provided for the unit. They have annually, whenever time and budgetary opportunities allow have been able to provide on island services such as on-site training, skills building, screening and testing and minor surgery for patients that have been identified with hearing complications. This collaboration continues to play a significant role in providing valuable hands on experience to our technicians and medical staff that would otherwise be difficult to obtain with our limited budget and on island expertise.

The Palau FHU/MCH Program has invested over many years to develop its capacity. Because of our size and remoteness from the mainland US and countries that offer more opportunities we will continue to

face the lack of qualified personnel that are committed to stay in Palau and build the local professional capacity. These problems will continue to haunt us and therefore, we need to build the capacity with local people in mind, as this is the only sub-population that will have permanency in Palau, while the other sub-population is a mobile population, with professionalism, movement outside of Palau is almost guaranteed.

With the current pattern of staff migration, staffing for the FHU/MCH program has seen a change in management and staff in the latter half of 2009. Ms. Berry Moon Watson former Administrator of the Unit has transitioned out and moved into the Research and Publication arm of the Unit at the end of 2009 and Ms. Sherilyn Madraisau (former Adolescent Health Coordinator) assumed the role of Administrator for the program in January 2010. Due to staff movement and expanding role of the Unit, we began the process of filling much needed positions to address the expansion and needs of the growing unit. There are three full time Administrative Specialists (one of whom is stationed at the School Health Office), two Newborn Screening Technicians, a Male Health Coordinator, a Reproductive Health Coordinator, an Adolescent Health Coordinator (to assume the position that was vacated by Ms. Madraisau), a School Health Counselor, two IT (Information Technology) personnel to help with the expanding database and two part-time staff: one serves as an parent advocates for Children with Special Health Care Needs while the other one's role is a care coordinator/case manager for all high risk clients. A New Born Screening Coordinator is being recruited to help with the coordination and screening needs of the Newborn Screening program. With the expanding personnel we envision that the unit will be better equipped in providing health care providers and national leaders with current and accurate information that is pertinent to the management and future care of the MCH population.

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Assessment of the MCH Population:

Infant and Children:

There were a total of 279 live births in 2007. Of these newborns, 80.8% (n=227) were screened for hearing using the Otoacoustic Emission test prior to discharge. About 86.3% (196/227) passed the test and 13.7% (31/227) failed in both or either ears. Among the newborns who failed in the initial hearing screening, one (1) newborn was confirmed positive for hearing defect.

In 2008, 81.4% (252/295) newborns were screened for hearing out of 295 live births. 88.1% (222/252) of these newborns passed the Otoacoustic Emission test.

Almost all (97.7% or 266/273) of the newborns in 2009 had undergone the hearing screening. Close monitoring on every delivery contributed to the success of hearing screening activity. There were no reported confirmed cases of hearing loss among the newborns in 2009.

Newborn Genetic Screening

In June 2008, Palau had started newborn genetic screening. Blood samples are sent to a testing facility off-island. There were 134 samples collected and 99 or 73.9% were tested and have normal results. 16.4% (22/134) of the blood samples failed testing requirements due to contamination, no feeding, and blood collection in less than 24 hours from birth.

In 2009, there were 151 babies who been tested for genetic abnormalities. These babies were delivered in the months between January and August of 2009. The screened ceased in August

due to unavailability of testing kits. Screening resumed in January 2010. Among the births from January to August 2009, 79% (151/191) of the occurent births were screened.

Immunization

Children in Palau received their immunization from the Well-baby clinic or in the Dispensaries. In 2007, the immunization registry and tracking show that HIB was missed at 15 months for majority of missed immunization. At average, the percentage of 35 month old who received immunization is 95%.

In 2008, immunization coverage increased to 96%. Data is taken from the Division of Primary and Preventive Services which pool all data from the Well-Baby Clinic and the Communicable Disease Unit.

In 2009, Immunization Program reported 88% immunization coverage for the children 19 to 35 months of

Summary of Infant and Children's Health[2]:

- Lower Infant Mortality rate through time (6.8 in 2008 and 22 in 2009)
- 96% have weight of equal or greater than 2500 grams at birth
- 91.5% had appropriate age of gestation upon birth (AOG ≥ 37 wks)
- High breastfeeding rate.
- 96% immunization coverage at 35 months (2008)
- 99% hospital deliveries
- Pre-term births constantly increasing along with low birth weight
- Cause of infant mortality mainly preventable (aspiration & prematurity due to preterm births)
- 1 congenital hearing loss was identified in 2009 among newborns in 2008
- 1 G6PD infant identified in 2010 (screening began in 2008)

68% of infants receive EPSDT-like screening within the first year of life. The health screening rate is high in the first 2 months after birth, but then begins to decline so that by the 12th month, well-baby services attendance have decreased to around 60%. This means that even during the immunization follow-up in the home, well-baby services are not provided, although at this time, public health nurses conduct the immunization follow-up

Adolescents:

Of the projected 234 sexually active female adolescents[3] (15-19 years old) in Palau (2007 YRBS)), **79.9%** (n=187) adopted some forms of contraceptive method. The 2008 FPAR indicates that the

[2] Birthing Records, Belau National Hospital, Ministry of Health, 2009

Three Month Hormonal Injection (48%) and Norplant (29%) were the more common contraceptive methods used. This is followed by Oral Pills (22%) (Figure 6).

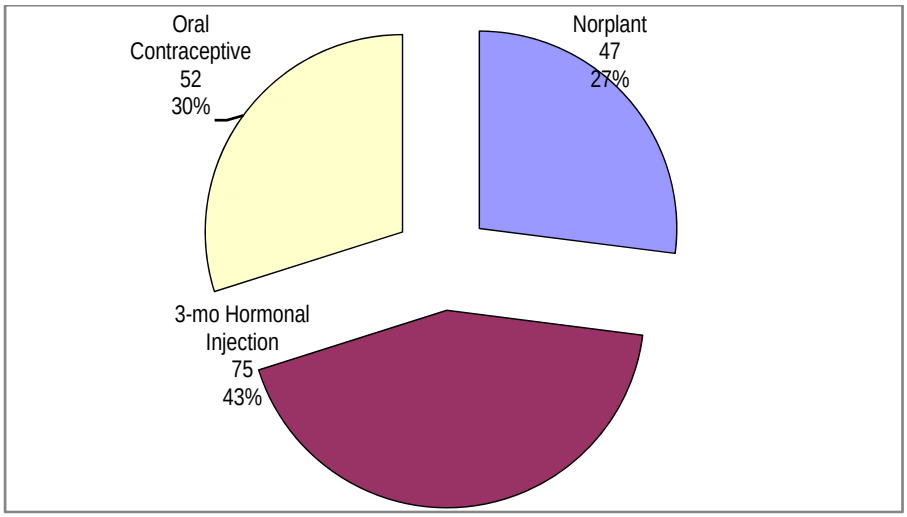


Figure 6: Distribution of 15-19 Years Old as to Contraceptive Methods Used, 2009 Family Planning Clinic, Republic of Palau

In 2008 Palau's adolescent contraceptive prevalence is equal to the world (67%) and developing countries (65%) but lower compared with the industrialized countries at 78%[iii]. In 2008, adolescent contraceptive prevalence has increased to 79.9%.

Generally, the contraceptive use in the adolescent age group is less than those 20 years and over because of lower knowledge on the need for contraceptive use, cultural barriers in accessing services and inadequacy of FP programs to address the special needs of this age group.

