



PAPUA NEW GUINEA

CHILD HEALTH POLICY AND PLAN

2009-2020



CONTENTS

CONTENTS	3
FOREWORD	7
ACKNOWLEDGEMENT	8
ABBREVIATIONS.....	9
EXECUTIVE SUMMARY	11
VOLUME I CHILD HEALTH POLICY 2009	13
CHAPTER 1. BACKGROUND	14
1.1 Global and Historical Context.....	14
1.2 Need for and Intent of Policy	14
1.3 Audience	15
CHAPTER 2. POLICY DIRECTIONS	16
2.1 Policy Goals	16
2.2 Policy Objectives	16
2.3 Policy Principles	16
2.4 Guiding Principles of Partnership in Child Health Policy.....	16
2.5 Population policy	17
2.6 Core Government Commitments and Policies	17
CHAPTER 3. HEALTH SYSTEMS.....	19
3.1. Human Resources	19
3.2 Service Delivery.....	19
3.3 Medical products and technology	20
CHAPTER 4. POLICY CONTENT	21
4.1 Integrated management of childhood illness.....	21
4.2 Expanded program of immunization.....	21
4.3 Standard treatment and clinical guidelines.....	22
4.4 Neonatal care	22
4.5 Breast feeding, nutrition & micronutrients	23
4.6 Quality improvement in hospital care	24
4.7 Pneumonia.....	25
4.8 Malaria	25
4.9 Tuberculosis	26
4.10 HIV	26
4.11 Paediatricians training.....	27
4.12 Child health nurses and midwives.....	27
4.13 Community health workers.....	28
4.14 Continuing professional development.....	28
4.15 Adolescent health.....	28
4.16 Cancer, Heart disease, Paediatric Surgery	28
4.17 Child protection and social services.....	29
4.18 Child disability.....	29

4.19	Legislation.....	30
CHAPTER 5.	MONITORING AND EVALUATION.....	32
5.1	Policy development in Child Health	32
5.2	Review	32
VOLUME II SECTION I. CHILD HEALTH PLAN: 2009-2020		34
CHAPTER 5. INTRODUCTION.....		35
5.1	Child health in PNG: recent progress and future challenges	35
5.2	Child mortality	36
5.3	Common causes of childhood illness and death.....	37
5.4	Health facility network	37
5.5	Human resources in child health.....	37
5.6	Population issues	38
CHAPTER 6. PROGRAM AREAS		40
6.1	Integrated Management of Childhood Illness (IMCI)	40
	Progress in the three IMCI components in PNG	40
	Improvements in Health Systems	41
	Improvements in family and community practices	41
6.2	Expanded Program of Immunization.....	43
6.3	Standard Treatment and Clinical Guidelines	45
6.4	Neonatal Care	46
	Training and standards	46
	Baby Friendly Hospital Initiative	46
	Neonatal sepsis.....	46
	A centre of excellence for neonatal care	47
	Activities	47
6.5	Breast Feeding, Nutrition and Micronutrients	49
	Breast feeding promotion	49
	Complementary feeding	49
	Micronutrients	49
	Vitamin A.....	50
	Deworming.....	50
	Zinc	50
	Growth monitoring.....	50
	Nutritional support to sick and malnourished children.....	50
	Human resources for nutrition.....	50
	Essential nutrition requirements	51
6.6	Improving Quality of Hospital Care.....	52
	A quality improvement approach to paediatric care.....	52

	Introduction of the WHO Pocketbook of Hospital Care for Children	52
	Improving oxygen supplies and the management of severe pneumonia	52
	Standardized hospital data reporting	53
	Hospital outreach services	53
	Improving hospital care for sick adolescents	53
6.7	Pneumonia	55
	Causes	55
	Case management.....	55
	Prevention of pneumonia.....	56
	Surveillance	56
6.8	Malaria	58
	Prevention with long lasting mosquito nets.....	58
	Diagnosis and treatment.....	58
	Activities and future directions	58
6.9	Tuberculosis.....	60
6.10	HIV and AIDS	62
6.11	Paediatricians training.....	64
	Training of Paediatricians for the next 10 years.....	64
	Sub-specialty training.....	64
6.12	Child health nurses and midwives	65
6.13	Community Health Nurses and Community Health Posts	66
6.14	Continuing Professional Development.....	67
	CPD for paediatricians	67
	CPD for other health workers.....	68
6.15	Adolescent Health.....	69
	Community-based services.....	69
	A model of adolescent services within a hospital.....	70
6.16	Special Areas: Childhood Cancer, Heart Disease and Paediatric Surgery	71
	Childhood cancer.....	71
	Children with heart disease	72
6.16	Child protection and social services.....	74
	Child abuse and neglect.....	74
	Reducing domestic violence.....	74
	Universal education	74
	Birth registration	74
6.17	Children with disabilities	75
	Prevention of disability	75
	Support services for children with disabilities	75
6.18	Child health research	75

CHAPTER 7. CHILD HEALTH ADVISORY COMMITTEE	76
SECTION II STRATEGIC IMPLEMENTATION PLAN 2009 - 2015.....	77
SECTION II. STRATEGIC IMPLEMENTATION PLAN: 2009-2015	78
Appendix 1. Costing - in Kina	105
Appendix 2. Projection of paediatrician training 2009-2015	111
Appendix 3. Projection of paediatrician sub-specialty training 2012-2020	112
Appendix 4. Monitoring.....	113
Appendix 5. Child health hotline and contact addresses.....	114
Appendix 6. Core indicators and potential mechanism for monitoring.....	116
Acknowledgements	119

FOREWORD

It is with great pleasure that I introduce this PNG Child Health Policy & Plan. Improving child health and education are vital for the future of Papua New Guinea. Sadly, in the last 30 years, child death rates in PNG have been among the highest in the Asia and Pacific regions. The encouraging news is that in recent years child death rates have reduced, and this is because of a comprehensive approach that is outlined in this plan. However there is still a very long way to go to achieve acceptable child survival, health and development. Improvements in child health have not been shared by all. The poor have missed out. Also child survival gains are not evenly distributed throughout the country. Some districts have child mortality rates that are 3-4 times higher than the better performing districts. The challenges are many, including difficult geographical access, weak health systems and limited human resources. Preventable and treatable diseases such as pneumonia, diarrhoea, malnutrition, HIV and tuberculosis remain some of the biggest causes of child death. Many of these diseases also cause disability and long term problems that limit quality of life, educational outcomes and productivity.

The good news is that there are effective interventions to reduce the burden of these illnesses, all of which are included in this Child Health Plan, and child health indicators are starting to improve. The plan emphasizes the importance of primary health care, improving quality of care, disease prevention and improving the human resources for health.

This Child Health Policy & Plan complements our overall National Health Plan and Medium Term Development Framework. The aim of the National Health Plan is to improve the health of all Papua New Guineans through the development of a health system that is responsive, effective, affordable, acceptable and accessible to all people. This National *Child* Health Plan shows the detail of the child health component of the overall National Health Plan, and sets out activities and programs that will result in the MDG aspirations being achieved.

With sufficient investment in child health and education, this plan can be fully implemented and our goals for Child Health can be achieved. This Child Health Policy & Plan should be seen in the non-health sector policy contexts of improvements in community development and engagement, increased access to education and improved female literacy, curbing of domestic violence, increased male involvement in families, and the more equitable sharing of the favorable economic conditions.

This plan will be used at National, Provincial and local level; by Provincial Health to guide their annual activity plans; and to inform health workers, the community and the Government's partners about child health priorities and the approaches being adopted.

Special thanks are due to the Paediatric Society of PNG, Family Health Services Branch and the Child Health Advisory Committee of the National Department of Health for their key roles in developing this plan.

Hon. MR. SASA ZIBE, MP
Minister for Health & HIV&AIDS

ACKNOWLEDGEMENT

Improving child and maternal health is a major commitment of the PNG National Department of Health and Provincial Departments of Health. To achieve the Millennium Development Goals for Child Health will require that all people responsible for the health and wellbeing of children focus on the one strategy and work with commitment together. This policy and plan outlines a comprehensive approach that will result in real and sustained improvements in health services for children.

It is a tragedy that children in PNG still die unnecessarily, from preventable and easily treatable diseases, malnutrition and neglect. Our health service can contribute substantially, not only to preventing these deaths, but by the respectful and caring way we treat children and their families, in minimizing the effects of social disadvantages and poverty on health and development. We should treat people as we would want to be treated ourselves; with timely, considerate and effective care and good communication.

This document was developed in a series of meetings between June 2007 and June 2009. Many people contributed ideas and suggestions or reviewed various drafts. Substantial contributions in specific areas to the writing of this plan were made by members of the Paediatric Society of Papua New Guinea; Family Health Services of Department of Health; Child Health Advisory Committee; Division of Child Health, School of Medicine and Health Sciences, University of Papua New Guinea; and Center for International Child Health, University of Melbourne.

On behalf of the National Department of Health, I would like to convey my sincere gratitude to all that were involved in putting together this very comprehensive and evidence-based Child Health Policy, Plan and Strategic Implementation Plan for 2009-2015.

I look forward to this Child Health Policy and Plan to be promoted and implemented at all levels of governance by all cadre of health workers, as well as everyone else who contribute one way or the other in the development and wellbeing of the children of Papua New Guinea. I would ask you to please read this document carefully and do what you can to help us implement it.

DR CLEMENT MALAU

Secretary for Health

ABBREVIATIONS

IMCI	Integrated Management of Child hood Illness
ART	Antiretroviral therapy
HIV	Human Immune Deficiency
AIDS	Acquired Immune Deficiency Syndrome
NDoH	National Department of Health
CHP	Child Health Policy
EPI	Expanded Program on Immunization
IYCF	Infant & Young Child Feeding
PPTCT	Prevention of Parent to Child Transmission
WHO	World Health Organization
WPRO	Western Pacific Regional Office
UNICEF	United Nations International Children
UPNG	University of Papua New Guinea
NGO	Non Government Organization
CHW	Community Health Worker
FBO	Faith Based Organization
HEO	Health Extension Officer
ANC	Antenatal Clinic
TB	Tuberculosis
FDC	Fixed Dose Combination
PCR	Polymerase Chain Reaction
NHIS	National Health Information System
MDG	Millennium Development Goal
CHAC	Child Health Advisory Committee
CAP	Community Action Program
VHV	Village Health Volunteer
VBA	Village Birth Attendant
DHS	Demographic Health Survey
HFS	Health Facility Survey
AAP	Annual Activity Plan
HSIP	Health Sector Improvement Program
SIA	Supplementary Immunization Activity

STM	Standard Treatment Manual
DOTS	Directly Observe Treatment Strategy
CBSC	Capacity Building Services Center

EXECUTIVE SUMMARY

In 2005, the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) launched the joint Child Survival Strategy for the Western Pacific Region.¹ In September 2005, at the fifty-sixth session of the Western Pacific Regional Committee of the World Health Organization, the PNG Government, through the Health Minister supported and endorsed the WHO/UNICEF Regional Child Survival Strategy.² This strategy was designed to put child health higher on the political, economic and health agendas, renew efforts to reduce child mortality with support being mobilized by the Regional office and donors, and expand current child and reproductive health activities.

To assist a better understanding of the current situation and to provide some baseline data the Child Survival Country Profile: Papua New Guinea was published in 2006. This plan was developed in response to the WHO/UNICEF Regional Child Survival Strategy. A series of meetings and consultations were held between July 2007 and September 2008 with child health people from the Department of Health, the Child Health Advisory Committee (CHAC), the PNG Paediatric Society, nursing personnel, provincial health staff, and nutritionists.

Major recommendations of the WHO/UNICEF Child Survival Strategy are to have technical interventions that have proven effectiveness in reducing child mortality in low income countries, outlined in the Lancet Child Survival Series. The Child Survival Strategy focuses on the importance of integrated service delivery and continuum of care, universal access to key child survival interventions as a goal with a focus on major causes of mortality, scaling up and quality improvement at all levels of the system. The key Child Survival interventions are: safe motherhood, neonatal care, breastfeeding and complimentary feeding, micronutrient supplementation, the Expanded Program on Immunization, the Integrated Management of Childhood Illnesses (IMCI) and improving the quality of hospital care, malaria control and insecticide treated materials. In PNG three other components have been added to the essential list: HIV prevention and antiretroviral treatment; scaling up TB prevention and treatment; and promoting family planning.

The Regional Strategy also calls for:

- One effective high level coordination mechanism (such as a Child Health Committee)
- One integrated national plan for child survival
- One national monitoring and evaluation system measuring core child survival indicators

This *PNG Child Health Policy & Plan* describes a balanced and integrated program that incorporates almost all of the 23 essential interventions proven to reduce child mortality in low income countries,³ and the role of integrated service delivery.

This document emphasizes the strong expanded program of immunization (EPI) that has developed over years. The Policy & Plan also emphasizes the importance of Safe Motherhood, Neonatal Care and IMCI, which are crucial to reducing the high rates of neonatal mortality. "Integration" should be between all child health programs, and between maternal and child health, and between child health and disease-specific programs, such as Roll-Back Malaria, nutrition, the National TB program and HIV.

This document includes sustainable activities in service delivery and capacity building which have been introduced successfully in recent years, and which strengthen each level of the health service. The plan also describes the coordinating committee (Child Health Advisory Committee, CHAC), which has responsibility for implementation, oversight, and monitoring.

This plan also describes the core indicators that would enable progress to be monitored by CHAC. These are simple, measurable, and objective indicators of progress towards establishment of sustainable programs with high coverage, and progress toward the achievement of the Millennium Development Goal

targets, particularly MDG-4 (the reduction of the under 5 mortality rate by two thirds between 1990 and 2015. In PNG this target is an U5MR of around 32/1000).

The Child Health Policy and Plan recognizes that other areas are important to child health in PNG, including Adolescent Health, Family Planning and Maternal Health. Adolescent health has been largely neglected by medical services in PNG; paediatricians have concentrated on children aged 0-12 years, and adult physicians have focused on those over 18 years of age. A focus on adolescents is an opportunity to protect children from acute and chronic infections including STDs and HIV/AIDS, lifestyle diseases, and social problems which result in the majority of the disease burden in adults in PNG. It is also an opportunity to promote good health for future mothers and fathers. Family planning is crucial to achieving progress in child and maternal survival and other health outcomes. Nutrition is important to ensure that girls enter their reproductive years in good health and minimize complications during pregnancy and delivery.

The plan recognizes the central importance of human resources if the technical interventions known to be effective for child survival are to be scaled up. Increased training of child health nurses and nutritionists, training of pediatricians as leaders in child health, and incorporating the components of this plan into pre-service nursing, community health worker and HEO training will be important.

Throughout the plan we have listed key messages for Provincial Health staff. These are designed to assist you implement the plan. At the end of the plan we have listed key contacts. If you have any questions about the child health, please contact the relevant people.

The total cost of this Plan, per year in Kina is:

2009	2010	2011	2012	2013	2014	2015
11145290	13998497	12456791	12440662	10809742	11210776	11565262



Figure 1. Map of Papua New Guinea

VOLUME I
CHILD HEALTH POLICY 2009

CHAPTER 1. BACKGROUND

Improving child health, education and welfare are vital for the future of Papua New Guinea. Improving child health and reducing child deaths has profound economic and social benefits for a country. Between the 1970s and 1990s, child death rates in PNG were among the highest in the Asia and Pacific regions. The encouraging news is that in recent years child death rates have reduced, and this is because of the comprehensive approach that is outlined in this Policy and Plan. There is still a very long way to go to achieve acceptable child survival, health and development.

The challenges are many, including difficult geographical access, weak health systems and limited human resources. Preventable and treatable diseases such as pneumonia, diarrhoea, malnutrition, neonatal sepsis, birth asphyxia, HIV and tuberculosis remain some of the biggest causes of child death. Many of these diseases also cause disability and long term problems that limit quality of life, educational outcomes and productivity.

The good news is that there are effective interventions to reduce the burden of these illnesses, all of which are included in this Child Health Policy and Plan, and child health indicators are starting to improve. The policy and plan emphasizes the importance of primary health care, improving quality of care, disease prevention and improving the human resources for health.

1.1 Global and Historical Context

In 2005, the World Health Organization (WHO) and the United National Children's Fund (UNICEF) launched the joint Child Survival Strategy for the Western Pacific Region.¹ In September 2005, at the fifty-sixth session of the Western Pacific Regional Committee of the World Health Organization, the PNG Government, through the Health Minister supported and endorsed the WHO/UNICEF Regional Child Survival Strategy.² This strategy was designed to put child health higher on the political, economic and health agendas, renew efforts to reduce child mortality with support being mobilized by the Regional office and donors, and expand current child and reproductive health activities.

1.2 Need for and Intent of Policy

To assist a better understanding of the current situation and to provide some baseline data the Child Survival Country Profile: Papua New Guinea was published in 2006. This policy and plan was developed in response to the WHO/UNICEF Regional Child Survival Strategy. A series of meetings and consultations were held between July 2007 and June 2009 with child health people from the Department of Health, the Child Health Advisory Committee, the PNG Paediatric Society, nursing personnel, provincial health staff, and nutritionists.

Major recommendations of the WHO/UNICEF Child Survival Strategy are to have technical interventions that have proven effectiveness in reducing child mortality in low income countries, outlined in the Lancet Child Survival Series. The Child Survival Strategy focuses on the importance of integrated service delivery and continuum of care, universal access to key child survival interventions as a goal with a focus on major causes of mortality, scaling up and quality improvement at all levels of the system. The key Child Survival interventions are: safe motherhood, neonatal care, breastfeeding and complimentary feeding, micronutrient supplementation, the Expanded Program on Immunization, the Integrated Management of Childhood Illnesses (IMCI) and improving the quality of hospital care, malaria control and insecticide treated materials. In PNG three other components have been added to the essential list: HIV prevention and antiretroviral treatment; scaling up TB prevention and treatment; and promoting family planning.

1.3 Audience

This policy and plan will be used at National, Provincial and local level; to guide their annual activity plans; and to inform health workers, the community and the Government's partners about child health priorities and the approaches being adopted. The policy and plan will also be shared with international Development Partners, Donor Agencies, NGOs and other stakeholders both within the public and private sector.

CHAPTER 2. POLICY DIRECTIONS

2.1 Policy Goals

The goals of the Child Health Policy are to reduce child mortality and to improve the general quality of health and development of the children of Papua New Guinea.

2.2 Policy Objectives

The objectives of the Child Health Policies are:

- To improve the quality, access and delivery of health services to children and young people of Papua New Guinea
- To reduce the neonate, infant and under 5 year old mortality as per the Millennium Development Goals (MDG-4).

2.3 Policy Principles

It is the right of every child to good health and protection from harm. The Government of Papua New Guinea recognizes that and had been signatory to the 1989 United Nations Convention of the Rights of the Child.

Furthermore, the Government of Papua New Guinea recognizes that the future of this young and developing nation depends on the wellbeing of its most important resource - the children, who will be the leaders of the nation.

Thus the Government of Papua New Guinea recognizes this Child Health Policy as the instrument through which its vision and goals of developing a better Papua New Guinea becomes a reality.

2.4 Guiding Principles of Partnership in Child Health Policy

The scope and level of partnership for Child Health in Papua New Guinea depends on the following principles:

Responsibility for Policy: The overall responsibility for health policy formulation (including the Child Health Policy), monitoring and evaluation and the health status of the children of PNG is maintained by the Government of Papua New Guinea through the National Department of Health. The National Department of Health will consult its partners and aims for consensus in all cases of common concern.

Responsibility for Service Provision: Provision of health services to the children of Papua New Guinea pertains to the different service delivery partners: - Government agencies (hospitals, health clinics, provincial, district and public health offices), church health services, non-government organizations (NGO), private health care organizations, schools and universities of health care worker training and development partners (local and international partners and agencies).

Complementarity: All Partners shall strive to complement their services rather than duplicate them within the given context.

Identity and Autonomy: The identity and autonomy of each partner is respected.

Equity: Equitable allocation of resources for implementation of the Child Health Policy and Plan shall be made in accordance with performance benchmarks.

Transparency and Accountability: Inputs, outputs and outcomes pertaining to the attainment of the Child Health Goals are agreed to, reported by, and shared among partners.

2.5 Population policy

Paediatricians, obstetricians and other maternal and child health workers are aware of the fact that one of the factors in PNG that has the potential to derail all the positive gains made so far is uncontrolled population growth. PNG now has almost a 3% population growth rate with a projected doubling time of 20 years. This means that in 10 years time the paediatric population will have been increased by around 2 million.

These will put immense pressure on resources with a requirement in commensurate increases in number of health facilities, personnel, schools, jobs etc. Moreover there will most likely be detrimental effects on overall socio-economic status of families, provision of education and increase in social discord, urban drift, food insecurity, degradation of the environment and land shortages.

There is abundant evidence of an adverse effect on child health and mortality of narrow birth spacing. Infant mortality is very high for children born following a birth interval of less than 2 years after the previous birth; IMR is 71 per 1000 live births compared with 42 per 1000 live births for children born 3 or more years after the previous birth.

The Paediatric Society and Family Health Services advocates the problem of population policy needs to be dealt with at the highest levels, with the utmost urgency. The country's political leadership must be made aware of the need to address this issue at the national level and legislate for a concerted effort. This will require mobilisation of all segments of society as the ill effects of the population explosion will impact on all areas of life.

2.6 Core Government Commitments and Policies

This Child Health Policy & Plan complements PNG's overall National Health Plan (2011-2020), Medium Term Development Framework, and builds on the previous National Health Plan 2001-2010. The aim of the National Health Plan is to improve the health of all Papua New Guineans through the development of a health system that is responsive, effective, affordable, acceptable and accessible to all people. This National *Child* Health Policy and Plan shows the detail of the child health component of the overall National Health Plan, and sets out activities and programs that will result in the MDG aspirations being achieved.

Thus, this Child Health Policy and Plan applies to:

- The total health care system in Papua New Guinea provided by Government, Faith Base Organizations, NGOs and Private Health Services.
- All health care facilities and non-facility based services such as those provided in homes and villages
- All registered health care workers

The Child Health Policy and Plan should be read together with other key policy documents, including:

- Constitution of Papua New Guinea (1975)

- Papua New Guinea National Strategic Plan: 2010 – 2050 (September 2008)
- Organic Law for Provincial and Local Level Government (Department of Provincial and Local Level Government Affairs, November 1998)
- National Health Plan: 2001 – 2010 (National Department of Health, August 2000)
- Corporate Plan: 2009 – 2013 (National Department of Health, 2008)
- National Health Plan: 2011 – 2020 (National Department of Health, 2009)
- Minimum Standards for District Health Services in Papua New Guinea (Ministry of Health, May 2001)
- Policy on Partnership in Health (Ministry of Health, 2002)
- National Policy on Expanded Program on Immunization (National Department of Health, 2004)
- National Nutrition Policy (March 1995)
- National Policy on Integrated Management of Childhood Illness (National Department of Health (National Department of Health, 2009)
- National Policy on Family Planning (National Department of Health, 2009)
- National Policy on Sexual and Reproductive Health (National Department of Health, 2008)
- Village Health Volunteer Policy (National Department of Health, July 2000)
- Health Workplace Policy on HIV&AIDS (Ministry of Health, December 2005)
- Community Health Posts Strategy (Ministry of Health, 2009)
- National Health Reform Legislation 2009

CHAPTER 3. HEALTH SYSTEMS

WHO has proposed a framework of six building blocks to analyze health systems. The six building blocks are service delivery, information, medical products and technology, human resources, health financing, and leadership. This Policy and accompanying Plan recommends, by order of priority, the following three components of Health Systems to be seriously addressed.

- Human Resources
- Service delivery
- Medical products and technology

3.1. Human Resources

Numbers

The Child Health Plan advocates for appropriate numbers of paediatric health staff to be in place during the tenure of the plan. The paediatric health workforce includes doctors, nurses, nutritionists, community health workers, as well as support staff including social workers. Ongoing assessment of the required number of paediatric staff in the workforce needs to be maintained at least every 3 years especially as new hospitals are built and current services are expanded.

Training

Undergraduate training of additional students in medicine needs to be supported and negotiated with the Higher Education section under the Ministry of Higher Education, Research, Science and Technology.

Service training of the paediatric health workforce is strongly supported and promoted by the Child Health Plan, as is Continuing Professional Development. In the Child Health Plan this is outlined in several sections: Section 5.5; The HRH plan in Appendix 1: Projection of Paediatrician Training 2008-2015, tabulates and outlines the required number of paediatric health workforce for the nation at all levels. Furthermore, Appendix 2: Projection of Paediatrician Sub-specialty Training 2012-2020, outlines the need for specialized training in the discipline. Indeed attaining and maintaining the right number of the paediatric health workforce will ensure the proper implementation and achievement of the Child Health Plan.

Welfare of health workers

The welfare of doctors and paediatric staff should be seriously considered as a priority issue. Indeed the performance of health staff is greatly enhanced when their welfare is adequately addressed and satisfied. Basic family concerns such as housing, security, transport, telecommunication, water and electricity, depending on the station of assignment, should be ensured. Good welfare consideration of staff will lead to enhanced performance and greater job satisfaction.

3.2 Service Delivery

The Child Health Plan supports the new projects of Community Health Posts for improving service delivery. It also promotes the concept of Primary Health Care in service delivery for rural and community level health posts. Up-scaling of services in the Provincial and District Hospitals is promoted during the tenure of Child Health Plan. Needless to mention, networking of the Department with key Government Central Agencies would be vital for the improvement of public infrastructure to encourage and ensure access of the general population to health facilities and services.

The Child Health Plan advocates for the resumption of services at closed Aid Posts. Management authorities for Aid Posts need to prioritise resource allocation to these stations as their role and services are vital for early management and referral of the population.

Laboratory services should be available at all District Hospitals. Needless to mention, basic diagnostic instruments and equipment should be made available to health centres for early diagnosis of conditions such as malaria and anemia. Chest radiographs, bacteriology facilities (including CSF microscopy and culture and blood culture and bacterial antigens) should be available at all provincial hospitals.

3.3 Medical products and technology

The Child Health Plan advocates for the maintenance of adequate medicine and drug supplies in all health facilities. Basic equipment appropriate to the level of health services provided should also be ensured.

- An oxygen supply service program based on oxygen concentrators and pulse oximeters in all provincial and rural hospitals and major district health centers in the country.
- To improve immunization coverage, health facilities where vaccination is carried out should have and maintain a functional refrigerator. Missed opportunities in vaccination lead to disease occurrence and complication.
- The use of medical communication technologies should be considered for provincial and rural hospitals. Telehealth and telemedicine should be developed to improve the quality of care in remote areas and timely medical evacuation and referrals.
- A Paediatric Hotline will be developed for addressing health worker questions relating to child health and paediatrics.
- Newer diagnostic technologies for tuberculosis should be evaluated

CHAPTER 4. POLICY CONTENT

The Policy document is broken up into program areas, but there is integration across all of these programs. This document outlines the policies, which are expanded upon in the Child Health Plan, and the specific activities to achieve these, timelines and costing are detailed in the Strategic Implementation Plan, which is in Section III of this document.

4.1 Integrated management of childhood illness

IMCI provides an effective strategy for training primary health workers in clinical management of common illnesses in children. Since the initial adaptation work of IMCI in PNG in 1998, progress has been gradual. The Child Health Policy aims in IMCI between 2009 and 2020 include to:

1. Improve the coordination and structure for IMCI. This will be done in several ways:
 - Creation and funding of National IMCI coordinator position
 - At provincial and district level, create positions for provincial and district MCH coordinators, responsible for IMCI, IYCF and other MCH services
 - Paediatricians should support coordination and supervision of IMCI in their province
2. Expand and sustain IMCI training in all provinces and districts. This will be done by:
 - Inclusion of IMCI training into provincial and district annual activity plans
 - Conduct IMCI training in all provinces and districts, including follow-up after training
 - Improve supervision activities at provincial and district level with case management observation
 - Expand community IMCI, including management of common diseases at community level and link with other community-based programs
3. Improve integration between programs and ensure that IMCI is taught in all courses of child health (nursing, medical, HEO, CHW):
 - Incorporation of IMCI into pre-service and post-graduate training
 - Inclusion of a step on how to recognize children requiring HIV testing or investigation for TB
 - Incorporation of Infant and Young Child Feeding (IYCF) counselling training, supervision and follow-up into the national IMCI program
 - Incorporate IMCI diagnoses into the National Health Information System

4.2 Expanded program of immunization

Childhood vaccines have been responsible for substantial advancements in child health and reductions in mortality in PNG in the last 30 years. The Expanded Programme of Immunization is a major component of the Child Health Policy & Plan. The policy aims and the strategies required to achieve these aims are carefully described separately within the PNG EPI Multi-year Plan and EPI Policy. These Child Health Policy directions in EPI are summarized below. Between 2009-2020 the Department of Health aims to:

- Achieve high quality immunization services that reach every child and mother
- Make progress towards elimination of measles

- Progress towards control of hepatitis B
- Maintenance of PNG's Polio-free status
- Elimination of maternal and neonatal tetanus
- Introduction of new vaccines against major killers of children, including adding new vaccines to the EPI schedule, including *Haemophilus influenzae* type b vaccine. When available and affordable, strategies for vaccination against *Streptococcus pneumoniae*, Human Papilloma Virus will be introduced.
- Integrate EPI with other health interventions
- Conduct supplemental immunization activities every 2 years and increase the coverage of routine immunization, including at Community Health Posts
- Ensure all children receive at least 2 doses of vitamin A, at 6 and 12 months, according to the Vitamin A policy

4.3 Standard treatment and clinical guidelines

The aim of the Standard Treatment Book is, according to the preface of the first edition, to: “allow the busy nurse, health extension officer or doctor to prescribe quickly standard treatments that are simple, safe and effective”. The STM is now in its eighth edition. The policy aim is to have the latest child health recommendations in the Standard Treatment manual available to and used by every health worker when managing children. Between 2009-2020 this will be done by:

- Revising the 2010 (9th Edition) Standard Treatment Manual, incorporating changes in TB, malaria, HIV, care of the sick septic child and other areas
- Publishing and distributing the 2010 Standard Treatment Manual to all health workers in the country
- Completing and distributing the 2015 edition of the STM (10th Edition)
- Revision of other Paediatric Treatment Manuals

4.4 Neonatal care

In PNG neonatal mortality makes up 50% of infant mortality, so reducing neonatal mortality is vital to improving child survival. Two thirds of neonatal deaths are associated with high risk pregnancies, labour and delivery. Although there are many factors, prematurity, low birth weight, deliveries that are not supervised by skilled health workers and neonatal sepsis account for the majority of deaths in the first month of life in PNG.

Efforts to reduce neonatal mortality are closely linked to safe motherhood programs, including the National Strategic Action Plan to reduce Maternal & Newborn Mortalities and the WHO Integrated Management of Pregnancy & Childbirth (IMPAC). Antenatal clinics (ANC) continue to be important to prevent neonatal illness.

The policy aims in neonatal care are to provide the highest possible level of care for newborns in health facilities and within communities:

1. The Department of Health aims to implement Minimal Standards of Neonatal Care in provincial and district hospitals and health centers

- Conduct a needs assessment of what is required for provincial and district hospitals, and health centers to achieve minimal standards of neonatal care (physical facilities, basic equipment, essential drugs, human resources, training, auditing, infection control measures)
 - Undertake a program to upgrade health facilities neonatal and labour ward services to achieve minimal standards.
2. Promotion of breast feeding (also see Nutrition and Breast Feeding section of this policy, below)
 - Revitalization of the Baby Friendly Hospital Initiative in all provincial hospitals
 3. Making high quality and understandable information on newborn care available to all mothers
 - Review the New Mothers brochure on newborn care
 - Print and distribute the New Mothers Brochure to all health facilities where babies are born or antenatal care is given, and to community mothers groups
 4. Develop a centre of excellence for neonatal care and training
 - Build a new Special Care Nursery at Port Moresby General Hospital, as a centre of excellence in neonatal care, emphasizing basic newborn care, low cost technology and standard treatment would provide a model for provincial hospitals throughout the country.
 - Implement this model at other provincial hospitals
 6. Support a program of neonatal care and resuscitation training for nurses, midwives and doctors
 - Print and distribute the neonatal resuscitation poster to all hospitals and health centers where babies are born.
 - Conduct neonatal resuscitation training using the training modules in the WHO Pocketbook of Hospital Care for Children (maybe as part of IMCI training)
 - Support neonatal clinical attachments to level 1 and 2 hospitals for nursing offices from level 4 and 3 hospitals

4.5 Breast feeding, nutrition & micronutrients

Nutrition is a vital but neglected part of health care in Papua New Guinea. The rates of malnutrition are unacceptably high and contribute substantially to high child mortality, poor growth, poor development, and high infectious disease morbidity. Severely malnourished children account for over 5% of all paediatric hospital admissions. Many more children suffer from moderate malnutrition, which increases the risk of death from pneumonia, diarrhoea, tuberculosis, HIV and malaria. Two-thirds of all child deaths are associated with moderate or severe malnutrition. Between 2009 and 2020 the Department of Health aims to:

1. Support exclusive breast feeding from birth up to 6 months
2. Support adequate supplementary feeding from 6 months onwards
3. Increase human resource capacity for child nutrition
 - Create positions for nutritionists at all provincial hospitals
 - Develop a training program for local nutritionists
 - Have a paediatrician trained in nutrition to help provide national leadership
4. Improve coordination between programs

- Integrate IMCI and Infant and Young Child Feeding (IYCF) to ensure consistency
5. Community promotion of proper breast feeding practices and adequate complementary feeding
 - Conduct IYCF training in all provinces
 - Enforce Infant Feeding Act
 6. Improve vitamin A coverage
 - Expand vitamin A supplementation into the second year of life, by additional doses at 18 and 24 months
 - Expand vitamin A supplementation to post-natal mothers
 7. Achieve high coverage of deworming
 - Deworm every child at regular intervals from 12 months of age
 8. Improve health facility and community services for management of malnutrition
 - Increase the availability of oral rehydration solutions (ORS) and zinc sulphate as treatment for children with diarrhoea and with malnutrition
 - Encourage the fortification of staple foods, such as rice and flour with multiple micronutrients including iron, iodine, zinc, thiamin, riboflavin and folate
 9. Support programs for school health and nutrition

4.6 Quality improvement in hospital care

In many hospitals and health centers there are major deficiencies in drug supplies, basic equipment, buildings and facilities, training and support for health staff, and provision of a family friendly environment. Improving the quality of paediatric care is important for generating community demand. Improving the management of malnourished children, improving triage and emergency care, oxygen administration, supportive care and monitoring apply whether children have pneumonia, tuberculosis, HIV, or less common conditions. These can be partly addressed by a program of training for nurses, better use of guidelines, better facilities and equipment, improved data collection to follow outcomes and measure impact, and a focus on key areas such as malnutrition. Efforts to improve the availability of food supplies on hospital wards, improve the detection of children at high risk of malnutrition, and improve malnutrition management of are also crucial. The policy aims in quality improvement are to:

1. Ensure all sick children have access to good quality care
 - Develop Minimal Standards in Paediatric Care for provincial and district hospitals
 - Distribute the WHO *Pocketbook of Hospital Care for Children* to every child health worker in provincial and district hospitals, and provide training
2. Improve oxygen systems and the treatment of pneumonia
 - Expand the oxygen systems program to all provincial and rural hospitals and major district health centers in the country
 - Maintain the oxygen program with review visits and training on the management of acute respiratory infections
3. Standardized hospital data reporting and paediatric surveillance
 - Extend the Paediatric Hospital Reporting System to all provincial hospitals in the country

- Support human resource capacity and logistics within Family Health Services and provincial hospitals for Paediatric Surveillance and Hospital Reporting

4. Improve the care and management of adolescents in hospitals and other health facilities

4.7 Pneumonia

Acute lower respiratory infection is the most common cause of serious illness and death in children in PNG, accounting for 30-40% of all hospitalisations. Pneumonia, the commonest cause of ARI, is particularly prevalent in highlands provinces. A comprehensive strategy to address pneumonia is outlined in the Child Health Plan. Pneumonia policy is a cross-cutting issue that involves most program areas in this policy and plan

The policy strategies to reduce pneumonia mortality and morbidity include:

- Improvements in the quality of services at community health (aid) posts, to include immunization services and IMCI case management and standard treatment.
- Revision of the Standard Treatment Manual, with consideration of changing from chloramphenicol to ampicillin and gentamicin as first line treatment for severe pneumonia
- Extension of vitamin A supplementation to the second year of life
- Expansion of the oxygen concentrator / pulse oximeter program to all hospitals, and improving the quality of hospital care
- Expansion of the PPTCT program, ART prescribing and cotrimoxazole prophylaxis to all provincial hospitals
- Introduction of a conjugate vaccine against *Streptococcus pneumoniae*, the most important bacterial cause of pneumonia
- Promotion of exclusive breast feeding, avoidance of early solid feeding
- Improvements in the quality of neonatal care and care of low birth weight infants

4.8 Malaria

Malaria is endemic in all coastal provinces of PNG. An objective of the current PNG National Health Plan is to reduce malaria disease and mortality by 50% by 2010. Currently about 7% of mortality in children under the age of 5 years is from malaria. Between 2009 and 2020 the policy aims in childhood malaria include:

1. Improve the prevention and management of malaria among mothers and children

- Publish the revised malaria guidelines in the 9th Edition of the Standard Treatment Book
- Use IMCI and the Standard Treatment Book as mechanisms and guidelines for case management of malaria
- Support efforts to increase the use of rapid diagnostics in clinical decision making
- Consider the implications of research on intermittent chemoprophylaxis measures for infants (IPTi)
- Include artesunate suppositories for pre-referral treatment in health centers in the STM, and ensure procurement and distribution.