If the adolescent contraceptive prevalence is used to gauge the family planning program of Palau, it reflects higher utilization of contraceptive methods and coverage of the contraceptive services (particularly the adolescents). This also mirrors the ease in the access to reproductive health services including family planning, one of the eight elements of primary health care. A high contraceptive prevalence also ensures that pregnancies are not too early, too closely spaced, too late or too many. This will have benefits for maternal and child health.

While there are strong reasons to believe that the family planning program is on track and able to deliver the services to women and the adolescents, special attention should be given to those

Figures based on 2008 FPAR

who have unprotected sex in the adolescents age group. The Youth Risk Behavior Survey in 2007showed that 39.3% (234/595) of the respondents have had sexual intercourse. Of those who are sexually active, 21% (n=49) did not use any method, 6% (n=15) practiced withdrawal and 18% (n=42) used some other methods (traditional), 32% (n=76) used condoms, 8% (n=20) used Depo-Provera, and 7% (n=16) used birth control pills during the last sexual intercourse (Figure 7). This brings to 20% of the adolescents at risk of getting pregnant (or their partner).

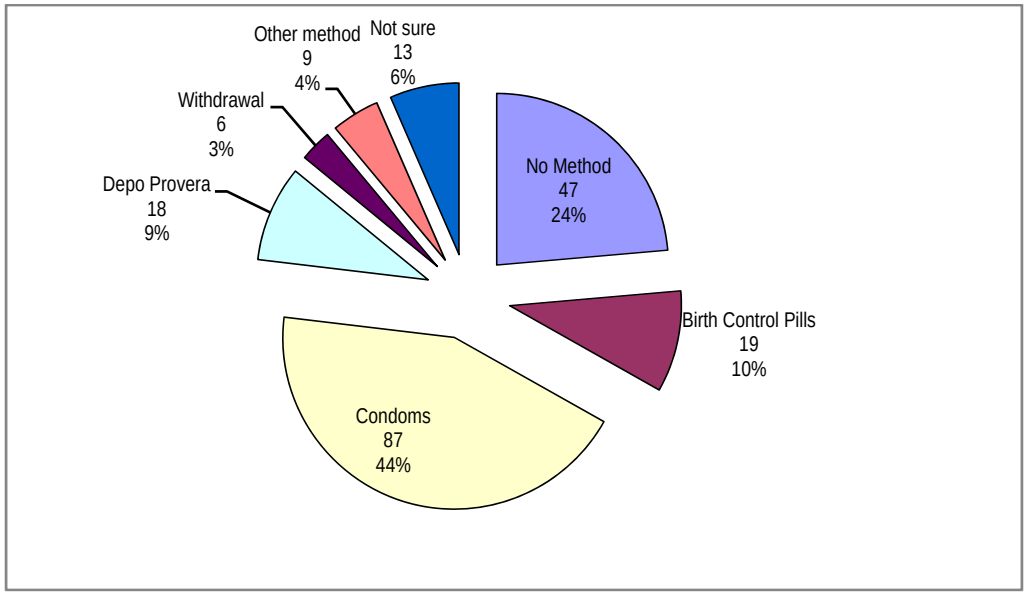


Figure 7: Distribution of Sexually Active Youth as to the Type of Method Used to Prevent Pregnancy during the Last Sexual Intercourse (n=198), 2009 YRBS, Republic of Palau

Another alarming indicator in the 2007 YRBS is the Initiation of Sexual Intercourse which continues to be high. Of the 234 respondents, 51.4% initiated sexual intercourse at 14 years of age and below (middle school age) while 48.6 is at 15 years of age and over. This means that by the time that a child enters high school, about half of them are already sexually active.

Child Death Rate in Palau from 2007 to 2009 averages to 71.96 per 100,000 population of ages 1-14. There were ten deaths in this age group from 2007 to 2009 (10/13895) at 95% CI of 3.8-16.2.

- There were no deaths due to **unintentional injuries** among children aged 14 years and younger (2009 Death Certificates, Republic of Palau).
- There was one (1) death accounted to the age group of 15 and 24 due to **motor vehicle crash** in 2009 (2009 Death Certificates, Republic of Palau).

- There were 60 **non-fatal injuries** among children aged 14 and younger or 1211 for every 100,000 population (2009 Surgical Ward Hospital Discharges Database, Belau National Hospital and 2009 Encounters Database, BPH, MOH)

Among the 283 **motor vehicle accidents**, 7.1% (20/283) were reported to be alcohol related(2009 Motor Vehicle Accidents Data, MOJ).

In-school Children

In 2007, a total of 1365 students voluntarily participated in the health screening. At average, their age was 10 with the youngest and oldest at 3 and 21 years old, respectively. About 90.9% is of Palauan ethnicity followed by Filipinos (4.7%) and the other Pacific Islanders (2.5%). These participants attended 1st, 3rd, 5th, 7th, 9th and 11th grades.

In 2008, 1307 school children participated in the school health screening. Mean age is 10 years old, youngest and oldest are 4 and 21 years old, respectively. 91.1% (1191/1307) were of Palauan ethnicity.

In 2009, there were 79.4% (1490/1876) of the reported school census for the odd grades in both elementary and high school availed of the school health physical examination screening. Mean age of the screened children is 11 years old and 90.6 (1350/1490) were of Palauan ethnicity.

Overweight Children, Physical Activity and Diet Recall

Very recently, Palau was ranked 7th among the highly obese people in the world by the World Health Organization[4]. Obesity has dire consequences. Overweight in children, when not recognized and managed appropriately, brings about a greater risk of developing Type II Diabetes, suffering from hypertension, having difficulty sleeping and developing psychosocial problems. This also persists into adulthood for 70% of overweight adolescents. As obesity related illness begins at an early age, a high proportion of obesity increases the demand for health services and imposes financial burdens on the health care system which was roughly estimated at US$100 billion per year. In the Pacific Islands, tertiary management of weight related illnesses and tertiary medical services accounts for about two third of health care budget/expenditures.

BMI-for-age weight status categories and the corresponding percentiles are shown in the following

[4] Obesity in the Pacific – Wikipedia, the free encyclopedia, retrieved on September 14, 2009, from http://en.wikipedia.org/wike/Obesity_in_the_Pacific

table (Table 1):[5]

Table 1: BMI Classification for Children Ages 2-19

Weight Status Category	Percentile Range
Underweight	Less than the 5th percentile
Healthy weight	5th percentile to less than 85th percentile
At risk of overweight	85th to less than the 95th percentile
Overweight	Equal to or greater than the 95th percentile

There is a slight increase in the children categorized to have healthy weight from 59.8% in 2007 to 63.2% in 2009. Children categorized as underweight decreased by 5% (from 8% in 2007 and 3% in 2009). The proportion of children categorized to be "at-risk-of-overweight" and "overweight" increased by about 1.6% (32.2% in 2007 and 33.8% in 2009).