- Improve reporting mechanisms from the district to provincial health level and to NHIS, and improving the reporting of malaria cases and case fatality rates from hospitals
 - Increase coverage of insecticide treated mosquito nets and other preventative strategies, according to the 2011-2020 National Health Plan and integrated with the Maternal & Child Health programs
2. Improve the tendering process, procurement and supply of all essential drugs and supplies.
 - Establish a sustainable mechanism to deliver antimalarial drugs and related supplies to all levels of the health service
 3. Improve leadership, research and coordination of the childhood malaria
 - Provide training for a pediatrician in malaria

4.9 Tuberculosis

Childhood tuberculosis (TB) is a large burden in PNG. Childhood TB represented over 30% of all TB treated in PNG in 2005-6. This is twice the expected case load of paediatric TB and implies that there is a high community transmission rate and that the TB control and elimination programme was not functioning well. It also reflects the impact of HIV epidemic on TB cases. Pulmonary TB and TB meningitis contribute substantially to high rates of child mortality, malnutrition and impaired neurological and cognitive development. Improving the detection, prevention and management of children with TB was considered by the Paediatric Society as a major priority in Child Survival, and was added to the list of goal areas identified by the Western Pacific Region. The policy aims in childhood TB by the National TB Program and between 2009 and 2015 include:

1. Improve the ability of health workers to diagnose and treat TB
 - Roll-out fixed-dose combination (FDC) therapy for childhood TB
 - Update Standard Treatment Book to include guidelines for child TB including standardized regimens for FDC therapy.
 - Publish and distribute Child TB booklet to every health facility
 - Provide training for health workers in the use of fixed-dose combination therapy, child TB detection and case management using the Child TB Booklet.
2. Improve coordination and leadership of child TB
 - Create and fund a position of TB Paediatrician, as the focal point for child TB
 - Evaluate a model of a paediatric TB liaison nurse. The paediatric TB nurse would liaise with the district DOTS workers, other health workers and affected families to ensure adherence, clinical follow-up, and family screening.

4.10 HIV

PNG has a generalized HIV epidemic. In 2005 a national prevalence of 2% was estimated. To effectively address childhood HIV involves strengthening prevention strategies for adults, and addressing specific areas of disease prevention and treatment among newborns and children. The policy aims in childhood HIV between 2009 and 2020 include to:

1. Improve the prevention of HIV infection in newborns

- Increase provider initiated (PCT) and voluntary counseling and testing (VCT), prevention of parent to child transmission program (PPTCT), and paediatric ART to all provincial hospitals
- Introduce PCR testing for newborns
- Update to newer and more effective PPTCT and ART regimens as they become available

2. Improve the care of children with HIV

- Increase access to ART up to level 5 hospitals
- Ensure all affected children receive cotrimoxazole and isoniazid prophylaxis
- Train health workers on the HIV step in IMCI check list
- Provide nutritional support to children with HIV, including Ready-to-Use Therapeutic Feeds (RUTF)
- Update to new and more effective ART as they become available

3. Improve coordination and leadership of child HIV

- Create and fund a position of HIV Paediatrician, as the focal point for child HIV

4.11 Paediatricians training

Paediatricians are crucial to maintaining progress in child health and survival. The Paediatrician's role in provinces is multi-faceted. They need to provide the highest standard of appropriate care to all children, to teach other staff about child health, to manage the child health service, to play a supportive role to public health services and primary health care providers. Particularly they need to liaise with Provincial Health Advisors to ensure that child health programs are planned for and implemented in their provinces. Much of the progress in child health in the last decade has been because of the leadership and technical support provided by provincial paediatricians. The policy aims in this area include:

1. Achieve the National Health Minimum Standard on specialist (Paediatrician) manpower: a minimum of two paediatricians in all provinces and 5 in Level 1 hospital (PMGH)

- Train sufficient new paediatricians to achieve the minimal standards of two paediatricians in each province by 2020.

2. Develop a paediatric workforce with appropriate subspecialty skills.

- Support training in cardiology, neonatology, HIV medicine, adolescent health, oncology and nutrition.

3. Support programs for continuing professional development for paediatricians, paediatric trainees, child health nurses and other child health workers.

4.12 Child health nurses and midwives

Child health and midwifery nursing need a major influx of resources. The policy in this area is to achieve the standard of one child health nurse and one midwife in every health centre, and at least one per shift in every hospital.

4.13 Community health workers

PNG has a policy of upgrading aid post to be community health posts. The intention is to have these staffed by three officers; one of whom is a community health worker with training and skills in maternal and child health care. The services that will be offered at Community Health Posts for mothers and children will include all essential MCH services: antenatal care, deliveries, basic newborn care, immunizations, growth monitoring, and management of common childhood illnesses, and referral of very sick children.

1. Given the number of aid posts to be staffed, there will need to be marked increases in the number of CHWs trained and major support given to CHW training schools.

4.14 Continuing professional development

It is a policy of the PNG Department of Health that some form of effective continuing professional development should be available to all health workers.

4.15 Adolescent health

In PNG, half of the total population is children and a large number of them are adolescents. A healthy adolescence requires informed and safe choices about risk-taking behavior such as smoking, alcohol and other drugs, sexual activity, diet and relationships. Adolescence is a time when interventions may reduce the risk of chronic physical illness in adulthood, and reduce the risk of adverse mental health and substance abuse problems. The programs currently in place to address issues affecting adolescence are very limited. The policy aims in this area are to:

1. Provide appropriate facilities for adolescent health services

- Strengthen existing school clinics to provide information to adolescents
- Establish adolescent centers in provinces
- Expand adolescent immunization services, including HPV vaccine

2. Improve human resources for adolescent health

- Provide training for a paediatrician in adolescent health, to act as a national resource-person for this area
- Provide training for other health workers in adolescent health

4.16 Cancer, Heart disease, Paediatric Surgery

1. Improve the management of childhood cancer and ensure wide access to services

- Develop appropriate guidelines for referral, and recommendations for managing cancer at a provincial level
- Support central coordination and improve data collection and surveillance on pattern of childhood malignancies
- Improve diagnostic services, particularly histopathology services
- Ensure appropriate drug regimes are available, including drugs for effective palliative care

- Plan for a young paediatrician to train in oncology
- Establish Paediatric Cancer Units (10 beds ward) attached to PMGH and National Cancer Unit in Lae
- Skill development for a few key nurses in childhood cancer

2. Improve the management of congenital and acquired heart disease in children and ensure wide access to services

- Support the annual Operation Open Heart program
- Support the training of a paediatrician in cardiology
- Support interventions to reduce rheumatic heart disease

3. Improve services for children with surgical problems and ensure wide access to services

4.17 Child protection and social services

Many children are at risk of neglect and abuse, with little social support or protection. Such children include many orphans, adopted infants, displaced children, and those living in crowded conditions in urban settlements. The number of orphans is increasing because of HIV and the breakdown of traditional village structures. Natural disasters or civil conflict give rise to displaced children, unplanned urbanization is increasing, all meaning the number of at risk children is increasing. The consequences are extreme, including malnutrition, physical and emotional injury, preventable infection with HIV and other sexually transmitted infections.

- Improved reporting, documentation and surveillance systems for child abuse and neglect are needed
- Improved preventative and treatment services need to be in place for children at risk of neglect and abuse.
- Health workers can make a major contribution to identifying at-risk, abused or neglected children and through liaison with social and legal services help to mitigate the effect on health and development of the child
- Training for health workers in child abuse, neglect, child legislation, strategies for protection, prevention and management are required.

4.18 Child disability

Many children in PNG live with disabilities. Diseases causing disability include meningitis, birth asphyxia, tuberculous meningitis, trauma, low birth weight and malnutrition. These illnesses may result in cerebral palsy, the most common physical disability in childhood, blindness, deafness, intellectual or learning problems and epilepsy. Health consequences include malnutrition, increased risk of pneumonia, skin problems and dental decay. In addition to direct health consequences children with disabilities are vulnerable to socioeconomic exclusion and disadvantage; more than 90% of children with disabilities in developing countries do not attend school. Children with disabilities are also at increased risk of abuse and neglect

1. Policy directions that will prevent disability outlined in this Policy and Plan include:

- Vaccines against meningitis, including Hib, *S. pneumoniae*, BCG.

- Strategies to improve newborn care: encouraging facility-based deliveries, skilled midwives, neonatal resuscitation
- Improving rates of exclusive breast feeding, reducing malnutrition, reducing anaemia and micronutrient deficiencies
- Strategies to improve child safety, such as car seat belt legislation, bicycle helmets, fire safety

2. Policy directions that will support services for children with disability include:

- Increasing support to community organizations who work with disabled children.
- Strengthening multi-disciplinary health services for children with disabilities
- Training of nurses and paediatricians in supporting children with disabilities and their families.

4.19 Legislation

The Child Health Policy and Plan (CHPP) in its formulation and implementation notes the importance of a sound legislative environment to support the goals, objective and strategies of the plan

The CHPP acknowledges the presence of the following Legislations under the Ministry of Health that have bearings on the health of children in the country.

- National Health Administration Act 1997
- Organic Law on Provincial and Local Governments
- Public Hospital Act 1994
- HIV/AIDS Management Act
- Provincial Health Authorities Act 2007
- Christian Health Services Act
- Medicines and Cosmetics Act
- Food Sanitation Regulation 2001
- National AIDS Council 2007 (Amendment) Act 2007
- Institute of Medical Research (Amendment) Act 2007.

Other Legislation relevant to child health but place under the administration of other government departments includes the following.

- Adoption Law
- Civil registration
- Child Welfare Act
- Education law (for primary school education)
- Deserted Wives and Children Act

The CHPP is also mindful of Government's commitment to the international agreements and obligations relevant to adolescent and child health as listed below.

- Millennium Development Goals
- Convention on the Rights of the Child (CRC)
- International Conference on Population and Development (ICPD)

In the term duration of the CHPP, it is recommended that the following new Legislations be considered by the NDOH for the promotion of health of children.

- Code of Marketing of Breast-milk substitute
- Food safety and Food Standards
- Child Protection

CHAPTER 5. MONITORING AND EVALUATION

Implementation of this National Policy on Child Health will be monitored on an ongoing basis by collection of performance indicator data. Data collection will occur at the service delivery and population levels and be collated at national, provincial and district levels. All data shall be forwarded to the National Department of Health for national collation and analysis.

The National Department of Health will liaise with the non-governmental components of the health sector to seek their participation in performance indicator data collection

5.1 Policy development in Child Health

In line with the WHO / UNICEF Child Survival Strategy recommendations, the Department of Health in 2006 established a National Child Health Advisory Committee. The Child Health Advisory Committee (CHAC) has a key role in coordinating and supervising Child Health activities. The CHAC reviews all child health policy areas, new evidence and information and provides recommendations to the National Department of Health. It meets quarterly, overseeing many child health activities. It is a vital link between child health workers, institutions and the NDOH.

Having a forum for discussion of policy issues is essential. The NDoH supports the Paediatric Society to meet twice a year to discuss and formulate child health policy, and to report back to the Child Health Advisory Committee on recommendations.

1. Support the Child Health Advisory Committee as the major technical advisory body on child health
2. Support the Paediatrics Mid-Year meeting each June, and the Paediatric Mini-Symposium in September as major forums for child health policy development advice to the Department

5.2 Review

The Child Health Policy will be reviewed in conjunction with mid term reviews of the Health Sector Corporate and Strategic Plans.

VOLUME II
SECTION I. CHILD HEALTH PLAN: 2009-2020

CHAPTER 5. INTRODUCTION

5.1 Child health in PNG: recent progress and future challenges

Papua New Guinea is a high priority country for the achievement of the Millennium Development Goals, because the baseline child mortality rate and maternal mortality ratio are among the highest in the Western Pacific region, and other targets, such as those for universal primary education and poverty alleviation also have much scope for improvement. PNG's modified MDG-4 calls for a reduction in under-5 mortality from 90 (in 2000) to 32 per 1000 live births and a reduction in infant mortality from 64 (in 2000) to 24 per 1000 live births, by 2015. This goal is feasible and achievable, with some qualifications.

In terms of child survival interventions, PNG has, as part of her child health program, almost all of the technical strategies identified by the Bellagio group in the Lancet Child Survival Series in 2003. Unfortunately coverage for most essential interventions has been very low, with many remote communities missing out on almost all interventions. Coverage for essential preventative and treatment strategies is limited by relatively weak health systems, particularly affecting remote rural areas. Health systems are weak because of low levels of financing, lack of supervision and support for rural health workers, limited human resources, deficiencies in building and equipment maintenance, drug procurement and distribution, limited community engagement with the health service, and low health worker morale in many areas.

However the health system in PNG also has several great strengths, including strong commitment by nurses and paediatricians to the health and welfare of all children. These strengths can be built on, and many of the obstacles to achieving better child health can be overcome. Recent successes in PNG have included:

- Achieving much higher measles vaccine coverage than ever before, through incorporating 3-4 yearly supplemental immunization activities into the routine Expanded Program of Immunization
- The designation of PNG as polio-free
- Progress in technical policy including the publication of the 8th Edition of the Standard Treatment Manual for Children, which includes zinc as treatment for diarrhoea, 6 monthly vitamin A supplementation to all children
- Hib vaccine, introduced in 2008
- Increase in the number of paediatricians serving clinical and public health needs of provinces, and the development of substantial capacity of paediatricians in IMCI, EPI, HIV, neonatal care, public health, child nutrition, research, oncology and cardiology.

The Health Department, the Paediatric Society and other partners are committed to overcoming the obstacles to achieving higher coverage with standard treatment and essential preventative interventions. Recently, a consultative process has occurred that has reviewed the child health program for its content and coverage of essential interventions, discussed the obstacles to achieving high coverage, made recommendations about how these obstacles can be overcome, and described mechanisms for evaluating whether action is taken and whether improvements occur. This provides an important framework for addressing these issues over the next few years.

However there are several major obstacles to achieving MDG-4. The HIV epidemic shows few signs of slowing and HIV infection accounts for an increasing proportion of child deaths. The establishment of

parent to child prevention programs in all provinces is going a long way to addressing this, however unless HIV is controlled among adults, infants will continue to be affected. Other obstacles to achieving MDG-4, and general improvements in child development, are the poor social situations in many urban settlements and some rural communities, the lack of effective tuberculosis control measures and poor nutritional outcomes. Infants and children in many urban settlements live in extremely crowded and often unstructured households, where breast feeding rates are low, and bottle feeding, early weaning and informal adoption are common, and where deaths due to combinations of severe malnutrition, diarrhoeal disease, acute respiratory infection and tuberculosis are common. It will be essential to address malnutrition to achieve reductions in under-5 mortality. A significant constraint to services being delivered within such communities is their sometimes dangerous and volatile environments, which makes them places into which health workers are reluctant to venture.

If MDG-4 is to be achieved by 2015 there will need to be major focuses on improving, supervising and supporting rural health services, particularly primary health facilities and district and provincial hospitals; on infant and young child nutrition; on economic development that benefits poorer communities and those in remote rural areas; and deliberately targeting poorer communities in both rural and urban areas to improve access to essential health interventions and educational opportunities.

5.2 Child mortality

In 2000 PNG had an under-5 mortality rate estimated at 92 per 1000 live births, a slight down-ward trend on the consistently high mortality rates seen throughout the 1980s and 1990s. Since 2004, after the drafting of the WPRO Child Survival Strategy, there has been a concerted effort by child health organizations in PNG to systematically improve the situation. In 2004 the estimated under-5 mortality was 88 per 1000 live births. In 2007, UNICEF's *State of the Worlds Children* lists the under-5 and infant mortality rates as 74 and 55 per 1000 live births respectively. This is consistent with the 2006 Demographic & Health Survey (DHS). PNG's modified MDG-4 target is an under-5 mortality rate of 32 per 1000 live births by 2015. The 2006 DHS result is very good news. It would suggest that the efforts in the last decade to develop quality child health services are having an impact on child health outcomes. The MDG-4 target is achievable.

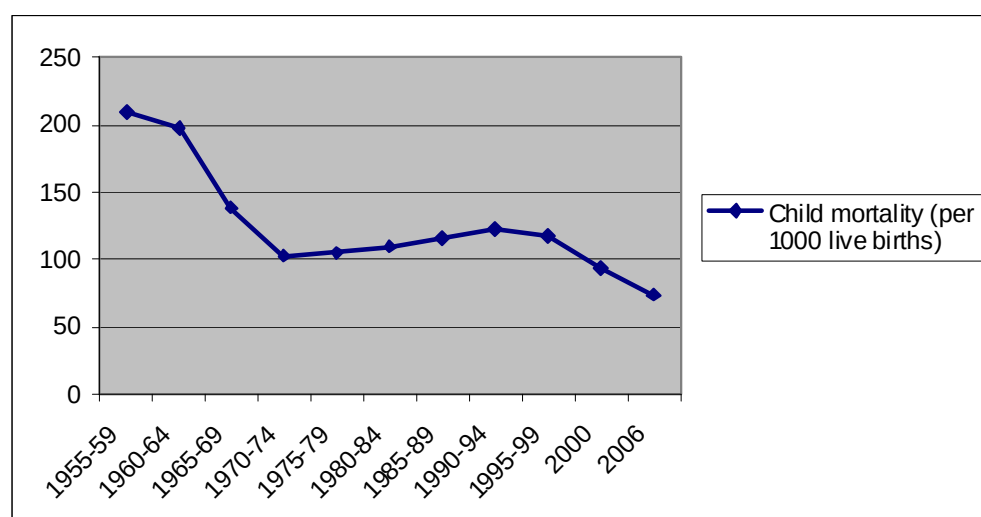


Figure 2. Mortality trends for children in the first 5 years of life in PNG, 1955-2006 ^{4;5}

5.3 Common causes of childhood illness and death

Acute respiratory infection, particularly pneumonia (23%), meningitis and septicaemia (11%), malaria (7%), perinatal conditions (25%): low birth weight, birth asphyxia, sepsis, tuberculosis (4%), intestinal infections (5%) and HIV are the most common causes of child deaths reported to the National Health Information System (NHIS). The proportion of deaths that are due to HIV has increased markedly in the last 10 years. Malnutrition is a very significant contributor to mortality but is not reflected in the NHIS. In studies in Goroka and Port Moresby moderate or severe malnutrition was a factor in two-thirds of all child deaths.^{6,7} The reason for this discrepancy is that NHIS data records the major cause of admission and death. Malnutrition is usually a co-contributor to death from other infections but common co morbidities, including malnutrition and anaemia are, not coded on the current NHIS.

There are several references summarizing the common causes of childhood illness and mortality in PNG. For more information, see also the PNG Child Survival Country Profile.

5.4 Health facility network

PNG has a network of base or provincial referral hospitals at a province level, district hospitals or health centers at a district level, and health sub-centers and aid posts at a village and community level. However access to primary care services is poor in many areas, because of remoteness, poor road conditions and the closure of many aid posts. In 2006 only 69% of 2633 aid posts were considered open, and several provinces had very low proportions of aid posts open (Eastern Highlands 34%, Enga 44%, East Sepik 51%). NHIS data suggests only 36% of births occur in a health facility.

5.5 Human resources in child health

Without increased numbers of trained health staff this plan cannot be fully implemented, and PNG's MDG-4 goal will not be reached.

Child health and midwifery nursing need a major influx of resources. There are two post-graduate child health nursing courses in PNG. The most established is in the School of Medicine and Health Sciences, University of Papua New Guinea, Taurama Campus. This school trains about 20 new midwives and paediatric nurses annually. A new child health course in Goroka University trains another 20-25 per year. A review of PNG's nursing workforce in 2002-3 estimated that there was a need for 435 more midwives and 200 more paediatric nurses. These post-graduate programs, which are fragile because of limited teaching and other resources, will need serious ongoing support. Reviewing and standardizing the curricula of all courses that teach maternal and child health (Community Health Workers, Child Health Nurses, Midwifery, HEO, Medical students) to ensure the content contains essential child health training interventions and the contents of this plan is urgently required.

Since the closure of the Nutrition Course at the College of Allied Health Sciences (CAHS) in 1982, there has been a steady decline in number of nutritionists and nutrition positions in provinces. At present, nutrition positions are filled in 9 provinces and in 3 provinces nutrition positions have been vacant for extended periods of time. The number of nutrition positions at Health Department Head Quarters has declined from 7 to 2.

There has been an increase in the number of paediatricians in the last decade. Now paediatricians are working in 15 of 20 provinces. Without at least two paediatricians in each of the 20 provinces it is very difficult for paediatricians to focus on public child health issues, as each province has a very busy clinical

load. Enga, Southern Highlands, Central, Gulf, Manus still do not have paediatricians, so little technical expertise is applied to these provinces' child health activities. This Plan sets out a workforce and training plan and timeline for achieving this (see Paediatricians training and Appendix 1 & 2).

There is now increasing need for paediatricians to take national "portfolio" responsibility for key aspects of child health, as evidenced by the approach being taken in IMCI and HIV/AIDS. This approach is reflected in this plan, with paediatricians newly identified to provide leadership in Neonatal Care, Childhood Tuberculosis, Infant and Young Child Feeding and Adolescent Health.

The School of Medicine and Health Sciences is understaffed, with 40% of teaching positions unfilled. The School of Medicine and Health Sciences needs ongoing strengthening over the next decade to maintain the leadership required in child health.

The human resources gaps are not just in training, but in workforce planning, accreditation of child health nurses, and incentive for rural service.

In many districts village health volunteers – which include village birth attendants and other village health workers - have a role in delivering maternal and child health services in remote communities. Village health volunteers are mostly supported by churches and other non-government agencies. This cadre of health workers is currently unregulated, and there is little standardization of practice or quality assurance. There is a need to determine appropriate content and durations of training, skill-set, standards of practice, supervision, remuneration, and integration with the formal health system. There is evidence from other countries that village health workers can reduce neonatal mortality, the effect of village birth attendants on maternal mortality is less certain. The links between VHWs, community health (aid) posts, and government and church run health centres will need to be strengthened

5.6 Population issues

The Paediatric Society of PNG and Family Health Services Division of the National Department of Health is aware of the fact that one of the factors in PNG that has the potential to derail all the positive gains made so far is uncontrolled population growth. PNG now has almost a 3% population growth rate with a projected doubling time of 20 years. This means that in 10 years time the paediatric population will have been increased by around 2 million.

These will put immense pressure on resources with a requirement in commensurate increases in number of health facilities, personnel, schools, jobs etc. Moreover there will most likely be detrimental effects on overall socio-economic status of families, provision of education and increase in social discord, urban drift, food insecurity, degradation of the environment and land shortages.

In addition, for the health of families there are major consequences of unplanned pregnancies and lack of access to family planning. There is abundant evidence of an adverse effect on child health and mortality of narrow birth spacing. Infant mortality is very high for children born following a birth interval of less than 2 years after the previous birth; IMR is 71 per 1000 live births compared with 42 per 1000 live births for children born 3 or more years after the previous birth.

The Paediatric Society and Family Health Services advocates that population policy and family planning availability needs to be dealt with at the highest levels, with the utmost urgency. The country's political leadership must be made aware of the need to address this issue at the national level and commit to a concerted effort. This will require mobilisation of all segments of society as the ill effects of the population explosion will impact on all areas of life.

The Paediatric Society will undertake within its own membership to more actively promote family planning in the clinical setting as well as advocate for wider solutions to population control.

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CHAPTER 6. PROGRAM AREAS

6.1 Integrated Management of Childhood Illness (IMCI)

The IMCI strategy focuses on the management of diseases of childhood that cause the greatest burden in the country. IMCI involves different activities and interventions aimed at the care of sick child, prevention of childhood diseases, and promotion of healthy growth of children. IMCI has the potential to make a major contribution to health system reforms and it fits into the governmental priority agenda to upgrade the aid posts to community health centers, in order to improve access to basic health services in rural settings.

Since the initial adaptation work of IMCI in PNG in 1998, progress has been gradual. It has gone through adaptation 1999-2000, and piloting the program in Heganofi and Madang districts in 2001, which was supported by WHO. In parallel to this AusAID supported training in the IMCI 10-Step check list in many provinces, and the development and piloting of the Young Infant IMCI Checklist. National coverage will only be achieved if national support to the province and central coordination is maintained and if the implementation structures are established at the districts. In 2009, there is review and update of IMCI diagnostic algorithms and is included in the *National Plan of Roll-Out of all Components of IMCI Strategy*. This document explains in detail the activities of IMCI implementation.

IMCI has 3 components: training for case management, improving health system and improving family and community practices. Summary of activities, achievements and challenges in IMCI are discussed below.

Progress in the three IMCI components in PNG

Training for case management

Since 1999 Training of Trainers courses have been done through the country, driven initially by the AusAID Women's and Children's Health Program. This training was in the 10-step checklist and of 5 day duration, often combined with reproductive health training. District training courses followed in 2000-20002. In 2003 the Young Infant or 8-step check list was finalized and 10 day trainings were conducted, especially in the pilot districts supported by World Health Organization (WHO) and in East Sepik. In 2005, 10 day training courses were done again in regions to strengthen provincial and eventually district training supported by the HSIP.

Until now only a few provinces have made substantial progress in district training. There have been insufficient follow-up visits after training and limited supervisory visits with case management observation, both of which are recommended to optimize the effect of training on clinical practice.

IMCI training should be included in provincial and district annual activity plans (AAPs), along with follow-up visits after training and supervisory visits with case management observation should be planned and budgeted for each year to accommodate for attrition and new health workers entering the workforce. This has not happened in all provinces until now.

Pre-service training commenced with training tutors in 2003-2004 initially in Lae for the Goroka and Lae Schools of Nursing. Community Health Worker schools have incorporated IMCI from 2004. Some schools have developed their own syllabus incorporating IMCI training. These need to be reviewed. The University of PNG now ensures that medical students learn IMCI in their clinical practice at the children's outpatient department of Port Moresby General Hospital, and IMCI is included in the Bachelor

of Clinical Nursing (Midwifery and Child Health) program at the School of Medicine and Health Sciences.

Both pre-service and in-service can be supported by recently developed training aids: video-training materials, ICATT (IMCI computerized adaptation and training tool).

Improvements in Health Systems

Although limited, there is some evidence of health system strengthening and impact on quality of care. A study done in 2007-8 showed that in districts in which IMCI training had been carried out, case management was more comprehensive and communication with parents was better (Moses Moti, MPH thesis). A Health Facility Survey (HFS) in 2007 in 2 districts each in Eastern and Madang Provinces showed scope for improvement, and supported the need to upgrade the aid posts to offer more comprehensive MCH services, including immunization and case management using IMCI and Standard Treatment.

Improvements in family and community practices

The third component of IMCI aims at involving families and communities more fully in activities like immunization, breast feeding and nutrition, micronutrient supplementation, growth monitoring, malaria control, family planning, safe motherhood and birth registration. A survey of family and community practices was done by PNGIMR in 2002 in Madang and Eastern Highlands. In 2009 WHO developed materials on community IMCI, which would require adaptation to PNG.

Future needs

Improving coordination and structure for IMCI

For IMCI to be sustained, coordination should be strengthened at all levels of health system. At the National level, a National IMCI coordinator will assist the Child Health Technical Advisory and Chief Pediatrician to coordinate IMCI and represent IMCI on the Child Health Advisory Committee (CHAC). The implementation of the IMCI is also supported by NDoH Advisor for the Child Health and Principal Advisor of Family Health Branch. At the provincial and district levels the positions of provincial and district coordinators would greatly assist in IMCI implementation. The IMCI coordinators should be responsible for organizing IMCI trainings for health staff and village health volunteers / workers, follow-up after training visits, supervisory visits with case management observation, arrange logistics operations for IMCI, contacting the health facilities (including aid posts) on regular basis and supporting health information system regarding child health. IMCI coordinators should also ensure that child health programs are well reflected in annual work plans.

Another task is establishing a database of all IMCI trainers and trained health workers. Incorporation of Infant and Young Child Feeding (IYCF) counseling training, supervision and follow-up into the national IMCI program will be important for sustaining improvements in child nutrition.

The implementation of IMCI strategy on the district level should be based on the local district plans developed as part of micro-planning. The district IMCI implementations plan should build the provincial plans, and all provincial plans will create the national IMCI implementation plan with proper budgets and funding gaps identified. Such a plan will help to look for the donors (GFATM, AusAID, GAVI and others) to support roll-out of IMCI in the country.

Expansion and sustaining of IMCI

Expansion and sustaining of IMCI will require:

- inclusion of IMCI and IYCF training, Follow-up after training and supervisory visits with case management observation into provincial annual activities plans
- conducting IMCI training in all districts in Papua New Guinea to train or retrain all health workers managing children in new IMCI algorithm and recommendations
- incorporation of IMCI and IYCF into pre-service and post-graduate training
- review of current IMCI materials and inclusion of new steps in IMCI guidelines (HIV/AIDS, breastfeeding assessment and others)
- establishing proper structure to implement and sustain IMCI on the provincial and district level through IMCI provincial and district coordinators
- conduct IMCI micro-planning at the district level to assess the costs, identify gaps and build provincial and national plans of IMCI implementation and build capacity to manage child health programs on provincial and district level.
- use IMCI as catalyst of health system reforms with special focus on upgrading the aid posts to community health centers level to improve access and quality of services offered to communities in rural areas.
- Incorporate IMCI diagnosis into the National Health Information System. Liaise with the Monitoring & Research Section of NDoH to do this. Although some documents have been produced, this should be trialed in districts or provinces to ascertain user any other problems.
- Consideration may be given to developing in-services training courses in collaboration with training institutions, provinces and districts to ensure many health workers are trained in IMCI, Neonatal Care and IYCF Counseling. All levels of health services would need to meet the costs for tuition and boarding fees to make it viable.

The detailed implementation of all component of IMCI Strategy is described in *IMCI Policy* document and *National Plan of Roll-Out of All Components of IMCI Strategy* that is part of the *Child Health Plan 2009-2015* and is attached to this document.

Key messages for Provincial and District Health Staff

- Create and fill positions of national, provincial and district IMCI coordinators
- Create IMCI implementation unit with appropriate office and logistical support
- Conduct IMCI micro-planning to learn about costs of IMCI implementation in your area and to build capacity in management of child health programs at provincial and district levels
- Include IMCI and IYCF training in your Annual Activity Plans
- Include “Follow-up after training” as part of your IMCI training
- Conduct supervisory activities with case management observation
- Prepare and plan for upgrading aid posts to community health centers and training all staff managing children using the new IMCI algorithm
- Plan and budget for implementing “Community IMCI”.

6.2 Expanded Program of Immunization

Immunization services are provided through the network of 705 Maternal and Child Health (MCH) clinics run from health centers and hospitals. Modes of delivery are static, mobile and opportunistic, and services are 'routine' and supplementary. It has been estimated that 30% of the children are reached through outreach services, although the frequency and regularity of mobile services is variable, and may have diminished over time.

There is now a policy to expand EPI activities down to a community health post level. This will require the upgrading of aid posts, training of more community health workers, and installation of cold chain equipment at an aid post level.

Supplemental immunization activities (SIA) were done in 1996 for polio eradication and in 2003-2005 in response to epidemics of measles. A current SIA got underway in Bougainville in 2008. SIAs are now considered an integral part of EPI services, and there is a commitment to conducting them every 2-3 years.

Administratively, EPI is under the Family Health Unit in the Health Improvement Branch of the Department of Health. At the *National* level, the EPI management team includes an EPI Manager. In addition, the team includes; a Cold Chain / Logistics Officer, and a Vaccine Management Officer.

At the *regional* level, there are four Regional Cold Chain Logistics Officers based in one province within the region; all are funded and resourced by the AusAID Capacity Building Service Centre (CBSC). Provincial Cold Chain Logistics Officers are responsible for the management of vaccines at *provincial* level with support from the provincial family health coordinator. At the *district* level, EPI is managed by the district manager through the health facility nurse in charge.

Up to June 1995 the EPI had a vertical reporting system. Since, July 1996, EPI reporting systems are organized as part of NHIS in line with health sector reforms. Though timeliness of the reporting has improved considerably, there still remain the issues of data completeness and accuracy with considerable discrepancies in the reported EPI data.

The Health Department is strengthening disease surveillance, including that for diseases targeted under EPI through the introduction of an integrated surveillance system in the Disease Control Unit to which most of its reports flow through NHIS and sentinel reporting.

The broad aims of the EPI program include providing:

- High quality immunization services that reach every child and mother
- Elimination of measles
- Control of hepatitis B
- Maintenance of PNG's Polio-free status
- Elimination of maternal and neonatal tetanus
- Introduction of new vaccines against major killers of children, building on the introduction of Hib (*Haemophilus influenzae* type b) vaccine in the EPI schedule. When available and affordable, strategies for vaccination against *Streptococcus pneumoniae* and other common childhood diseases will be introduced.

- Consideration of introduction of Human Papilloma Virus (HPV) vaccine in school health and adolescent health programs
- Integrating EPI with other health interventions
- Ensure all children receive at least 2 doses of vitamin A, at 6 and 12 months, according to the Vitamin A policy
- Expand vitamin A supplementation in to 2nd year of life by adding two additional doses at 18 and 24 months.

The targets and strategies required to achieve these aims are carefully described within the EPI Multi-year Plan.⁸ Key activities include management and planning at a national, provincial and district level, training and supervision, monitoring and evaluation, surveillance and laboratory support, cold chain and logistics, effective schedules for service delivery, improving communication and community links and revitalizing school-based immunization programs. Strengthen the integration of vaccine distribution with other programs and activities, particularly IMCI, long lasting insecticide-treated mosquito net distribution, vitamin A, hospital services, and family planning will be important for efficient delivery of child health interventions.

Establishing an effective vaccine preventable disease surveillance system will be crucial. A mechanism for hospital-based surveillance for VPDs is proposed, utilizing a network of paediatricians at provincial hospitals.

Supporting Birth Registration will be important for better understanding coverage of vaccines at a village level.