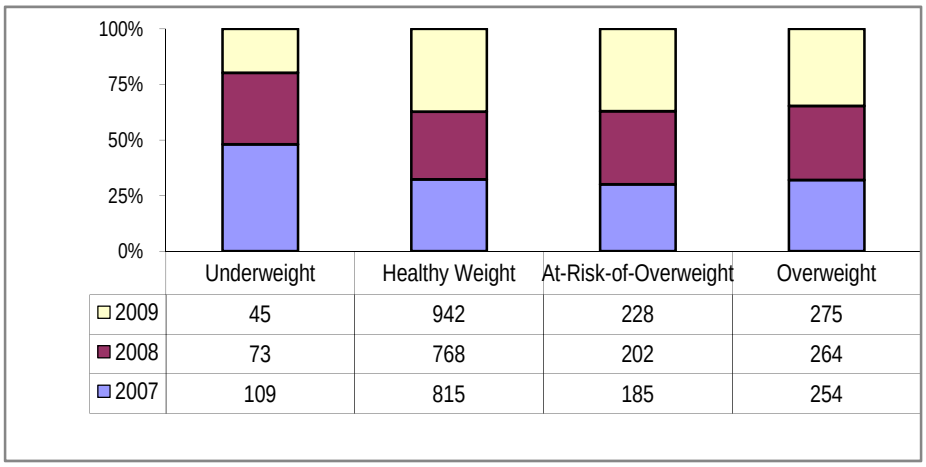


Figure 8: Distribution of Students as to Body Mass Index, School Health, 2007 - 2009

Evidences explain the two important contributions of diet and physical activity in the development of overweight among children. About 34.4% in 2007 and 30.0% in 2009 of the students expressed that they have moderate to light level of physical activity.

[5] BMI- Body Mass Index: BMI for Children and Teens: About/DNPAO/CDC, retrieved on October 10, 2007, from http://www.cdc.gov

Table 2: Distribution of Students as to their Level of Physical Activity, Republic of Palau, 2007-2008

Level of Physical Activity	Total		2007		2008		2009	
	Freq	%	Freq	%	Freq	%	Freq	%
Vigorous	1265	63.8	785	65.6	480	61.1	942	70.1
Moderate	520	26.2	322	26.9	198	25.2	322	24.0
Light	197	10.0	90	7.5	107	13.6	80	6.0

In terms of the school children's diet for the past 24 hours from screening, from 2007 to 2009, an average of 5.5% (7.1% in 2007; 3.0% in 2008; 6.4% in 2009) of the school children recalled to have eaten fruits and/or vegetables compared with about 39.3% who ate carbohydrates, protein (39.5%), dairy products (5.4%) and fat/sugar (8.3%).

Prevalence Odds Ratio of overweight and physical activity among school children in Palau in 2009 are the following: *Light and moderate physical activity* (Adjusted POR=2.3, 95%CI 1.79<POR<2.96, p-value=0.00). Children that have sedentary physical activity (light-moderate) are 2.30 times more likely to be at-risk/overweight than those having vigorous physical activity.

Hypertension

Using the classification of hypertension set by the National High Blood Pressure Education Program Working Group on High Blood Pressure in Children and Adolescents, the proportion of Stage 1 and Stage 2 hypertension is 16.7% in 2007 among students who had single measurement of BP during the screening. To ensure accurate blood pressure measurement, repetitions were done thus reducing hypertension among school health children at 3.4% in 2008 and 3.1% in 2009.

For children and adolescents (2-17 years old), following are definitions for blood pressure categories[6]:

Normal blood pressure is defined as systolic and diastolic readings that are less than the 90th percentile for a child's sex, age and height.

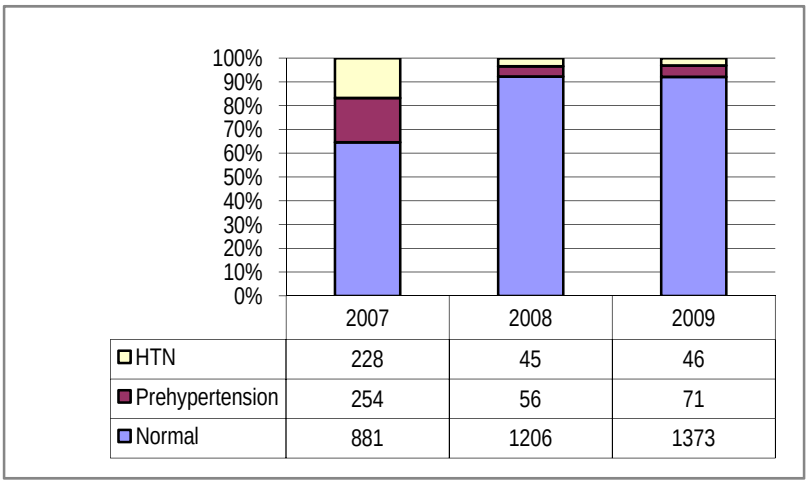
Pre-hypertension is either systolic or diastolic blood pressure readings 90th to <95th percentile or if BP exceeds 120/80 mmHg even if <90th percentile up to <95th percentile.

[6] The Fourth Report on the Diagnosis, Evaluation, and Treatment of High Blood Pressure in Children and Adolescents. Retrieved on September 18, 2007 from www.pediatrics.org

Stage 1 Hypertension 95th to <99th percentile plus 5 mmHg

Stage 2 Hypertension >99th percentile plus 5 mmHg

Caution must be applied in the interpretation of this data since the measurement of BP was done as a screening rather than as a diagnostic tool. Hence, anyone who had high blood pressure was referred for further evaluation and determination of HPN status.



	2007	2008	2009
HTN	228	45	46
Prehypertension	254	56	71
Normal	881	1206	1373

Figure 9: Distribution of Children by Blood Pressure Classifcation, School Health Screening, 2007-2009

Establishing the relationship between at-risk/overweight and pre/hypertensive in 2009, an Odds Ratio of 5.30 (95%CI 3.45<POR<8.17, p-value=0.00) It means that at-risk/overweight children are 5.30 times more likely to develop pre/hypertension as compared to those who are not at-risk/overweight.

Protein & Glucose Spill and Occult Blood

The urine screening to determine protein and glucose spills and occult blood showed that there are high proportion of students who may have medical problems related with diseases of the kidneys and diabetes. From 2007 to 2009, at average, 0.37% of the children were tested positive of glucose spill; 2.43% were positive of protein spill; and 5.53% were tested positive of occult blood.

Visual Acuity and Sense of Hearing

Visual and hearing problems require immediate diagnosis as these affect students' learning and

socialization.

Averaging visual acuity tests results from 2007 to 2009 gives 6.7% are classified “border”, 1.1% is “not good” and 0.5% is for “immediate referral”.

In 2007, 2.3% and in 2008, 16.9% (173/1024) have Tympanometry of Type C. These students were referred to appropriate clinics.

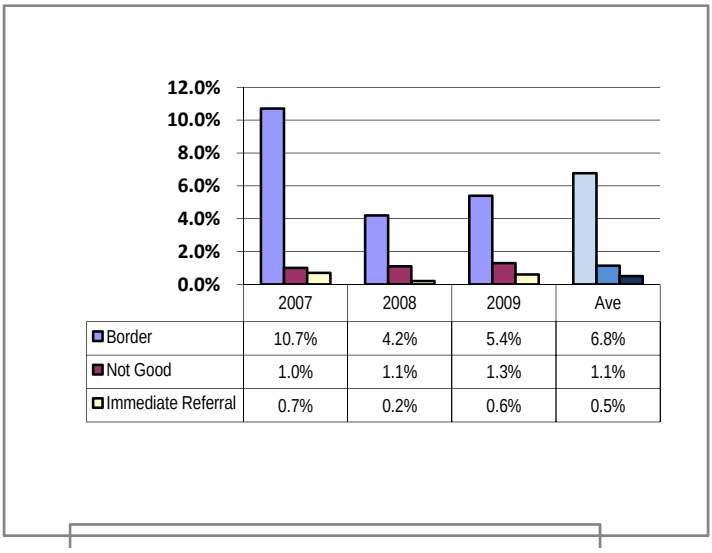


Figure 10: Proportion of Students by Visual Acuity, School Health Screening, 2007-2009

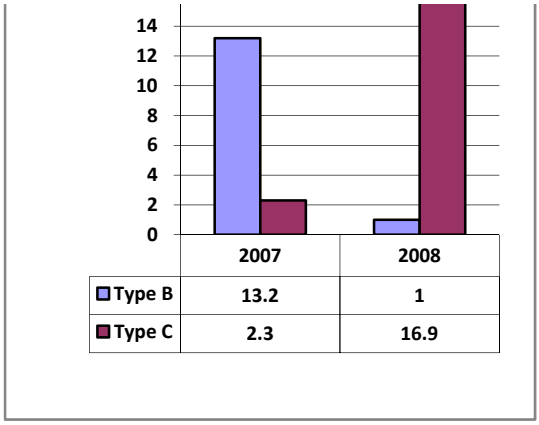


Figure 11: Proportion of Students by Tympanometry, School Health Screening, 2007-2009

Reproductive Health - Children

At average, 66.2% of the female students screened from 2007 to 2009 have had menarche. The average age at menarche is 12. The youngest and the oldest at age of menarche is 9 and 16,

respectively. With regard to the regularity of their menstrual cycle, about 60.6% have monthly periods whereas 39.4% have irregular menstruation.

Sexuality

In 2007, of the 1365 students, about 607 responded to questions related to sexual activity. About 7.4% of the students claimed to be sexually active. 86% (37/43) have monogamous relationship and 14% (6/43) have multiple partners. In 2008, about 6.4% (40/623) students said that they are sexually active. Among these, 68.4% (26/38) have monogamous relationship and 31.6% (12/38) have multiple partners. In 2009, 5.2% (40/768) admitted to have had sexual history and 71.1% (27/40) of them said they have single sexual partner.

2007 YRBS shows that 39.4% of the adolescents claimed to have had sexual intercourse and 16.8% had four or more sexual partners.

In terms of protection from sexually transmitted infections, about 56.8% (2007-2009) used condoms. This data is compatible with that of the YRBS, 2007 which had condom used at 60.8%. From the foregoing data, it shows that a proportion of the children is sexually active and has low protection from STI including pregnancy.

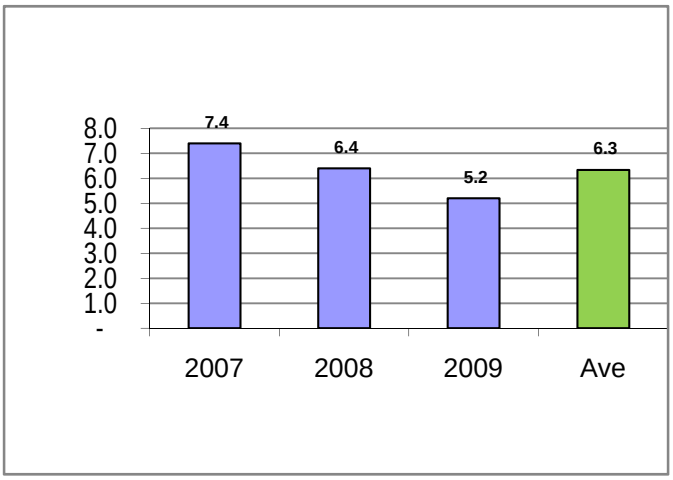


Figure 12: Proportion Students having Sexual History School Health Screening, 2007-2009

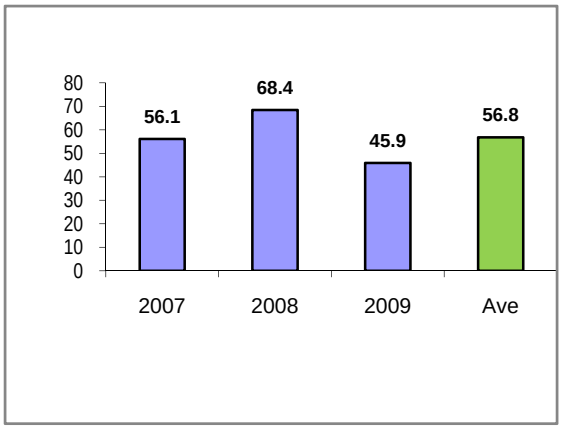


Figure 13: Proportion Students Who Used Protection from STD during Last Sexual Intercourse, School Health Screening, 2007-2009

Sexually Transmitted Infections (C. trachomatis)

Chlamydia trachomatis is one of the more common sexually transmitted infections. It's almost always asymptomatic and ascending in nature. It has dire consequences like Pelvic Inflammatory Disease.

Younger population is also at risk with this infection due to risky behavior. Also, biologically and physiologically their reproductive system is not fully developed.

In 2007, 22.4 per 1000 women aged 15-19 years old have had Chlamydia infection (17/759) while in 2008, there were 10.5 per 1000. Efforts are done in the schools and the community to make them aware of sexually transmitted infections including HIV. There is strong partnership between the schools, FHU/MCH and the STI/HIV programs to deal with the problems related to sexually transmitted infections. Population of this group was culled from the Population Projection using exponential methods. (RDSS, 2007)

In 2009, 44.1 per 1000 (34/771) women aged 15-19 were tested positive for Chlamydia infection.

Teenage Pregnancy

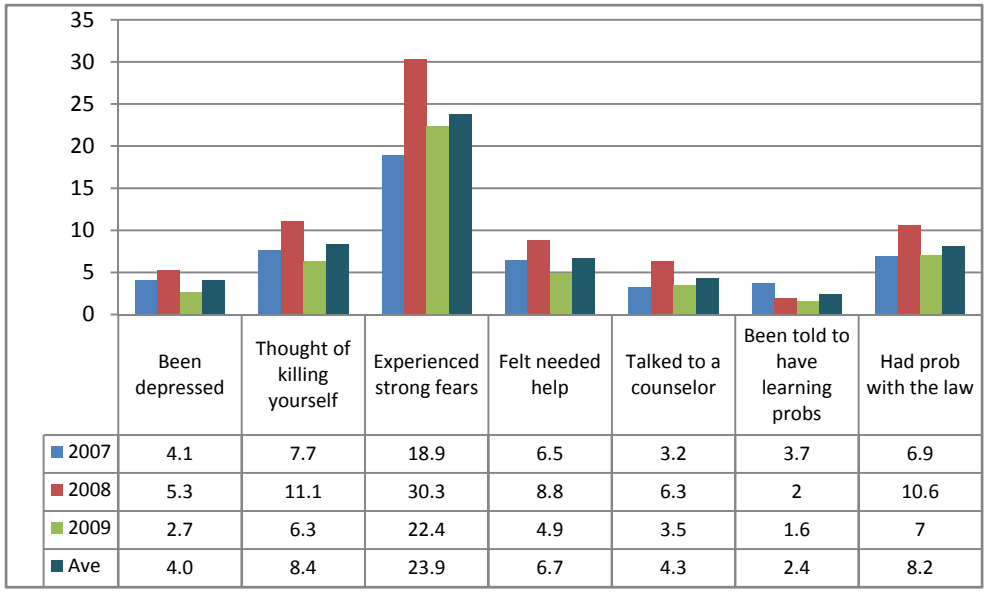
The 5% (n=14) teenage pregnancies in 2007 increased to 8% in 2009 (15-19 years old). This brings the 15-17 ASFR at 6.6 per 1,000 women in 2007 and 15.1 per 1,000 women in 2009 in the said age bracket. For 2009, the three-year moving average is 18.9 per 1,000 for teenagers aged 15 through 17 years. Expanding the assessment of the ASFR to 15-19 years old, this has increased 18.4 in 2007

to 44.1 in 2009 (per 1,000 women). An age-specific fertility rate of 44.1 is higher compared with the same rate in the industrialized countries at 24 (Fertility and Contraceptive Use, UNICEF Statistics, UNICEF, 2007).