No further details of the EPI program are given here, as these are outlined in the Multi-year plan, which is the blue-print for all EPI activities.⁸

Key messages for Provincial and District Health Staff

- Support immunizations at every opportunity
- Outreach MCH services are an important way to reach many rural children and mothers, make sure these are functioning in your province
- Improve the facilities and services at community health posts (formerly aid posts) to increase coverage of vaccines in remote villages
- Support the Supplementary Immunization Activities (SIA) as part of routine immunization services every 2 years
- The new Hib vaccine will prevent some cases of meningitis and pneumonia. Raise awareness of the importance of vaccination and this new vaccine
- Immunization is everybody's business, everyday!
- During immunization activities, give vitamin A and Family Planning

6.3 Standard Treatment and Clinical Guidelines

The first edition of the PNG Standard Treatment Book was published in 1975, and the eighth edition in 2005.⁹ The PNG Standard Treatment Manual is probably the longest running evidence-based treatment guideline in a developing country, and has a unique place in the health culture of PNG.¹⁰ The research underpinning the original STM and its subsequent editions have also influenced development of global paediatric treatment recommendations, such as the WHO programs for Acute Respiratory Infection, and the Integrated Management of Childhood Illness.

The original aim of the Standard Treatment Book was, according to the preface to: “allow the busy nurse, health extension officer or doctor to prescribe quickly standard treatments that are simple, safe and effective”.

Child Health has become increasingly complicated in the last two decades, with the introduction of IMCI, antiretroviral therapy for HIV, ceftriaxone treatment for meningitis, changes in antimalarial drugs in response to increasing parasite resistance. In the next 2 years there will be changes to TB treatment with the introduction of fixed-dose combination therapy. This will necessitate changes to the STM before the next edition is due out in 2010.

Work will get underway soon on the next edition of the STM. The STM may need to be simplified to maintain its relevance to primary health workers, and incorporate the IMCI steps in more detail. The long-term sustainability of both IMCI and Standard Treatment may depend on this.

The STM is now in its eighth edition. The activities required in the life of this plan include:

- Revising the 2010 (9th Edition) Standard Treatment Manual, incorporating changes in TB, malaria, HIV, care of the sick septic child and other areas
- Publishing and distributing the 2010 Standard Treatment Manual to all health workers in the country
- Completing and distributing the 2015 edition of the STM (10th Edition)
- Revision of other Paediatric Treatment Manuals

Other technical resources will need updating and printing in the life of this plan, including Paediatrics for Doctors in PNG and Child Health for Nurses and HEOs. The WHO Pocketbook of Hospital Care for Children will need to be purchased and distributed annually, along with the training CD.

Key messages for Provincial and District Health Staff

- Encourage all health staff to carry and use the STM whenever they see a child

6.4 Neonatal Care

Neonatal mortality makes up 50% of infant mortality, so the neonatal mortality rate for PNG is likely to be about 28 per thousand live births. Two thirds of neonatal deaths are associated with high risk pregnancies, labour and delivery. Although there are many factors, prematurity, low birth weight, deliveries that are not supervised by skilled health workers and early neonatal sepsis account for the majority of neonatal deaths in PNG.

Efforts to reduce neonatal mortality are closely linked to Safe Motherhood programs. Antenatal clinics (ANC) continue to be important to prevent neonatal illness. ANC interventions include maternal screening for common diseases like malaria, syphilis and HIV, and haemoglobin checks for anaemia. All pregnant mothers should have a minimum of three ANC during pregnancy, have two tetanus toxoid injections if primiparous (and one if multiparous), and take prophylactic anti-malarials and iron / folate throughout the pregnancy. All mothers with high risk pregnancies need qualified medical personnel to supervise the delivery, and emergency obstetric care must be available.

Efforts to reduce neonatal mortality are closely linked to safe motherhood programs, including the National Strategic Action Plan to reduce Maternal & Newborn Mortalities and the WHO Integrated Management of Pregnancy & Childbirth (IMPAC). Antenatal clinics (ANC) continue to be important to prevent neonatal illness

Training and standards

Improving training in neonatal care is also important, as currently the number of trained nurses particularly is inadequate. The target for improving survival in low birth weight infants will be those that are more than thirty weeks gestational age or weighing 1000gm or more. Guidelines for the management of very low birth weight babies (1000-1750g) are contained in 8-Steps Checklist of the IMCI program, the Standard Treatment Manual and in WHO's *Pocketbook of Hospital Care for Children*. Minimal standards of neonatal care at different hospital levels have been developed and published by the Paediatric Society, and endorsed by the Ministry of Health.^{11;12} A needs assessment will be conducted of what is required for provincial and district hospitals, and health centers to achieve minimal standards of neonatal care in equipment, staffing, physical facilities. A program to upgrade health facilities to achieve minimal standards is planned.

Baby Friendly Hospital Initiative

This was started in 1989, supported by WHO and UNICEF and was implemented in 3 hospitals in PNG. However donor funds ceased and the impetus for continuing was less. However the BFHI is now more important than ever, with increasing pressures on mothers to feed in alternative ways, the mounting evidence that early solid feeding is a major risk factor for pneumonia, HIV and uncertainty around breast feeding and the lack of enforcement of the 1984 Infant Feeding Act. Having policies of exclusive breast milk feeding in hospitals in PNG is essential to showing a lead to mothers and the community on the importance of breast feeding. A recent initiative in ANGAU Hospital showed that the BFHI can be introduced with great effect without external funding. ANGAU Hospital is making progress towards the 10-Steps of being Baby Friendly. It is proposed that the BFHI will be revitalized throughout the country. This will be a collaboration between the provincial paediatricians and nurses, the Department of Health and the Susu Mamas organization. It is proposed that the Department of Health will accredit hospitals as Baby Friendly or not each year.

Neonatal sepsis

Sepsis is a common cause of neonatal death. Umbilical cord infection is a common cause of neonatal sepsis in PNG, and much of the problem occurs in babies born in villages. Appropriate cord care may reduce this. To increase the proportion of newborns receiving this essential newborn care, an information

brochure for mothers and a pre-packed newborn cord care kit is being developed. This kit will include a vial of gentian violet, cotton wool swabs and soap, plus the New Mother's Brochure, which will explain all the interventions that every newborn should receive (early breast feeding, Vitamin K, Hepatitis B and BCG vaccines).

A centre of excellence for neonatal care

PNG needs a facility for training nurses in good quality neonatal care, and the huge population of Port Moresby needs a facility for sick newborns to receive the best care that can be provided. There are over 10,000 babies born in Port Moresby each year. The NNU at PMGH admits about 1000 sick newborns each year, mostly with low birth weight, prematurity, sepsis and birth asphyxia. The existing Special Care Nursery is an old fibrocement building which is overcrowded, and unhygienic. Plans have been drawn up to build a new neonatal unit adjacent to the labour ward, and several hundred thousand Kina have been raised through the efforts of paediatricians at PMGH, Rotary and other agencies. Some more funding is required to begin this project, which would contribute substantially to the health of newborns in the National Capital District and those referred from Central Province. The unit could function as a training facility for nurses and doctors in appropriate neonatal care. Having a centre of excellence in neonatal care, emphasizing basic newborn care, low cost technology and standard treatment would provide a good model for other provincial hospitals throughout the country. The aim is not to build a neonatal intensive care unit, but a unit where safe, clean basic support for very low birth weight and other sick babies can be given near their mothers.

Activities

Below are some other important activities in Neonatal Care in provinces.

- Promote essential newborn care, including initiation of breast feeding in the first hour of life, nursing the baby with the mother.
- Distribute revised Minimum Standards for Neonatal Care ¹¹ to all provincial and district hospitals
- Review hospitals to assess to what degree they comply with minimal standards of neonatal care, and what would be required to achieve this level (space, basic equipment, essential drugs, human resources, training, auditing, infection control measures, etc).
- Undertake facility improvements to labour wards and special care nurseries.
- A Neonatal Resuscitation flow chart has been developed for labour wards and special care nurseries. This should be printed and distributed to all hospitals and health centers where babies are born. Neonatal resuscitation training should be done, this could use the training modules in the WHO Pocketbook of Hospital Care for Children and the Training CD-ROM.
- Neonatal clinical attachments to level 1 and 2 hospitals for nursing offices from level 4 and 3 hospitals. Conduct neonatal resuscitation training in conjunction with clinical attachments
- Supervisory visits to provincial hospitals and districts for follow up EPI / IMCI & Neonatal Care training activities

Key messages for Provincial and District Health Staff

- Include activities to improve access to antenatal care in your Provincial AAPs
- Refer to the Minimal Standards of Neonatal Care and check whether your hospitals are achieving these standards

- Support your hospitals to be accredited under the Baby Friendly Hospital Initiative
- For assistance with Neonatal Care issues contact the Provincial Paediatrician

6.5 Breast Feeding, Nutrition and Micronutrients

Nutrition is a vital but neglected part of health care in Papua New Guinea. The rate of malnutrition is unacceptably high and contributes substantially to high child mortality, poor growth and neurodevelopment and high infectious disease morbidity. Severely malnourished children (marasmus and kwashiorkor) account for over 5% of all paediatric hospital admissions. However many other children suffer from moderate malnutrition, which increases the risk of death from pneumonia, diarrhoea, tuberculosis, HIV and malaria.^{6,7} Two-thirds of all child deaths are associated with moderate or severe malnutrition. The 2005 national nutritional survey showed over half of all children under 5 years of age had some degree of malnutrition. Contributing factors towards malnutrition include early weaning, inappropriate feeding, adoption and infections. Improving rates of exclusive breastfeeding for six months is crucial to achieving better nutrition throughout childhood.

The national nutrition survey showed that stunting and underweight are a serious public health problem (prevalence above 40%). Levels of stunting and wasting are particular high in the first two years of life. The prevalence is higher in rural than in urban areas, and Momase is the region where the highest proportion of children are affected.

Given the high prevalence of malnutrition in the second year of life, nutrition services should be expanded, and opportunities must be created to reach children between 13 and 24 months old. Many children do not attend well-baby clinics once immunizations are completed. Numerous children suffer from moderate malnutrition, which increases the risk of death from pneumonia, diarrhoea, tuberculosis, HIV and malaria. One strategy would be to expand vitamin A supplementation program to include children 18 and 24 months old, but other approaches are needed to reach children at risk of malnutrition throughout the first 2 years of life, not just in infancy. More emphasis should be placed on weaning and promotion of adequate complementary feeding, both in quality and quantity.

Breast feeding promotion

There is a need to promote proper breast-feeding practices, and to integrate different programs that have a nutrition component. Existing programs include IMCI and Infant and Young Child Feeding (IYCF). IYCF trains health workers to support breast feeding and effective complimentary feeding, and aims to improve knowledge and skills among adolescents and soon-to-be-parents. Apart from health workers, targeted groups for training include village health volunteers, school health workers, mothers of high risk babies (such as low birth weight), nutritionists and teachers.

There are impediments to progress in improving infant nutrition in PNG, including private businesses and Public Service facilities that don't provide breast-feeding friendly work environments, infant formula companies that promote their products to midwives and young mothers, and pharmacies and other outlets illegally selling infant feeding bottles. These obstacles need to be addressed by education, updating of the existing legislation by including provisions of the International Code of Marketing Breast-milk substitutes and enforcing existing legislation.

Complementary feeding

Child health programs should place more emphasis on introduction and promotion of adequate complementary feeding. Mothers and caregivers often introduce foods too early, and very often complementary foods are not energy dense with low protein content.

Micronutrients

Support should be given to efforts to fortify staple foods, such as rice and flour with multiple micronutrients including iron, iodine, zinc, thiamine, riboflavin and folate.

Vitamin A

The target population for vitamin A supplementation is children 6 months to 5 years. The current policy recommends 2 doses, given at 6 and 12 months. To improve vitamin A coverage it would be valuable to expand vitamin A supplementation into the second year of life, by adding additional doses at 18 and 24 months. Vitamin A is delivered through EPI. There is a need to record vitamin A administration in the NHIS and Baby Health Record Book. Include a dose of vitamin A to post-natal mothers.

Deworming

De-worming with albendazole should be given with vitamin A at 12 months of age, then at regular intervals thereafter.

Zinc

Zinc is part of Standard Treatment for children with diarrhoea and malnutrition. Zinc is currently not widely available in PNG, and efforts should be put into distribution of zinc to all health facilities.

Growth monitoring

Growth monitoring is an important part of child health, and is part of IMCI training. However its efficacy in reducing mortality has been recently questioned. Impact will be highly dependent on whether staff are able to understand how to plot a weight chart accurately, understand the meaning of a flat or falling weight line, and counsel the caregiver appropriately. This will vary between health workers and in different environments. Additional difficulties in remote areas in PNG are the lack of weighing scales. However, if health workers take a history of the child's dietary intake they can counsel mothers and other caregivers on feeding, appropriate for the child's age. In addition, evaluation of milestones can be helpful to assessing the nutritional and development state of the child. The role of measuring mid upper arm circumference needs to be revisited in areas where scales are lacking, but in some form growth monitoring will remain a very important part of child health in PNG.

Nutritional support to sick and malnourished children

In most hospital Nutrition Rehabilitation Units (NRU) have been closed down or operating under difficult circumstances. There is a need for hospitals to improve food services, both for in-patients and in the community.

- The reestablishment of nutrition rehabilitation units and the appointment of nutritionists in hospitals is important.
- There is a need for provincial health offices to work with departments of agriculture to support better nutrition in the community.
- Some countries have replaced NRU's with community-based distribution of RUTF (ready-to-use therapeutic foods). Development of local manufactured RUTF is crucial to sustaining supply. This requires coordinated inter-sector collaboration (including DAL, NARI, UNITECH, SMHS, DOH-Nutrition and Food Safety).

Human resources for nutrition

It is of concern that the number of nutritionists has decreased over the years. PNG has no dietitians in the Department of Health, let alone dietitians specializing in child health. The role of ready-to-use therapeutic feeds should be explored in children with malnutrition, tuberculosis and HIV. There is a great need for dietitians and nurses to assist with the implementation of a RUTF program in hospitals and the community.

The Health Department Nutrition Unit has proposed to create at least one position for dietitians at Level 1 and Level 2 hospitals during the current restructuring (combined with a training program for local dietitians). Dietitians could advise on food services for malnourished children. Given the central importance of nutrition there is a need for a paediatrician trained in nutrition to help provide national leadership in this area.

Essential nutrition requirements

Affordable and proven nutrition interventions through actions at health facilities, in communities and through communication channels are available. In summary, these include:

- Exclusive breast feeding (EBF) from birth to 6 months
- Adequate complementary feeding from about 6 –24 months with continued BF for at least 2 years
- Appropriate nutritional care of the sick and severely malnourished children
- Adequate intake of vitamin A for women and children
- Adequate dietary intake of iron for women and children
- Adequate nutrition for women
- Adequate intake of iodine by all members of the household

Regular contact with health care providers with nutrition skills is necessary during critical periods:

- Pregnancy
- Delivery and first 6 weeks post partum
- First 6 months
- Six to 24 months
- Young children during and just after illness
- Adolescence

Reduction in malnutrition and its consequences therefore depends on interventions started before or during foetal development and infancy.

Key messages for Provincial Health Offices

- Re-establish a Nutrition Rehabilitation Unit in your province
- Create a position for a nutritionist in the province
- Promote exclusive breast feeding from birth up to 6 months of life
- Have breast feeding friendly policies in all work environments
- Enforce the Infant Feeding Act: do not allow shops to sell infant feeding bottles without a prescription from a paediatrician
- Support your hospital to be accredited as Baby Friendly
- Include IYCF training in your AAP

6.6 Improving Quality of Hospital Care

In many hospitals and health centers there are major deficiencies in drug supplies, basic equipment, buildings and facilities, training and support for health staff, and provision of a family friendly environment. Improving the quality of paediatric care is important for generating community demand. Improving the management of malnourished children, triage and emergency care, oxygen administration, supportive care and monitoring apply whether children have pneumonia, tuberculosis, HIV, or less common conditions such as osteomyelitis. These can be partly addressed by a program of training for nurses, better use of guidelines, better facilities and equipment (such as oxygen), improved data collection to follow outcomes and measure impact, and a focus on key areas such as malnutrition. Efforts to improve the availability of food supplies on hospital wards, improve the detection of children at high risk of malnutrition, and improve malnutrition management of are also crucial.

A quality improvement approach to paediatric care

Paediatricians and child health nurses have important roles in improving quality processes within hospitals and their provincial and district health services. The following activities will be supported:

Development of Minimal Standards in Paediatric Care, along the lines of Minimal Standards of Neonatal Care, and consistent with the generic Minimal Standards of Hospitals at various levels. This would outline the minimal human resource and equipment standards for hospitals. Standards of clinical practice are already available, in endorsed technical guidelines such as the Standard Treatment Manual and the WHO Pocketbook of Hospital Care for Children.

Encourage a quality improvement process, using standards, auditing, and mechanisms for identifying and acting on problems. Explore mechanisms of assessment of pediatric care in hospitals, based on minimal standards. Such evaluation could be self-assessment or external assessment. Forums for staff discussion and identification of problems are important.

Introduction of the WHO Pocketbook of Hospital Care for Children

This WHO publication is the extension of IMCI to a hospital level. The Paediatric Society recently endorsed this book and *Paediatrics for Doctors in PNG* as standard technical resources for paediatric care in hospitals. Copies of the WHO Pocketbook have been distributed to colleges of training, the School of Medicine and to hospitals, through the paediatricians.

The book should be distributed to every provincial and district hospital.

Training for nursing staff in provincial hospitals in the use of this book is required. A training course exists, based on a WHO CD-ROM. There is a need to identify a paediatrician to act as a focal point for this. Regional training courses may be required.

Improving oxygen supplies and the management of severe pneumonia

In PNG the major cause of death among children under 5 years old is pneumonia. Hypoxaemia (low oxygen levels in the blood) is the major complication of pneumonia leading to death. Hypoxaemia is also a complication of other common diseases, particularly among newborns. Children with severe pneumonia need both antibiotics and oxygen, but oxygen shortages are common due to the cost and complex logistics of transporting oxygen in cylinders. Detection of hypoxaemia using clinical signs can be difficult. Pulse oximetry is the most reliable, non-invasive way of detecting hypoxaemia. In 2003 the Health Department and the Paediatric Society started a trial of oxygen concentrators, machines that generate oxygen from ambient air, and pulse oximeters. It was hoped that the installation of a reliable, sufficient and cheap source of oxygen in hospitals coupled with the use of pulse oximetry would make a significant difference to child survival rates in PNG. The oxygen concentrator / pulse oximeter project

has been implemented successfully in 9 hospitals by 2008, reducing mortality from pneumonia in the first 5 hospitals by 35% (from 5% to 3.2%).^{13;14}

In 2008-10 there will be an expansion of the oxygen concentrator / pulse oximeter program to all provincial and rural hospitals and major district health centers in the country. Funding will be required for equipment, installation, commissioning and training (for clinical staff and hospital engineers), and for the oxygen team (paediatrician, biomedical engineer and nurse administrator) to provide regular support to each of the hospitals involved.