The denominator is a population projection for this age group (female) based on the Republic of Palau 2005 Population Census.

Depression and other Related Issues

At average, 4.0% of the students have experienced depression in 2007-2009. Those who ever thought of killing themselves constitute 8.4%. A significant proportion (23.9%) of the students experienced strong fears. Yet, despite the significant number of children with psycho-social issues, only 6.7% felt that they needed helped. About 4.3% (2007-2009) of them ever talked with a counselor for stressful problems. Among the students, about 2.4% were told that they have learning problems. 8.2% opened that they have problems with law, school, family and relationships.



	Been depressed	Thought of killing yourself	Experienced strong fears	Felt needed help	Talked to a counselor	Been told to have learning probs	Had prob with the law
2007	4.1	7.7	18.9	6.5	3.2	3.7	6.9
2008	5.3	11.1	30.3	8.8	6.3	2	10.6
2009	2.7	6.3	22.4	4.9	3.5	1.6	7
Ave	4.0	8.4	23.9	6.7	4.3	2.4	8.2

Figure 14: Proportion of Students having Psychosocial Issues, School Health Screening, ROP, 2007-2009

Suicide Deaths

In its commitment to address psychosocial issues that leads to suicide of young people, Palau, through FHU's school-based health screening and intervention monitors risk factors for suicide. Among the screening questions pertain to depression, traumatic experiences, suicide ideation and suicide attempt including access to counselor or therapist. If students are known to have any psychosocial problems, the Public Health Social Workers initiate counseling or make referral to appropriate units like the Behavioral Health or School Health Clinic. On the other hand, the Ministry of Education also conducts the Youth Risk Behavior Survey every two years that also deals on psychosocial issues similar to the School Health Screening Program. Both the School Health Screening and the YRBS also helped program implementers in designing strategies and activities to respond to the problems of the youth.

Averaging results from 2007-2009 School Health Screening, about 8.4% (339/4113) of children reported to have suicide ideation and 28.3% (91/322) of those who had ideation have attempted suicide. Interventions either through on-site and follow-up from school health program and through referrals were done.

In 2007, there was one (1) case of suicide who was a 14-year old female. In 2008, there were two (2) cases of suicide, one (1) 14-year old female and one (1) 19-year old male. In 2009, one (1) sixteen year old male committed suicide.

Bullying

Bullying involves a person or a group repeatedly trying to harm another person who is weaker or more vulnerable. It can be in the form of direct attacks (such as hitting, threatening or intimidating, maliciously teasing and taunting, name-calling, making sexual remarks, and stealing or damaging belongings) or more subtle, indirect attacks (such as spreading rumors or encouraging others to reject or exclude someone).

If bullying continues for some time, it affects the teens' self-esteem and feelings of self-worth. This increases their social isolation, leading them to become withdrawn and depressed, anxious and insecure. In extreme cases, some teens feel compelled to take drastic measures, such as carrying weapons for protection or seeking violent revenge. Others, in desperation, even consider suicide. At average, 27.4% of the students claimed to have experienced being bullied at (2007-2009).

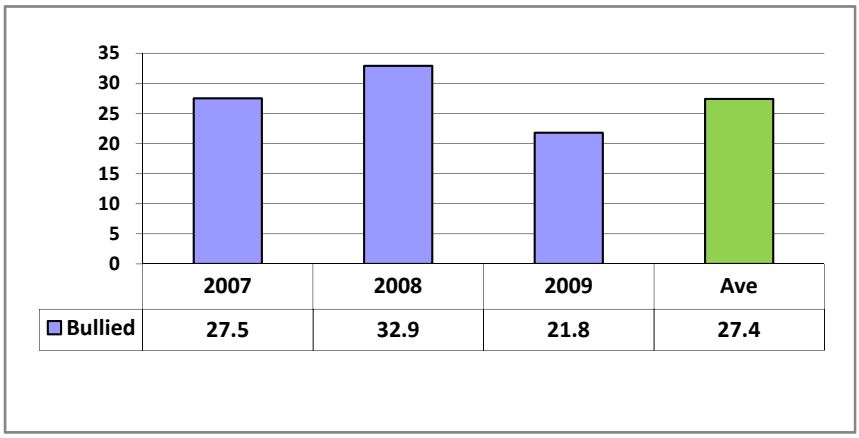
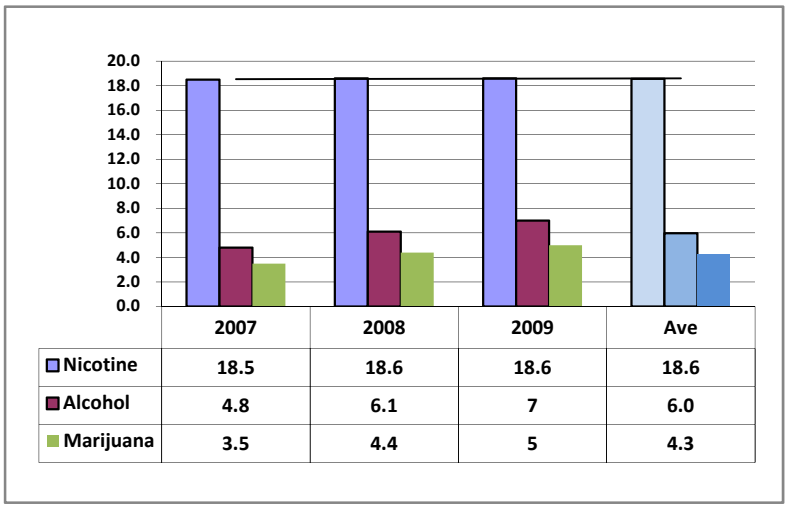


Figure 15: Proportion of Students Who Ever Been Bullied at, School Health Screening, 2007-2009

Alcohol, Tobacco and Other Drugs (ATOD)

About 18.6% of the students admitted to have used nicotine from 2007-2009. On the other hand, 6.0% and 4.3% consumed alcohol and used marijuana, respectively. There is almost equal preponderance of ATOD used in both sexes.



	2007	2008	2009	Ave
Nicotine	18.5	18.6	18.6	18.6
Alcohol	4.8	6.1	7	6.0
Marijuana	3.5	4.4	5	4.3

Figure 16: Distribution of Students as to ATOD Used, School Health Screening, 2007-2009

Summary of Children's Health Issues:

- 9% (107/1188) of the screened school children who have claimed to be physically inactive are either overweight or at-risk-of-overweight
- 6% (76/1363) of the screened school children were found to have elevated hypertensive and either overweight or at-risk-of-overweight
- 3% of the diet of screened school children are on fruits and vegetables while 39% and 37% are on carbohydrates and protein respectively.
- Overweight is prevalent with consequences like hypertension
- Sexually active population with low protection from STI
- Troubled youth with high proportion who have psycho-social problems including suicide ideation
- ATOD used has not really change in the last 10 years
- Better access to health care (i.e. immunization and consultation)
- High contraceptive prevalence rate among the teenage group
- Greater proportion of children under7 years of age are cared for by people who have High School or greater education level.
- Palau Families allot Space/Time for children to learn/study regardless of size & space in the house
- No Safe Playground: (13%)
    - Play Indoor (latchkey)– 49%
    - Public Parks – 14%

- Roads – 12%
- Play around neighborhood – 9%
- Driving/Strolling on parents dayoff – 7%

Specific Tested Risk Factors for Palau's Children[7]: ([2])

	OR	CI 95%
At Risk/Obese vs. Activity Level	2.30	(1.79-2.96)
At Risk/Obese vs. Pre-HTN/HTN	5.30	(3.45-8.17)
Depression vs. Sexual Activity	2.99	(1.17-7.30)
At Risk/Obese: 7-11 grade vs. 1-5**	1.29	(1.04-1.61)
Academic Performance vs. bullied	1.74	(1.18-2.57)
Psych vs. ANM*	2.24	(1.71-2.94)
• Psych vs. Alcohol	2.78	(1.74-4.45)
• Psych vs. Nicotine	2.26	(1.70-3.00)
• Psych vs. Marijuana	3.84	(2.29-6.47)
ANM vs. Sexual Activity	11.07	(5.23-23.86)

Summary Statements of Palau's Children's Risk Factors

- Issues faced by Palauan Youths are not uniquely Palauan
- Palauan community is now part of the global community with similar pediatric issues
- Solutions will require global perspective and can no longer be obtained in isolation

Pregnant Women8:

Incident Cases of Risky Pregnancy by Virtue of their Age: There were a total of 21 (7.1%) teenage pregnancies in 2008. Of these, 1 was 14 years old and 1 was 16 years old. On the other hand, there were 27.5% (81/295) aged >35 years old. This group have risky pregnancy by virtue of their age.

[7] School Health Screening and Intervention Program, FHU, Bureau of Public Health, Ministry of Health 2005 - 2009
[8] Palau Pregnancy Risk Assessment & Surveillance System, FHU, BPH, Ministry of Health 2009

The low age-specific fertility rate and pregnancy in the adolescent age group reflects a strong family planning program for the adolescents and that this program has responded to **Goal 4** (i.e. reduce adolescent pregnancies) effectively.

- **Birth Interval**

Of the 295 assisted deliveries in 2008, 80 were primigravid. The mean birth to pregnancy interval (BTP) of those with at least 2 pregnancies is four (4) years and five (5) months. The shortest and the longest BTP interval are 12 months and 19 years, respectively. At least, 21.3% (37/174) of the pregnancies have BTP of less than two years and 78.7% (137/174) equal or greater than two years (Figure 17). The 4-year BTP interval is double than the prescribed 2 year interval[iv]. Again, the FP program has achieved **Goal 2** (improve the 2-year birth interval).

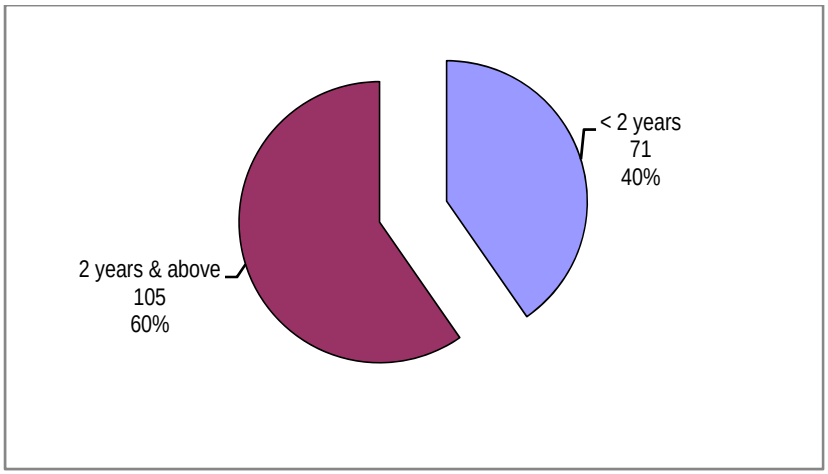


Figure 17: Birth to Pregnancy (BTP)* Interval of Less than 2 Years† of Mothers Who Delivered (n=295), Belau National Hospital, 2009, Republic of Palau

*Previous birth to current pregnancy
† After a live birth, the recommended interval before attempting the next pregnancy is at least 24 months in order to reduce the risk of adverse maternal, prenatal and infant outcomes.

- **Planned and Unplanned Pregnancies**

In the PRAMS[9], there were more unplanned pregnancies in the year 2008 (25.0%) compared with 2007 (23.3%) (Table 3). The odds of having unplanned pregnancy is 1.24 (0.53<POR<2.94) times more in 2008 than in 2007. This difference between these two is not significant with a p-value of **0.59**.

The data suggests that the Family Planning Program may have not reversed the issue of unplanned pregnancy at least among those post-partum mothers who participated in the survey.

Table 3: Distribution of Mothers Who Gave Birth, Years 2007/2008 and 2009 as to Planned and Unplanned Pregnancy, PPRASS, Republic of Palau

Variable	Total		2007-08		2009	
	Freq	%	Freq	%	Freq	%
Thinking back to just before you got pregnant with this baby, how did you feel about becoming pregnant?						
Did not want to get pregnant or wanted to get pregnant later	57	35.2	39	36.1	18	33.3
Wanted to get pregnant	47	29.0	31	28.7	16	29.6
Don't know	58	35.8	38	35.2	20	37.0
Total	**162**	**100.0**	**108**	**100.0**	**100**	**100.0**

Breastfeeding

Among those mothers who delivered in 2003 to 2008 and participated in the PRAMS-like survey, 96.9% breastfed In 2009, well baby clinic registry registered 67.2% of the babies were breastfed at 4-6 months of age. 38.8% of them were reported to be breastfed exclusively while 28.4% were partially breastfed. On the other hand, the Palau Pregnancy Risk Surveillance System reported that 56.5% of the mothers who responded the survey were exclusively breastfeeding their babies and of those who breastfeed, 44.1% breastfed for 6 months or more.

[9] Since this is a voluntary participation survey, only very few of the post-partum mothers were covered. The proportion of the respondents to total live births for the different years is as follow: 19.5% (2003), 30.1% (2004), 21.5% (2005) and 11.2% (2006).

Table 4: Comparison of Breastfeeding among Mothers who Gave Birth in Years 2003 to 2008, PPRASS, Republic of Palau

	Total		2003-2004		2005-2007		2008	
	Freq	%	Freq	%	Freq	%	Freq	%
1-5 mos	206	52.8	71	50.7	68	43.9	67	70.5
6 or more	172	44.1	65	46.4	82	52.9	25	26.3
Did not breastfeed	12	3.1	4	2.9	5	3.2	3	3.2
	390	100.0	140	100.0	155	100.0	95	100.0

- **Contraceptive Failure**

About 23% of post-partum mothers who were interviewed in the PRAMS claimed to use any kind of birth control when they got pregnant (Table 5).

Table 5: Distribution of Mothers Who Gave Birth, Years 2007/2008 and 2009 as to the Use of Any Kind of Birth Control, PPRASS, Republic of Palau

Variable	Total		2007-08		2009	
	Freq	**%**	**Freq**	**%**	**Freq**	**%**
When you got pregnant with your new baby, were you or your husband using any kind of birth control?						
Yes	52	21.0	40	24.7	12	14.0
No	196	79.0	122	75.3	74	86.0
Total	**248**	**100.0**	**162**	**100.0**	**86**	**100.0**

Comparing 2007 with 2005/2006, the POR is 0.93 (0.40<POR<2.15) with p-value of 0.85. It means that there was no difference between two time points. However, this data shows that there was no improvement in the reversal of "contraceptive failure." **This could be brought about by incorrect way of using the contraceptive methods. Another explanation is that the contraceptive method may not be appropriate for the client that side effects are common that lead to irregular use. Another issue in this data is whether this specific question in the PRAMS is understood by the respondents as "contraceptive failure."** From this information, there is a need to strengthen on the activities of **Goal 1** (reduce contraceptive failure rate) and review this particular question in the PRAMS.