Standardized hospital data reporting

With the introduction of Hib vaccine in the second half of 2007, and the increased efforts to identify and control outbreaks of measles, there is a need to increase the quality, timeliness and accuracy of vaccine-preventable disease surveillance. The National Health Information System (NHIS) covers both hospitals and health centers, but does not enable accurate reporting of aetiology-specific meningitis, and the precision of reports of other infections is not high. Having an additional reporting system at hospital level, where a higher degree of diagnostic precision could be achieved, would be an advance.

In 2008 there will be the strengthening of vaccine-preventable diseases (VPD) reporting. The system will be coordinated at the Health Department, jointly by the Disease Control Branch and Family Health Services. This network will work closely with Provincial and National Disease Control offices, to ensure timely responses to reported outbreaks.

Standardization of hospital statistics will also occur. A computer program is being developed that records all admissions and outcomes, common diagnoses in sick children, and outcomes. This program can produce standardized reports and calculate case fatality rates. The diagnostic classification used will be consistent with ICD-10 classification system and IMCI / Standard Treatment classification systems, and the program will record the frequency of important co-morbidities, particularly malnutrition.

Hospital outreach services

Hospitals should support rural health services by regular outreach to rural health clinics. These can be coupled with teaching, assessments of equipment, drug and infrastructure needs, clinical reviews of patients and encouragement for rural health staff.

Improving hospital care for sick adolescents

Providing appropriate facilities for sick adolescents is an important new initiative. A model of an adolescent area in a children's ward will be developed (see Adolescent Health).

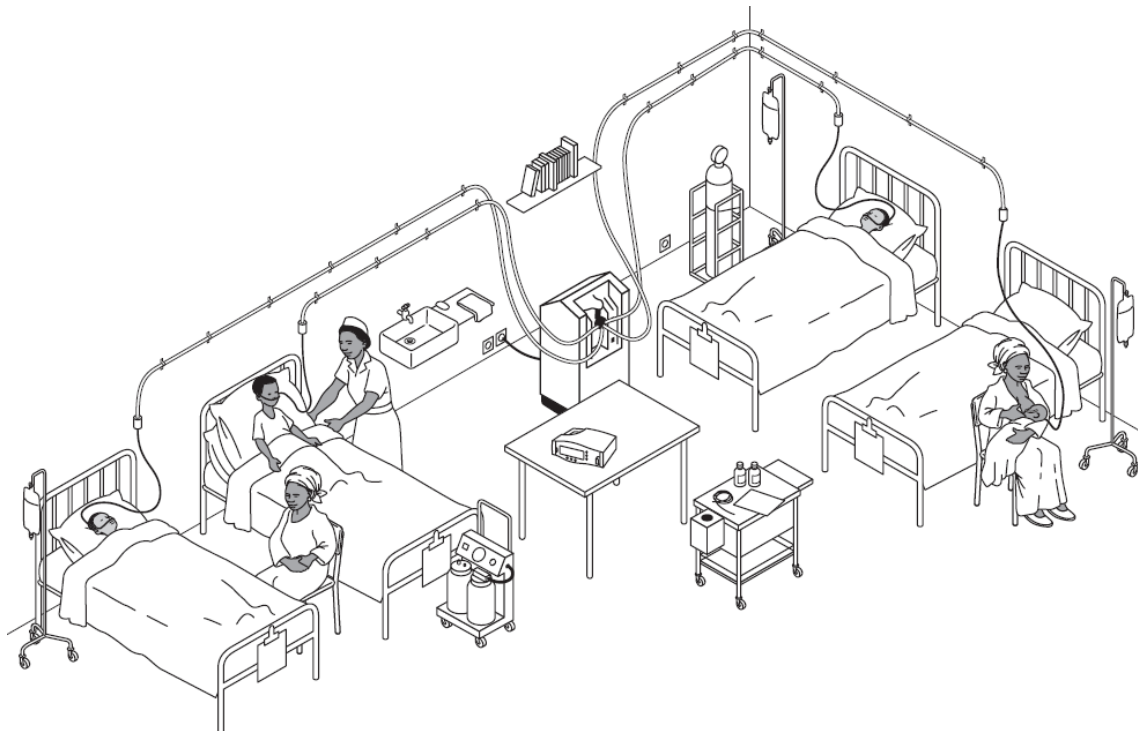


Figure 3. A high dependency unit in a provincial hospital will improve quality of care

Key messages for Provincial Health Offices

- Each province needs at least 2 paediatricians to care for sick children and to support provincial child health programs. If you don't have the required number, consider creating a provincial position
- Good quality hospital care depends on trained child health nurses, consider sending nurses for post-basic training in midwifery or child health nursing
- Make sure all health workers have a copy of the PNG Standard Treatment Manual and the WHO Pocketbook of Hospital Care for Children
- Oxygen is an important intervention for children with pneumonia and other common problems, invest in oxygen concentrators and pulse oximeters

6.7 Pneumonia

Acute lower respiratory infection is the most common cause of serious illness and death in children in PNG, accounting for 30-40% of all hospitalisations. Pneumonia, the commonest cause of ARI, is particularly prevalent in highlands provinces. A comprehensive strategy to address pneumonia is outlined in this Child Health Plan. Interventions to reduce pneumonia morbidity and mortality are included in many program areas, but are brought together in this section to illustrate the multi-faceted strategy required.

Causes

The major bacteria causing pneumonia are *Streptococcus pneumoniae* and *Haemophilis influenzae*. The most common pathogenic Sp serotypes are 2, 5, 6B, 7, 14, 19F, 23F. Both typable and non-typable strains of *H. influenzae* are common; about 20% of all Hi strains are Hi type b. Viruses, particularly respiratory syncytial virus (RSV) and influenza are likely to be common, although their role is not well characterised in PNG. Viruses often are associated with secondary bacterial infection. In the last 10 years with the increase in HIV infection, other pathogens are increasing in prevalence. In HIV affected children *H. influenza* and *S. pneumoniae* are still the most common causes, however *Pneumocystis jiroveki*, *Staphylococcus aureus*, and enteric Gram negative bacilli (such as *Klebsiella* spp and *E. coli*) are also found more commonly in HIV-infected than HIV-uninfected children. Tuberculosis is also a common pathogen in HIV-infected and uninfected children. Other high risk groups for pneumonia mortality are children with malnutrition, neonates and young infants.

Risk factors for pneumonia include

- Indoor air pollution, including smoke from fires for cooking or warmth inside poorly ventilated houses
- Parental smoking
- Low birth weight and prematurity
- Absence of breast feeding
- Feeding of solids and semisolids in the first weeks or months of life, a common practice in the highlands
- HIV infection

In this plan, given its importance to child health and mortality pneumonia is reflected in almost all program areas: EPI, IMCI, Neonatal care, Quality improvement in hospital care, Paediatric surveillance, Standard treatment and Clinical guidelines, Human resources and others

Case management

Case management of pneumonia occurs in primary health centres, district and provincial hospitals and referral hospitals. For decades Standard Treatment Manuals have guided case management for pneumonia. In recent years health workers have been trained in IMCI algorithms, although the roll-out of this has been fragmented. Partly because of the fragmented implementation, and partly because of relative greater availability of the Standard Treatment Manuals than IMCI algorithms, most health workers have continued to rely on STM for guidance on pneumonia case management. STM and IMCI case management instructions are consistent with each other, and the IMCI Checklist is incorporated into the STM. Lack of availability of standard antibiotics in some health facilities at various times has reduced the quality of case management. Absence of essential drugs and basic equipment such as oxygen catheters, nasogastric tubes and intravenous cannulae are common everyday problems in many hospitals, and are a challenge to health workers.

A program started in 2004 to improve ARI management and oxygen supplies has produced good results. This program, based on use of oxygen concentrators and pulse oximeters for detection of hypoxaemia reduced case fatality rates in 5 hospitals by 35% overall over 3 years. This program is now in 12 hospitals and will be extended to all provincial hospitals in 2009 and to all district level hospitals by 2011.

Prevention of pneumonia

Immunization

Immunization with existing vaccines in the EPI schedule (pertussis, BCG, measles) helps prevent certain types of pneumonia. In 2008 PNG introduced the Hib vaccine, which will prevent a proportion of pneumonia due to *Haemophilus influenzae*.

Several vaccine strategies against *S. pneumoniae* have been trialled in PNG. The pneumococcal polysaccharide vaccine may be effective in PNG; a trial in the 1980s showed a protective effect against all-cause mortality when given to infants as young as 9 months. However this alone is unlikely to protect infants from dying from pneumonia at the times of highest risk. Giving polysaccharide vaccine to pregnant mothers has been shown to increase infant immunity, and may be a strategy in the future.

PNG has signalled her intention to apply to the Global Alliance for Vaccines and Immunization (GAVI) to receive funding for the introduction of conjugate Sp vaccine. This is planned for early next decade (2011-2012). Several issues need to be addressed, including the appropriate vaccine given PNG's common pathogenic serotypes. Currently GAVI only provide vaccines that do not contain 2 and 7F, although on the horizon are 10- and 13-valent vaccines which contain more of the serotypes commonly found in studies in PNG children.

Other preventative opportunities

These include reducing indoor air pollution, improving rates of exclusive breast feeding and childhood nutrition, a focus on nutrition in very low birth weight babies and other maternal strategies to reduce prematurity, and prevention of parent to child transmission of HIV.

Surveillance

There are two methods of surveillance: laboratory and clinical. In 2007-08 a laboratory-based surveillance system for meningitis was set up in 8 sentinel sites. This system is designed to monitor the effectiveness of the introduction of Hib vaccine, and is also providing valuable information on the burden of other vaccine preventable meningitis pathogens, particularly pneumococcus. Sustaining this system will rely in part on hospitals purchasing latex agglutination test kits for detecting CSF pathogens. Latex antigen test kits should be included on the medical catalogue of drugs and diagnostics.

In 2008 a hospital-based surveillance system was set up at all hospitals with paediatricians. This will enable the standardised reporting of hospital admission data on pneumonia and other common childhood illness, and case fatality rates. Sustaining this system will require a computer being purchased for the paediatric wards, and having ward clerks trained in basic data entry.

Summary

Interventions to reduce pneumonia mortality and morbidity during the life of this Plan will include:

- Improvements in the quality of services at community health (aid) posts, to include immunization services and IMCI case management and standard treatment.
- Revision of the Standard Treatment Manual, with consideration of changing from chloramphenicol to ampicillin and gentamicin as first line treatment for severe pneumonia
- Extension of vitamin A supplementation to the second year of life

- Expansion of the oxygen concentrator / pulse oximeter program to all hospitals, and improving the quality of hospital care
- Expansion of the PPTCT program, ART prescribing and cotrimoxazole prophylaxis to all provincial hospitals
- Introduction of a conjugate vaccine against *Streptococcus pneumoniae*, the most important bacterial cause of pneumonia
- Promotion of exclusive breast feeding, avoidance of early solid feeding
- Improvements in the quality of neonatal care and care of low birth weight infants

Other preventative opportunities

These include reducing indoor air pollution, improving rates of exclusive breast feeding and childhood nutrition, a focus on nutrition in very low birth weight babies and other maternal strategies to reduce prematurity.



Figure 3. A mother with a young infant with pneumonia receives oxygen via an oxygen concentrator

6.8 Malaria

Malaria is endemic in all coastal provinces of PNG, and is increasingly found in the highlands region. The current objective of the PNG National Health Plan is to reduce malaria disease and mortality by 50% by 2010; this will be reviewed and objectives for 2011-2020 will be put in place. Currently about 7% of mortality in children under the age of 5 years is from malaria.

Malarial drug resistance is an increasing problem. All available evidence suggests the rates of resistance to chloroquine and amodiaquine are unacceptably high for these to remain Standard Treatment. Clinical failure rates are uncertain in many regions of the country, but there are many reports of delayed parasite clearance even when compliance is certain. Vivax malaria is a major problem in PNG.

The Roll-Back-Malaria Strategy was introduced in an effort to reduce the burden of malaria. Current principles of treatment and malaria control include:

Prevention with long lasting mosquito nets

Prevention measures include protection against mosquito bites and chemoprophylaxis against malaria. Insecticide-treated bed-nets are one of the safest methods of preventing and controlling malaria, and are being distributed in PNG. Studies from other countries have found that use of these insecticide-treated materials leads to a 19% reduction in child mortality, 40-60% reduction in infection, and also a reduction in maternal anaemia, pre-term delivery and low birth weight. Use of insecticide treated nets also has an important effect on population-based malaria control. The blood meal is denied for the female mosquito and this prevents development of eggs and results in a reduction in vector population and reduced transmission.

People living in endemic areas, and travelers to such areas, should be encouraged to adopt protective habits and use protective measures against mosquito bites. These include closing doors and windows in the evenings to prevent entry of mosquitoes into houses; using mosquito repellent lotions, creams, mats or coils and regular use of bed nets.

Diagnosis and treatment

Investigations for malarial parasites, either a blood slide or rapid diagnostic test, should be done where possible in all cases of fever, and treatment with effective doses of antimalarials should be administered, according to severity classification based on the Standard Treatment Book. Many patients fail to complete treatment due to either lack of understanding, belief that when feeling well treatment is no longer necessary, and sometimes due to perceived or real adverse effects.

Activities and future directions

Improvements in the management and control of malaria in children will be closely aligned with the overall malaria control program.

Key issues in the next few years include:

- Introduction of artemether-lumefantrine, and use of rapid diagnostic tests and the IMCI treatment algorithm to guide treatment of children with fever.
- Ensuring that the formulations of all standard antimalarial drugs are appropriate for children
- Supporting efforts to increase the use of diagnostics in clinical decision making
- Considering the implications of research in PNG and elsewhere on intermittent chemoprophylaxis measures for infants (IPTi)

- Introducing artesunate suppositories for pre-referral treatment in health centers, and including this in the Standard Treatment Manual.
- Improving reporting mechanisms from the district to provincial health level and to NHIS, and improving the reporting of malaria cases and case fatality rates from hospitals.
- Establishing the extent of other causes of fever, such as dengue, by utilizing new technologies for diagnosis.
- Improving the tendering process, procurement and supply of all essential drugs and supplies. Establish a sustainable mechanism to deliver antimalarial drugs and related supplies to all levels of the health service
- Create a position of National Coordinator of childhood malaria, to establish seminal sites for surveillance, provide evidence for treatment and prevention recommendations, and link other child health programs (such as IMCI, hospital care, standard treatment) and with the malaria department.

Key messages for Provincial Health Offices

- New therapy is being introduced to treat malaria, called Artemether-Lumefantrine (Coartem)
- Coartem is safe and effective, but costs more than older drugs, so it is important that we improve diagnosis of malaria. Support the use of Rapid Diagnostic Tests in deciding who to treat
- Bed-nets save lives. Distribute them at every opportunity

6.9 Tuberculosis

Childhood tuberculosis (TB) is a huge burden in PNG. Childhood TB reflects the transmission rate of TB in the community. Childhood TB represented 31% of all TB treated in PNG in 2005-6. This is twice the expected case load of paediatric TB and implies that the TB control and elimination programme is not functioning well. It also reflects the impact of HIV epidemic on TB cases. Pulmonary TB and TB meningitis contribute substantially to high rates of child mortality, malnutrition and impaired neurological and cognitive development. Improving the detection, prevention and management of children with TB was considered by the Paediatric Society as a major priority in Child Survival, and was added to the list of goal areas identified by the Western Pacific Region.

This is being addressed through the Stop-TB campaign. Through this program four new positions for TB control officers will be created in each province, working under the Provincial Disease Control Office. Progress in child TB will require better links between the National TB program and child health. This will be facilitated by nominating a paediatrician as the focal point for child TB, and by linking the introduction of paediatric fixed-dose combinations with the adult equivalent. Some of the key activities will be:

- Roll-out fixed dose combination therapy. This will require:
- Update standard treatment guidelines for children. The next revision of the Standard Treatment Book will update guidelines for child TB including standardized regimens for FDC therapy.
- Training for health workers in the use of fixed-dose combination therapy.
- Evaluate a model of improving treatment outcomes for children, increasing Child TB capacity among district disease control officers, using mothers as DOTS providers, and training for health workers using the booklet on newly developed PNG Child TB Booklet. An evaluation of this model is planned in Simbu.
- Ethambutol should replace streptomycin for all cases requiring four drugs in the 2-month intensive treatment phase, regardless of age.
- Follow-up needs to be strengthened at health centers for decentralized services to work effectively.
- BCG should not be given to babies who are known to be infected with the HIV virus, but it is difficult to know for sure which babies are HIV exposed but uninfected and which are HIV infected unless a specific test for the virus can be done. Currently the most common HIV test done is an antibody test, but this cannot distinguish between infection and exposure in infants, as HIV antibodies from the mother can persist in the baby's blood for up to 18 months. HIV DNA PCR testing, which is specific for the virus, is becoming available in some hospitals in PNG. It is optimal to do a HIV DNA PCR test on all HIV exposed newborns at 6 weeks of life. Where this PCR test is available, for infants of HIV infected mothers, BCG should be delayed until the PCR test is done at 6 weeks. If the DNA PCR test is positive, BCG should not be given. This is to avoid the risk of BCG induced tuberculosis, which is very hard to treat. HIV-infected infants should be started on isoniazid prophylaxis to prevent TB. If the PCR test is negative, BCG should be given. In most hospitals in PNG the PCR test is not available. In this situation, BCG should be given to infants of HIV affected mothers at birth, and the infant closely followed up. It is an aim to have HIV PCR testing of HIV affected infants introduced in all hospitals during the life of the Child Health Plan.
- Ensure availability of tuberculin solution in hospitals. Mantoux testing still has an important role in child TB diagnosis and it should be available at all hospitals

- Train health workers on child TB management. Training should be incorporated into training modules within IMCI and the National TB Program (NTP) framework and appropriate training modules needs to be developed for this.
- New diagnostic technologies, such as interferon gamma testing will be evaluated in the PNG context.