- **Adolescents Sexual Behavior**

In the 2007 YRBS, about 60.6% of the youth-respondents said they never had sexual intercourse. However, 14.6% claimed to have had their sexual initiation before age 14 and 25.5% have had sex at age 14 and over. Citing the same study, 21% (152/721) claimed that they were physically forced to have sexual intercourse. The proportion is higher among boys (17.2%) than girls (12.7%)

Table 6: Distribution of Students as to Sexual Activity and Contraceptive Use, School Health Screening Program, 2008 and 2009, Republic of Palau

Variable	Total		2008		2009	
	Freq	Percent	Freq	Percent	Freq	Percent
Sexually Active						
Yes	80	5.8	40	6.4	40	5.2
No	1311	94.2	583	93.6	728	94.8
Total	1391	100.0	623	100	768	100.0
Family Planning						
Yes	19	25.7	9	23.7	10	27.8
No	55	74.3	29	76.3	26	72.2
Total	74	100.0	38	100.0	36	100.0

In the School Health Screening Program[10], only 7.4% and 6.4% claimed to have had sexual history in 2007 and 2008, respectively. Among those who have had sexual intercourse, it appears that the proportion of contraceptive use was higher in 2007 (38.1%) compared in 2008 (23.7%) (Table 6). This rate is comparable to the Palau's adolescent contraceptive prevalence (79.9%) in 2007 YRBS. Comparing both years, those sexually active students are likely (95% CI 0.17<POR<1.48) to adopt any forms of contraceptive methods as compared with sexually active students in 2005

Summary Issues – Pregnant Women:

- A little over half of the pregnant women are chewing betel nut with cigarette;
- Prenatal-care requires more strengthening
- Psycho-social issues are prevalent among pregnant women
- Depression is an issue in the prenatal and postpartum period
- Obesity prior to and during pregnancy may have a negative impact on the delivery process and infant health -
- Appropriateness of Prenatal Care changes depending on either the Kotelchuk or WHO Index (32% vs. 84%)
- The high prevalence of Chlamydia infection in this age group and its relationship to pre-term labor and fertility pattern of women in Palau.

Strengths:

- High proportion of pregnant women with Birth to Pregnancy Interval of 2 years and more;
- No difference through time in terms of the proportion of unplanned pregnancy;

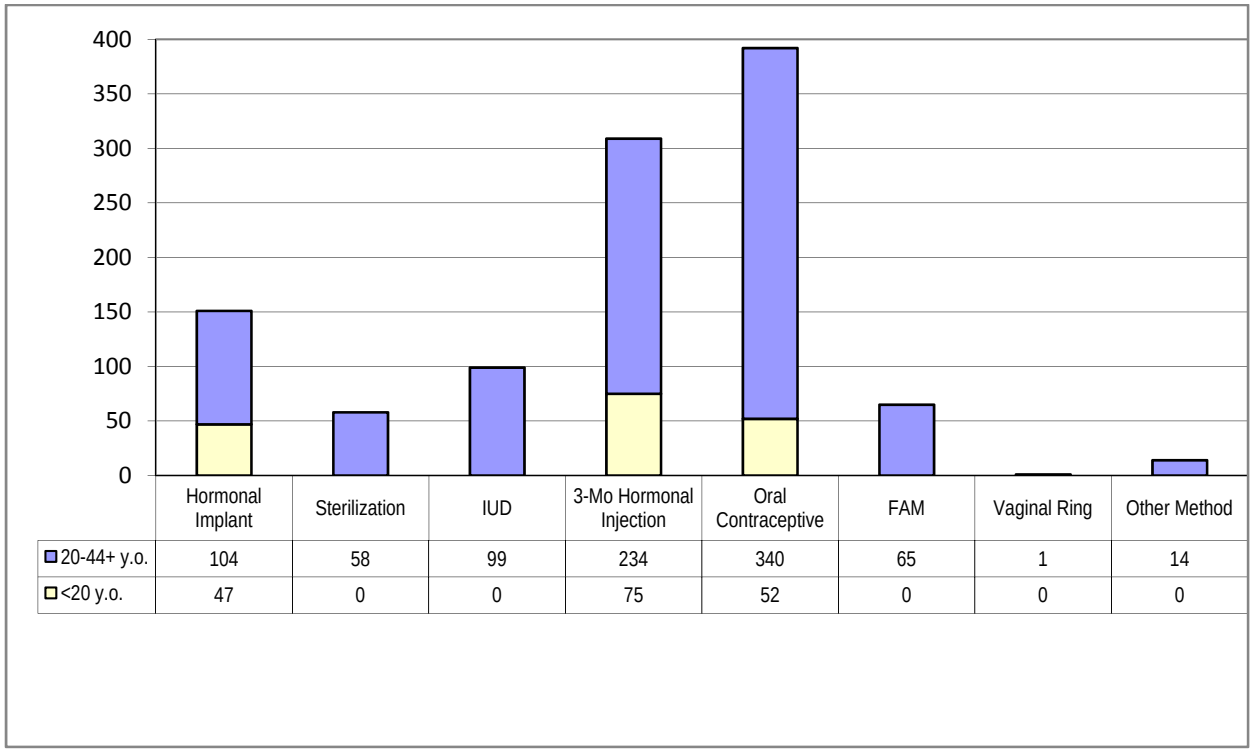
Women and Men of Reproductive Age Group:

Number of Women at Risk of Pregnancy Who Used Contraceptive Methods[11] (15-44 years old):

A total of 1153 women at risk of pregnancy used any forms of contraceptive methods in 2008. The most common types of method adopted are the Three Month Hormonal injection (33.2%) and Oral Contraceptive (33.0%). The adolescents account for 14.7% of all the contraceptive users (Figure 18). The Contraceptive Prevalence could not be ascertained due to lack of data relevant to the number of sexually active women.

[10] This is a voluntary screening with consent from parents. The students are identified in the screening form.

[11] Population-based sample surveys provide the most comprehensive data on contraceptive practice. However, in this computation we used programme statistics which may have drawback in excluding the use of contraception obtained outside the programme, including modern methods supplied through non-programme sources as well as other methods that do not require supplies or medical services.



	Hormonal Implant	Sterilization	IUD	3-Mo Hormonal Injection	Oral Contraceptive	FAM	Vaginal Ring	Other Method
20-44+ y.o.	104	58	99	234	340	65	1	14
<20 y.o.	47	0	0	75	52	0	0	0

Figure 18: Distribution of Family Planning Users as to Age Group and Type of Family Planning Methods, 2009 Family Planning Clinic, Republic of Palau

Sexually Transmitted Infections (Chlamydia trachomatis)

In 2007, about 22.4 for every 1000 women (82/3661) aged 20-44 years have had Chlamydia infection. In 2008, there were about 14.6 for every 1000. In 2009, a higher rate was seen at 68.3 per 1000 (254/3720) women aged 20-44 were tested positive of Chlamydia infection. At the communities, information and communication campaigns are done to increase the level of awareness of women as to signs and symptoms and risk of STI. Services are also strengthened at the Belau National Hospital, Out Patient and the Dispensaries in the outlying communities.