Key messages for Provincial Health Offices

- Fixed dose combination therapy for TB will be introduced soon, this will simplify treatment and help promote adherence to medicines
- Every province needs a paediatric TB nurse or disease control officer who can liaise between hospitals, health centers and families affected by TB. District disease control officers can be very useful link people if they are trained in Child TB.

6.10 HIV and AIDS

PNG has a generalized HIV epidemic. The first case of HIV was detected in PNG in 1987. The cumulative total by the end of Dec 2006 was 17000 cases. In 2005 a national prevalence of 2% was estimated, which is similar to the prevalence at antenatal clinics.

The best way in preventing children from being exposed to the HIV virus is to keep their parents negative (Primary Prevention). However the data shows that PNG has a generalized epidemic with heterosexual transmission being the most common mode of transmission. This, in combination with the slow start in trying to control the epidemic, has exposed many parents and their children to the HIV virus and subsequently many children have developed AIDS.

Secondary prevention or prevention of parent-to-child transmission (PPTCT) interventions can be used when primary prevention fails. These interventions, combined with caring for children with AIDS in PNG occurs in the context of suboptimal rural health services, high rates of malnutrition, an already high IMR, low antenatal coverage and even lower number of deliveries in a health care facility is very challenging.

A major priority in HIV among children is the Prevention of Parent to Child Transmission of HIV (PPTCT). This treatment is being extended throughout the country. Drugs are available but human resources are increasingly stretched. Similarly antiretroviral programs for mothers and children are being commenced in many of the major hospitals. The human resource implications of scaling up HIV treatment and prevention programs has not been fully appreciated and is providing great stresses and challenges for provincial health systems, and those at Port Moresby General Hospital. There is an urgent need for providing a paediatric HIV nurse and a midwife trained in PPTCT in each province.

Many children have been exposed to HIV since 1987, many have died from infectious diseases related to HIV infection and many are still being born to HIV positive parents. In the last ten years AIDS and HIV related infections have crept up into the top ten commonest causes of admissions and dramatically in the top five causes of deaths in paediatric wards. Assuming that a third of the exposed children will eventually become infected, there will always be a group of children who will require ART as part of managing their illness.

For children with HIV infection in PNG life until recently has been of poor quality with numerous recurrent infections and malnutrition requiring multiple admissions to the children's wards. HIV has been a huge burden on individual families and on an overburdened health system. Introducing ART as well as developing a good outpatient service and a strong link to the communities will reduce the number of admissions and improve the quality of life.

HAART therapy was introduced into the public health system in 2003. Management has to be age specific (as children are not small adults) include cotrimoxazole prophylaxis for PCP and isoniazid for tuberculosis and must include nutritional rehabilitation.

Paediatric ART formulations have become available in the last two years. This has made treatment a lot more child friendly and easier for the family to adhere to. To assist with malnutrition Ready to Use Therapeutic Food (RUTF, e.g. PlumpiNut) has been made available since 2007. However malnutrition in this setting requires more than RUTF and hence it is recommended that each facility providing care for HIV infected children must set up its own nutritional rehabilitation program.

Paediatric HIV management should be an integral part of management of childhood illnesses and must be included in training for those who run MCH services. Paediatric HIV and AIDS have been included in the standard treatment for children in into the IMCI program. This will hopefully allow lower level health care workers to assist with the diagnosis and management of HIV infected children

Priorities in HIV include:

- PPTCT: nevirapine and replacement feeding. Aim to increase provider initiated and voluntary counseling and testing, PPTCT and ART and ready-to-use therapeutic feeds to all provincial hospitals
- Update to newer and more effective regimens
- Antiretroviral therapy: increase access to ARV to level 1-5 hospitals
- Cotrimoxazole and Isoniazid prophylaxis
- Inclusion of HIV step in IMCI check list
- Nutritional support to children with HIV, including the improved management of malnutrition
- Adolescent services for primary HIV prevention

Key messages for Provincial Health Offices

- Prevention of Parent to Child Transmission of HIV is a high priority and will reduce the number of HIV affected children. Please support the PPTCT program in your province.
- Support the training of a paediatric nurse and midwife trained in HIV, to coordinate the HIV prevention and treatment program

6.11 Paediatricians training

The Paediatrician's primary role in a provincial hospital is to provide the highest standard of appropriate care to all children. However it is equally important for him/her to play a supportive role to public health services, surrounding district hospitals, and primary health care providers.

It is necessary to increase specialist manpower in order to effectively provide a supportive role at the provincial level. The ultimate aim is to cover all provincial hospital with an adequate number of paediatricians. At present 79% of the hospitals in the country have at least one paediatrician and these include all Level 1, 2 & 3 hospitals and 6 Level 4 Hospitals. Hospitals in provinces that are yet to have a Paediatrician are four Level 4 hospitals and these are Kerema, Mendi, Manus and Wabag.

As per National Health Minimum Standard on specialist (Paediatrician) manpower requirement for hospitals, there must be a minimum of 2 Paediatricians in all provincial hospitals and 5 in Level 1 hospitals (PMGH).

In the current establishment we require an additional 6 more Paediatricians in the next 5 years however one has to consider the current attrition rate in the Paediatric fraternity, which is close 1 per year. Therefore in order to maintain an adequate manpower requirement, our estimation of at least 2 new Paediatric graduates every year is desirable.

Training of Paediatricians for the next 10 years

Appendix 1 describes the training needs for paediatricians until 2015. 23 new paediatricians will need to be trained to achieve the minimal standards of two paediatricians in each province by 2015.

Ideally there should be a minimum of two MMed graduates per year for the next 10 years (we know there will only be a maximum of 8 in the next 5 years).

Sub-specialty training

In order to improve the standard of clinical practice and in line with the continuous medical education program the Paediatric division recognizes the need to support selected essential areas of sub-specialization. These include Paediatric Cardiology, Neonatology, HIV Medicine, Paediatric Oncology, Malaria, TB and Nutrition. Progress has been made in Paediatric cardiology and HIV medicine. Neonatology and oncology need to be further developed. It is important to ensure that there are positions established to allow those with subspecialty expertise to function effectively and efficiently. Appendix 2 outlines a plan for such training.

Key messages for Provincial Health Offices

- Every province needs at least 2 paediatricians to provide clinical care and to work closely with the provincial health office to implement the child health programs
- If your province doesn't have sufficient paediatricians, create a position

6.12 Child health nurses and midwives

Child health and midwifery nursing need a major influx of resources. There are three post-graduate child health nursing courses in PNG. The most established is in the School of Medicine and Health Sciences, University of Papua New Guinea, Taurama Campus. This school trains about 15-20 new midwives and paediatric nurses annually. A new child health course in Goroka University trains another 20-25 per year. A third course at Pacific Adventist University in NCD trains about 10 nurses each year. A review of PNG's nursing workforce in 2002-3 estimated that there was a need for 435 more midwives and 200 more paediatric nurses. In 2007 a review of the content and quality of midwifery and child health courses revealed deficiencies in the clinical experience students receive and recommended that midwifery and child health be taught over one year each, rather than trying to fit all learning into a 12-18 month course. These post-graduate programs, which are fragile because of limited teaching and other resources, will need serious ongoing support. Selection processes, accreditation, recognition of skills and remuneration issues need to be addressed if paediatric nurses are to stay in the clinical workforce.

Key messages for Provincial and District Health Staff

- There should be a child health nurse and a midwife in every health centre, and one on every shift in all hospitals. Send some of your nurses for post-graduate paediatrics or midwifery training



6.13 Community Health Nurses and Community Health Posts

PNG is moving towards upgrading aid post to be community health posts. The intention is to have these staffed by three officers; one community health worker with training and skills in maternal and child health care. The services that will be offered at Community Health Posts for mothers and children will include all essential MCH services: antenatal care, deliveries, basic newborn care, immunizations, growth monitoring, and management of common childhood illnesses, and referral of very sick children. Staff will also help encourage the Healthy Islands concept within communities.

Given the number of aid posts to be staffed, there will need to be marked increases in the number of CHWs trained, and major support given to CHW training schools.

6.14 Continuing Professional Development

Continuing professional development is important for all health workers; there are various activities for this, but no systematic program. CPD needs to be developed for child health nurses, registered nurses, non-specialist doctors and HEOs to update them in child health. In-service training and clinical attachment at hospitals for health workers from remote areas need to be strengthened as part of this. Radio doctor program should be continued for the rural health workers.

CPD for paediatricians

The Paediatric Society of Papua New Guinea is a professional body made up of all paediatricians working in the country and membership is open to any health worker involved in Child Health. It was agreed in the September 2005 Society meeting that as a professional body, its members need to be up to date with new information that is emerging around the world that will affect their practice. A program of Continuing Professional Development (CPD) would be developed for paediatricians in PNG. The program would be a way to measure a paediatrician's performance and maintain professional standards.

Since September 2005, effort was put into developing a CME program that would be relevant to practice in PNG. In September 2006, the program was presented to the Paediatric Society and it was approved to commence. The program would involve 5 main areas of a paediatricians' practice:

- Teaching and training of junior doctors, nurses and community health workers including grand round presentations.
- Regular monthly auditing of practice
- Involvement in research projects
- Attendance at annual Medical Symposia and Paediatric Society meetings
- Upgrading knowledge and skills by reading journals and web articles

The following has occurred since then:

September – December 2006 – Development of CPD scoring forms commenced. Drafts were sent to various paediatricians to edit. Explanation of the scoring form was also put together.

January – March 2007 - CPD scoring forms and explanations of the form was finalized and sent out to all paediatricians involved in clinical practice in PNG. It was decided that web and journal articles be sent quarterly.

April – June 2007- CPD annual timeframe was sent out. Articles on Haemophilus Influenza Type B conjugate vaccine were sent out to all paediatricians. This is so that paediatricians are updated on this vaccine before it is introduced into the immunization schedule.

July – September 2007 - Articles on HIV/AIDS, PMTCT and Highly Active Antiretroviral Treatment were sent out. CPD quiz/test was also sent out. Answers to be given back by end of September 2007.

There are costs in running the CPD program. At the moment, existing private equipment and stationeries are being used to enable this program to start. This includes a laptop computer, printer, A4 sized papers and others. Communication with other paediatricians is done via the Internet, telephone and the post. Internet access has incurred most of the costs involved. With the use of existing private equipment, the costs involved annually would be approximately K2000.

The CPD program will be successful in the years to come if funding is available for equipment and the general running of the activities involved in the program, and if members of the Society actively participate.

Annual Activities

- CPD Scoring form to be sent out annually during January
- Quarterly journal and web articles on relevant topics to be sent out
- Annual CPD test/quiz to be sent out and be given back before end of August
- CPD Scoring form to be sent back before end of December
- Paediatric Society to issue Certificate of Accreditation for successful completion of CPD program annually

CPD for other health workers

Some form of continuing professional development is important for all health workers, to keep up to date with the latest guidelines and evidence and to learn new skills. CPD helps maintain morale and enthusiasm. Child health nurses and midwives, through their professional organizations, need to develop opportunities for updating, participating in additional training, sharing of information, or research. CPD can begin modestly, and does not require expensive programs, large amounts of external funding, or prolonged periods spent away from the work-place. Training opportunities are often provided for a small number of nurses in the senior stages of their careers; systems need to be developed so that broader-based CPD can be accessible by all. Using new technologies, such as electronic media and the Internet can be helpful in some places, providing CPD activities at the places of work. In the life of this Plan it would be expected that such systems would be in place for all child health workers. The Paediatric Nurses Association will be supported in some CPD activities that are selected.

Key messages for Provincial Health Office

- Support CPD activities for your midwives and child health nurses, encourage networking and sharing of information

6.15 Adolescent Health

In Papua New Guinea, half of the total population is children and a large number of them are adolescents. According to the National Youth Commission, only 10% of school leavers each year end up in further education or get jobs. 90% of those adolescents end up unemployed in the community. The programs currently in place to address issues affecting adolescence are very limited in their approach and are usually addressed together with youth programs.

A healthy adolescence requires informed and safe choices about risk-taking behavior such as smoking, alcohol and other drugs, sexual activity, diet and relationships. Adolescence is a time when interventions may reduce the risk of chronic physical illness in adulthood, and reduce the risk of adverse mental health and substance abuse problems.

The School & Adolescent Health Program is jointly carried out by the Family Health Services Program in the National Department of Health, and the Department of Education. The health topics taught in PNG schools include basic anatomy and physiology, puberty, menstruation, Family Planning, reproductive health and sexual health, gender equity and HIV/AIDS. The introduction of adolescent health into schools starts at the lower primary school level up to the secondary high school level.

Some non-governmental organizations are also attempting to address some of the issues of adolescence. Save the Children based in Goroka and in Madang run the Youth Outreach Project, which runs programs of HIV/AIDS awareness in schools, settlements, villages and in urban areas. Some churches, such as the Salvation Army have programs that target their youth population and deal with similar health issues using a religious perspective.

The introduction of adolescent health into the primary school curriculum would enable adolescents who are going to leave school early to receive some form of health education. In order for teachers to teach these health topics effectively, they need to be adequately trained to do it. They must understand the content of the lessons, learn participatory teaching skills and also gain confidence to discuss sensitive and controversial topics. Teachers must also be trained for HIV prevention programs.

There are currently no adolescent programs that effectively reach out to those in the community with programs that address issues such as family planning, relationships and parenting, smoking and drugs, nutrition and immunization. Programs addressing these issues will improve adolescents' abilities to make healthy life choices, and will contribute to reducing infant mortality.

Currently, the care of sick adolescents admitted to hospitals in Papua New Guinea is shared between the pediatricians and adult medical units. The decision as to which unit they are admitted under, or which clinic should do the follow up of chronic cases, at times has caused uncertainty, especially among doctors of both these units as well as outpatient and emergency departments. The general understanding from the pediatric point of view, is that those adolescents who are under the age of 12 years old with a medical problem are admitted to the Pediatric Unit, and those above the age of 12 years old are admitted to the adult medical unit. However, the chronic care of cases such as congenital or acquired heart problems, epilepsy, cerebral palsy and those with multiple congenital abnormalities etc. continues under the care of Pediatricians and there is no clear cut time as to when their care is handed over to the adult medical teams. There is no infrastructure in place in hospitals in PNG to cater for this particular age group.

Community-based services

Existing school clinics can be strengthened to provide information to adolescents. Health workers who run such clinics should be well versed with adolescent health issues and how to address them, as well as have access to appropriate materials. However, only adolescents in school and those living in the vicinity of the school would have access to these services. Adolescent Centers should also target those who are out of school and extend into the community. Adolescents may not necessarily go to a hospital if they are well and therefore such a center should be located out in the community. Building of new infrastructure may take years to establish and therefore existing health or church facilities in the community can be

utilized to provide such a service. In some provincial capitals, such as Goroka, urban clinics would be ideally situated to provide such services. In Goroka, The Family Voice counselor's assistance may be sought in establishing this service as they are already in close working relationship with the paediatric unit in the counseling of children who are victims of sexual and physical abuse. UNICEF Goroka Branch is also planning programs that will target adolescents. Another organization is the Mercy Works (part of Catholic Church) who also run Youth programs that involve the adolescent age group.

To operate such a service, we need to have dedicated people who are willing to put in their own time and effort. The following category of workers would be ideal to start an adolescent service: peer educators / counselors (male and female); a nurse (to train existing staff); and other volunteers. These people should have access to health education materials and equipment that will help them address the following issues:

- Smoking, alcohol and other drugs
- Nutrition and immunization
- Sexual and reproductive health including HIV and STI
- Relationships and parenting
- Education and jobs

A model of adolescent services within a hospital

Adolescent center workers would work closely with paediatricians, Family Health Services, Provincial Health and Education Departments, Department of Community Services, churches and NGOs.

Hospital services in PNG should be strengthened in terms of setting up of an adolescent unit including an area within the children's ward to cater for admissions of sick adolescents. Adolescents do not feel comfortable admitted among adults or children, therefore it would contribute a lot towards their recovery and wellbeing if they were kept together with their peers. Paediatricians (and maybe adult physicians) and nurses who have interests to work with this challenging age group should receive some training to adequately handle the associated social issues.

Key messages for Provincial Health Offices

- Consider establishing an adolescent centre in your province which can provide services to adolescents
- Support school health programs
- Talk with your paediatrician on the best ways to provide youth-friendly services for adolescents
- In the life of this plan immunization against HPV, the cause of cervical cancer will be introduced.

6.16 Special Areas: Childhood Cancer, Heart Disease and Paediatric Surgery

Childhood cancer

Resources for managing cancer in children successfully are not well developed in PNG. Appropriately a much higher priority has been given to prevention of deaths from acute infectious diseases. However childhood cancer, although not as common as infections, is not rare. Health services need to be developed for children with cancer, with the aim of managing treatable cancers with standard therapy, and humane palliation for children with complicated or advanced cancer which cannot reasonably be expected to respond to treatment.

Although the burden of disease for Paediatric malignancies in country is not known; cancer is reported within the ten most common causes of hospital admissions in most of the major hospitals.

The common childhood malignancies in the order of frequency are:

- Burkett's lymphoma
- Leukaemia's (ALL , AML &CML)
- Retinoblastoma
- Wilm's Tumor
- Neuroblastoma

There has been a notable difference in the pattern of clinical presentation compared to other parts of the world, and a change in the incidence of leukemia in the last 3 decades. Studies done in the 1970s reported that leukemia was not very common in PNG, however more recent studies have shown that it has become the 2nd commonest malignancy in children.

Current situation of management of cancer

The majority of the cases present in an advanced stages that makes treatment difficult and in most all these cases the prognosis is poor. Chemotherapy is the main stay of treatment in most of the common paediatric malignancies. However surgery is indicated and curative for some cancers, particularly for Wilm's tumor. Radiotherapy is effective against some embryonic tumors and lymphomas. Radiotherapy may also be helpful for palliation; however it has only recently become available again.

Most of the diagnosis is made on clinical grounds particularly at a provincial level, as pathology services are poor. There is insufficient data available on treatment outcomes.