Summary of Issues for Men & Women of Reproductive Age Group:

- High proportion of Chlamydial infection in this age group.
- Obesity prior to and during pregnancy may have a negative impact on the delivery process and infant and mother's health.

- High Rate of tobacco use prior to and during pregnancy(chewing with betel-nut) in women may contribute to pre-term delivery and low-birth-weight

Children with Special Health Care Needs[12]:

Children with special health care needs as define includes children (between 0 to 21 years old) who have increased risk for a chronic physical, developmental, behavioral or emotional condition and who also generally require health and related services of a type or amount beyond that required by children.

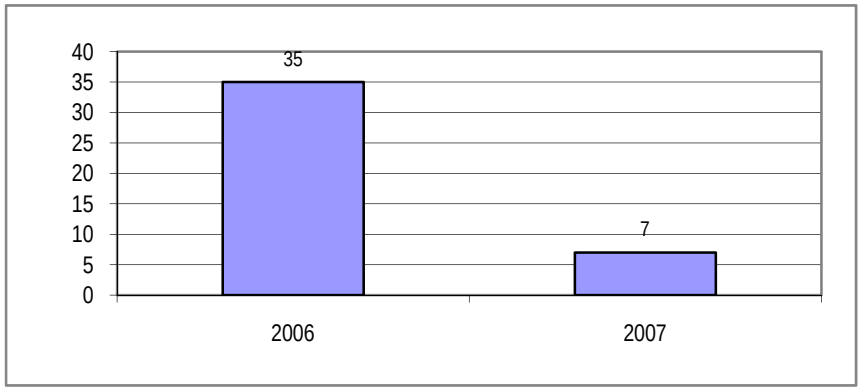


Figure 19: Number of Children with Special Health Care Needs Referred to the High Risk Clinic, Family Health Unit, Palau, Years 2006 and 2007

Those with special health care needs are physically impaired or with medical problems like those who are blind, visually impaired, deaf, hearing impaired, with speech impairment, developmentally disabled or mentally retarded, with learning disabilities and serious emotional disturbance.

There are over 300 children with special health care needs in the CSHCN Registry. At Well-Baby Clinic, children with special health care needs are identified and managed by the Medical Doctors and a Pediatric Case Manager work with various team members listed below to provide comprehensive services for the child and his/her family. Once the child is enrolled in the High Risk Clinic, the child is registered by the Palau Interagency CSHCN Registry. The CSHCN Interagency Team which includes the:

FHU Well-baby Clinic

Parent support group

[12] Early Care and Education National Surveillance, FHU, BPH, Ministry of Health, 2009

Special Education	Behavioral Health
Head Start	BNH Outpatient Clinic
Physical Therapy	Bureau of Community Services (Social Service)

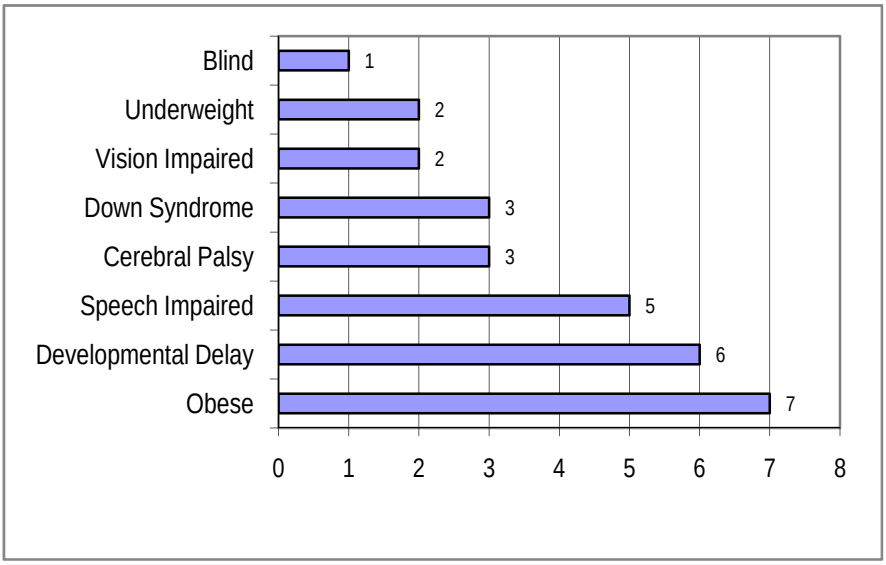


Figure 20: Number of Children with Special Health Care Needs as to Category (n=27), 2007

Each of these agencies, which may have direct and indirect involvement, will conduct their individual investigation / examination of the child. The evaluation and findings are discussed during the regular monthly meetings. In this meeting, management and interventions are also brought up which become the basis of follow-ups.

There were a total of 29 children with special health care needs that warranted the management of the Social Worker. Of these 29, 7 were obese, 6 with developmental delay and 5 with speech impairment.

Strengths:

- Greater proportion of CSHCN attend pre-school as compared to those without SHCN. (OR = 1.89 (1.02<OR< 3.50), P-value = .029
- SHCN no longer prevents children from being enrolled in schools.

Continuing Issues:

- Dental services are expensive

- Some common health problems that may result in child not going to school:
    - Asthma/eczema
    - Child's meds always out of stock
    - School aged children not in school
    - Speech problem
    - Seizure, hearing impairment
    - Parents deciding to have children stay at home due to unwanted exposure
    - Parental Participation in decision making of services for CSHCN

NEEDS ASSESSMENT SUMMARY

As discussed in the public input section, the needs assessment for this fiscal year followed similar process. Throughout the year, in our community engagement process, we enrolled community discussion on identified needs of the MCH population. From these discussions, the FHU aligns itself to address identified community needs. The needs assessment process also follows the community engagement process in that needs are reflective of the MCH age group. The important factor that came out of these community discussions is to increase effort in developing and improving parental skills in various health risk factors, such as:

FHU MCH Program in collaboration with its community partners and collaborators have developed community training materials that in the next year will be used in providing parental education and training in the communities. Within the collaborative groups, non-health members are being oriented and trained to be community educators. Key staff in the program will take part as professional support to the community educators.

To sum up, needs assessment activities in this fiscal year has improved with an added staff in epidemiology and statistics. Throughout the year, they have worked to organize data for this application and at the same time this has enabled our presence in the community to be more evidence and best practice based.

The improvement in our ability to capture, analyze, report health status information back to the communities and engaging the communities in discussions and decisions on how to help them address their issue, has greatly improved our relationship with various communities and stakeholders. Parenting skills, is one area of need that is verbalized is practically all communities of Palau.

One other area of need that we still need to be established in FHU MCH Program is the research activity that will enable us to understand the health of the MCH population. Along with this development, is the need to assure that a long-term solution to this key program component is undertaken through either external or internal funding streams. With the school system and leadership of Palau becoming more aware of sustainability of human development for Palau, there is an initiative to strengthen science and math in the school system, from primary to secondary schools so that Palau's children will be competent to meet college requirements for these types of courses.

[i] Foundations of Statistical Analysis for the Health Sciences, Department of Epidemiology and Biostatistics, College of Public Health, University of the Philippines-Manila; Vol. 1, page 67-107.

[ii] The State of the World's Children 2003, The United Nations Children's Fund, 2002

iii Fertility and Contraceptive Use, Unicef Statistics, Unicef, 2007.

iv Rutstein SO. Effects of preceding birth intervals on neonatal, infant and under-five years mortality and nutritional status in developing countries: evidence from the Demographic and Health Surveys. *International Journal of Gynaecology and Obstetrics*, 2005, 89:S7–S24.