The overall mortality from childhood cancer exceeds 60%. Infection plays a significant role in adverse outcome of many children on treatment.

Socio-economic issues, including family strain, marital problems and financial hardships are very real and contribute significantly to management problems and make compliance and follow-up very difficult.

Future plans

Future plans in improving the care of children with cancer include:

- Develop appropriate guidelines for referral, and recommendations for managing cancer at a provincial level
- Support central coordination and improve data collection and surveillance on pattern of childhood malignancies

- Improve diagnostic services, particularly histopathology services
- Ensure appropriate drug regimes are available, including drugs for effective palliative care
- Plan for a young paediatrician to train in oncology
- Establish a Paediatric Cancer Unit (10 bed ward) attached to National Cancer unit in Lae and satellite units in other regional hospitals is a long term plan
- Skill development for a few key nurses in childhood cancer

Children with heart disease

The problem of heart diseases in PNG is relatively small compared to the other major infectious diseases and nutritional health problems. However they are an important cause of chronic disease in children, with poor quality of life, high rates of morbidity and mortality and high costs to families if left untreated. Congenital heart disease is the largest group. Although there are limited population-based data, congenital heart disease affects 0.8% of infants born in most countries; therefore in PNG could be expected to affect 1000 infants per year. Rheumatic heart disease is also common. Cardiomyopathies are uncommon and lifestyle cardiac diseases are seen in the adult population. Pericardial disease is mainly infective with tuberculosis the predominant cause. *Staphylococcus aureus* pericarditis is less common, but linked to more common skin disease, impetigo and nutritional deficiencies.

Current situation of management of cardiac diseases

Management of cardiac disease has been a well established program with historically selected cases sent to Australia for surgery and since 1993 annual visits by an Australian team of volunteers working together with the local PNG team with both closed and open cases being performed at Port Moresby General Hospital.

Provincial Paediatricians identify and manage cardiac patients who are then entered into regional cardiac registries. Each year the two paediatricians with cardiology training then visit the regional and provincial centres to review children on the registries. This screening process is to identify children who may benefit optimally from cardiac surgery: those who require one procedure for a complete repair, and likely to subsequently have a normal quality of life without significant complications.

Final selection takes place at PMGH by a paediatric cardiologist from Australia in consultation with the local team and cardiac surgery team. Operations are done for the selected patients by the visiting team from Australia. The results have been very good with a mortality rate of less than 2%, and good long-term quality of life for the vast majority of children.

Over the last few years there has been an increasing amount of training and responsibility transferred to the local PNG team, to the extent that in 2009 all closed heart operations and a number of open cases were performed by the national team.

Funding for the operations comes from a number of sources including AusAid, NDoH, fund raising by the public and volunteer services of the Australian volunteers.

Future plans in the management of cardiac disease

Cardiac surgery will continue to pose a significant problem for resource-poor countries like PNG. Despite the increasing capability of PNG cardiac teams to manage these patients there is unlikely to be complete transfer of the overall program to PNG.

There may some merit in initially establishing a basic local cardiothoracic unit which will be capable of performing closed operations throughout the year whilst continuing to increase their participation with the visiting teams in the open heart program. This will continue to require substantial training of selected personnel in overseas units. Components in this plan should include

- Formation of cardiothoracic unit at PMGH
- Continuing training for the paediatrician currently under cardiology training, and to identify a second paediatrician for further training
- Identification and training of at least two anaesthetists / intensivists
- Identification of an additional surgeon for future training
- Supporting training of two persons identified as perfusionists
- Continuing training of operating theatre and intensive care unit staff

Key messages for Provincial Health Offices

- Many children with cancer can be cured if they are diagnosed early and receive early treatment.
- All children with suspected cancer should be referred to the Provincial Paediatrician
- Many children with heart disease can be cured with a single operation. Support children from your province being involved in the Paediatric Cardiac Program (Operation Open Heart).
- The cardiac program (Operation Open Heart) in PNG has been running since 1994. Children with heart disease can receive treatment, and many can receive surgery and be fully cured.

6.16 Child protection and social services

Child abuse and neglect

There is a need to support social services for children. In PNG some children are at higher risk of abuse or neglect. These include orphans, adopted infants, displaced children, and those living in crowded conditions in urban settlements. The number of orphans is increasing because of HIV and the breakdown of traditional village structures. Natural disasters or civil conflict give rise to displaced children, unplanned urbanization is increasing, all meaning the number of at risk children is increasing. The consequences are extreme, including malnutrition, physical and emotional injury, preventable infection with HIV and other sexually transmitted infections.

All paediatricians need to be advocates for marginalised and at risk children. More support is needed for community groups working with at-risk children and their families. More social workers are needed. Having a paediatrician within the National Department of Health who is trained in the area of child abuse and other areas of child protection is an aim for the next 5 years.

Reducing domestic violence

Domestic violence against mothers and physical and sexual abuse against children destroy families and destroy the psychological, emotional, spiritual and physical developments that are necessary in childhood and adolescence. It is the responsibility of everyone to speak out against such violence, and to build communities and families in which such violence is unacceptable. Health workers, teachers, community groups and neighbours need to identify and report child abuse and domestic violence.

Universal education

In the longer term child survival and improved child health and development cannot be achieved without concurrent increases in access to education. Achieving universal primary education, higher participation in secondary and tertiary education and maintaining quality of education will be as important for child and maternal health as any interventions within the health sector. There are several barriers, including school fees and available places. These need to be addressed by advocacy and legislative change.

Birth registration

Birth registration is important for public and population health. Health workers can promote birth registration when dealing with pregnant mothers, at delivery, and at times of infant immunization. Birth registration will be emphasised on the Baby Clinic Record Book, and in health worker training in newborn care.



6.17 Children with disabilities

Illnesses causing disability are common in PNG. Meningitis, birth asphyxia, tuberculous meningitis, trauma, low birth weight are common. These illnesses may result in cerebral palsy, the most common physical disability in childhood, blindness, deafness, intellectual problems and epilepsy. Health consequences include malnutrition, increased risk of pneumonia, skin problems and dental decay. In addition to direct health consequences children with disabilities are vulnerable to socioeconomic exclusion and disadvantage. It has been estimated that more than 90% of children with disabilities in developing countries do not attend school. Children with disabilities are also at increased risk of abuse and neglect. For example, the annual incidence of violence experienced by children with disabilities in some countries is several times greater than the rate experienced by children without disabilities. In spite of the extent of these problems, research into the situation of children with disabilities in PNG is limited.

Prevention of disability

A focus on disability will require strategies for prevention, many of which are outlined in this Plan. These include:

- Vaccines against meningitis, including Hib, *S. pneumoniae*, BCG.
- Strategies to improve newborn care: encouraging facility-based deliveries, skilled midwives, neonatal resuscitation
- Improving rates of exclusive breast feeding, reducing malnutrition, reducing anaemia and micronutrient deficiencies
- Strategies to improve child safety, such as car seat belt legislation, bicycle helmets, fire safety

Support services for children with disabilities

Improving support to services for children living with disabilities are essential to improve their quality of life, health and development. Many disabilities in children are not preventable, and children will continue to live with disability despite optimal prevention strategies being in place. Services are mostly run by community-based organisations, with limited external funding. Multidisciplinary health services for children with disabilities requires paediatric leadership.

- Increasing support to community organizations who work with disabled children.
- Strengthening multi-disciplinary health services for children with disabilities
- Training of nurses and paediatricians in supporting children with disabilities and their families will be important.

6.18 Child health research

The Child Health Plan strongly supports the further development of child health research and research capacity in the country. All program areas mentioned in this Child Health Plan have research needs, and priorities should be developed according to research that will best address high burdens of morbidity and mortality. Some of the most useful research will be operational, to gain a better understanding of how to implement effective programs and interventions in the PNG context. Other research will be epidemiological or addressing key technical questions, such as the effectiveness of new preventative or treatment strategies or the precision of new diagnostic technologies for common diseases. For program areas that are relatively new in PNG, research may be required to develop and evaluate service delivery models. Training paediatricians in research methodology is important sustain an evidence-based child health service.

CHAPTER 7. CHILD HEALTH ADVISORY COMMITTEE

In line with the WHO Child Survival Strategy recommendations a National Child Health Advisory Committee was established in 2006. The Child Health Advisory Committee has a key role in coordinating and supervising Child Health activities. This committee reviews all child health policy areas, new evidence and information and provides recommendations to the National Department of Health (NDOH). The committee has wide representation, including that from NDOH, the IMCI programme leader UNICEF and WHO, University of PNG, and a community Breast feeding support group. It meets quarterly, overseeing many child health activities. It is a vital link between child health workers, institutions and the NDOH. The CHAC has made recommendations or resolutions concerning all the activities mentioned in this document. A recent advance has been the appointment of an IMCI leader to be a member of the committee. General support to the policy, coordinating, and monitoring roles of the CHAC will be very important to maintaining a coordinated approach to child survival.

The CHAC comprises of:

- Director, Family Health Services
- EPI spokesperson
- IMCI Paediatrician
- Nutritionist
- Chief Paediatrician
- WHO representative
- UNICEF representative
- UPNG representative
- Susu Mamas representative

SECTION II

STRATEGIC IMPLEMENTATION PLAN

2009 - 2015

SECTION II. STRATEGIC IMPLEMENTATION PLAN: 2009-2015

STRATEGIC IMPLEMENTATION PLAN: 2009-2015 PROGRAM AREA: EXPANDED PROGRAM OF IMMUNIZATION (EPI)											
Strategic objective	Activities	Timeframe							Process indicators	Responsible persons	Resources
		09	10	11	12	13	14	15			
Achieve high quality immunization services that reach every child and mother Make progress towards elimination of measles Progress towards control of hepatitis B Maintenance of PNG's Polio-free status Elimination of maternal and neonatal tetanus Introduction of new vaccines against major killers of children. When available and affordable, strategies for vaccination against <i>Streptococcus pneumoniae</i> will be introduced. Integrate EPI with other health interventions Conduct supplemental immunization activities every 2 years Ensure all children receive at least 2 doses of vitamin A, at 6 and 12	See EPI multi-year plan for detailed description of annual activities and timeframes GAVI application for conjugate pneumococcal vaccine for introduction in 2011-2012	X	X	X	X	X	X	X	Vaccine preventable disease incidence Proportion of children who are fully immunized by age 1 year Percentage of babies who receive Heb B vaccine in first 24 hours of life Introduction of <i>S. pneumoniae</i> vaccine Reduction in incidence of Hib and pneumococcal meningitis and pneumonia	EPI section, FHS EPI Committee	Refer to EPI Multi-year plan

months, according to the Vitamin A policy											
Extend routine vaccine services to the community health (aid) post level											

STRATEGIC IMPLEMENTATION PLAN: 2009-2015
PROGRAM AREA: INTEGRATED MANAGEMENT OF CHILDHOOD ILLNESS (IMCI)

Strategic objectives	Activities	Timeframe							Process indicators	Responsible persons	National resources required
		09	10	11	12	13	14	15			
IMCI Objective 1: To achieve commitment of national, provincial and district authorities and educational institutions for nation-wide full implementation of IMCI strategy.	Refer to activities: 1.1; 1.2; 1.3; 1.4 of the National Plan to Roll out All Components of IMCI strategy	X	X						Number of provinces committed for full implementation of IMCI strategy.	NDoH; Provincial Health Offices; Development partners WHO UNICEF	K380,000
IMCI Objective 2: To develop national action plan of implementation of IMCI strategy based on micro-planning exercise conducted in all districts of Papua New Guinea.	Refer to activities: 2.1; 2.2; 2.3; 2.4 of the National Plan to Roll out All Components of IMCI strategy	X	X						Number of districts with developed micro-planning for IMCI strategy.	NDoH; Provincial Health Offices; Development partners WHO UNICEF	K1,135,000
IMCI Objective 3: To look for and secure resources for nation-wide implementation of IMCI strategy.	Refer to activities: 3.1; 3.2; 3.3; 3.4; 3.5; 3.6 of the National Plan to Roll out All Components of IMCI strategy	X	X						Number of districts with IMCI implementation plans cost and funding gaps identified.	NDoH; Provincial Health Offices; Development partners WHO UNICEF	K30,000
IMCI Objective 4: To build capacity for implementation of IMCI in the country.	Refer to activities: 4.1; 4.2; 4.3; 4.4; 4.5 of the National Plan to Roll out All	X	X	X	X	X	X	X	Number of districts with IMCI coordinators employed.	NDoH; Provincial and District Authorities;	K13,703.00

	Components of IMCI strategy									Development partners Donor agencies WHO UNICEF	
IMCI Objective 5: To improve health workers skills.	Refer to activities: 5.1; 5a1; 5a2; 5a3; 5a4; 5a5; 5a6; 5a7; 5a8; 5b1; 5b2; 5b3; 5b4; 5b5; 5b6; 5b7; 5c1; 5c2; 5c3; 5c4; 5c5; 5c6; 5c7; 5c8; 5c1; 5c2; 5c3; 5c4 of the National Plan to Roll out All Components of IMCI strategy	X	X	X	X	X	X	X	Number of districts with at least 60% of staff managing children trained/re-trained in IMCI strategy with follow-up after training visit and certified as IMCI trained.	NDoH; Provincial and District Authorities; IMCI district coordinators Development partners Donor agencies WHO UNICEF	K7,876,700
IMCI Objective 6: To improve health system to support implementation of IMCI strategy.	Refer to activities: 6.1; 6.2; 6.3; 6.4; 6.5; 6.6; 6.7; 6.8 of the National Plan to Roll out All Components of IMCI strategy	X	X	X	X	X	X	X	Number of districts with 90% of health facilities offering IMCI services (that includes: IMCI diagnosis and treatment, immunizations services, facilities being reached by phone or radio for daily supervision).	NDoH; Provincial Health Offices; IMCI district coordinators Development partners WHO UNICEF	K13,370,000
IMCI Objective 7: To improve community and family practices and care of the sick child at the community level through implementing community IMCI.	Refer to activities: 7.1; 7a.1; 7a.2; 7a.3; 7a.4; 7a.5; 7a.6; 7a.7; 7b.1; 7b.2; 7b.3; 7b.4; 7b.5; 7b.6; 7b.7; 7b.8; 7b.9; 7b.10 of the National Plan to Roll out All Components of IMCI strategy	X	X	X	X	X	X	X	Number of districts with community IMCI being implemented (it means: community IMCI being practiced by CHWs in registered Community Health Posts). Number of CHWs trained through CHW schools each year in IMCI, EPI and other	NDoH; Provincial Health Offices; IMCI district coordinators Development partners WHO UNICEF NGOs	K15,387,000 (50% of provinces for first 5 years with half of the communities)

								MCH activities		
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STRATEGIC IMPLEMENTATION PLAN: 2009-2015
PROGRAM AREA: STANDARD TREATMENT AND CLINICAL GUIDELINES

Strategic objectives	Activities	Timeframe							Process indicators	Responsible persons	Resources
		09	10	11	12	13	14	15			
To have the latest child health recommendations in the Standard Treatment manual available to child every health worker	Revise the 2010 (9 th Edition) Standard Treatment Manual, incorporating changes in TB, malaria, HIV, care of the sick septic child and other areas	X							STM revised and submitted to publisher	A-Prof Nakapi Tefuarani, Dr Stella Jimmy and Paediatric Society	Preparation costs: K10,000
	Publish and distribute the 2010 Standard Treatment Manual to all health workers in the country		X	X					Copies printed and appropriate numbers distributed to every PHO and every health facility in the country	Family Health Services Provincial Health Offices	K300,000 (20,000 copies)
Revise the 2015 (10 th Edition) Standard Treatment Manual							X	X	STM revised and submitted to publisher		K15,000
Publish and distribute the 2015 Standard Treatment Manual to all health workers in the country							X	X	Copies printed and appropriate numbers distributed to every PHO and every health facility in the country		K350,000
Revision and reprinting of Paediatrics for Doctors in PNG							X	X			K200,000 for 5000 copies
Revision and reprinting of Child Health for Nurses and HEOs in PNG (Green book)			X	X							Preparation: K20,000 K300,000 for 10,000

											copies
WHO Pocketbook of Hospital Care for Children		X	X	X	X	X	X	X		Purchase from WHO Geneva	K300,000 (1000 copies per year: K50,000 per year for 6 years)
Shann's Drug Doses		X	X	X	X	X	X	X			200 copies per year (K4,000 per year)=\$24,000 for 6 years

STRATEGIC IMPLEMENTATION PLAN: 2009-2015
PROGRAM AREA: NEONATAL CARE

Strategic objectives	Activities	Timeframe							Process indicators	Responsible persons	Resources
		09	10	11	12	13	14	15			
To implement Minimal Standards of Neonatal Care in provincial and district hospitals and health centers	Conduct a needs assessment of what is required for provincial and district hospitals, and health centers to achieve minimal standards of neonatal care (physical facilities, basic equipment, essential drugs, human resources, training, auditing, infection control measures)	X	X						Number of hospitals in which needs assessment conducted Report produced	Dr David Mokela Provincial paediatricians	K100,000
	Undertake a program to upgrade health facilities neonatal and labour ward services to achieve minimal standards.			X	X	X	X	X	Number of hospitals in which upgrading of neonatal and labour ward facilities underway	NDoH Provincial Health Offices	Based on needs assessment. Responsibility for funding will depend on needs per health facility
Promotion of breast feeding	Revitalization of the Baby Friendly Hospital Initiative in all provincial hospitals	X	X	X	X	X	X	X	Number of hospitals accredited as Baby Friendly	Paediatric Society Family Health Services Provincial Hospitals SuSu-Mamas	K100,000
Making information available to all mothers on newborn care	Review the New Mothers brochure on newborn care	X							Brochure reviewed and submitted to printer	Dr Theresa Rhongap Dr David Mokela Paediatric Society	Completed 2009
	Print and distribute Baby Book and New Mothers Brochure to all health		X	X	X	X	X	X	Copies printed and appropriate numbers distributed to every PHO	NDoH	To be printed with Baby Book: 250,000 books per

	facilities where babies are born or antenatal care is given, and to community mothers groups: 200,000 deliveries per year								and every health facility in the country Evidence that brochure being used	Household survey and other systematic observations	year = K1,250,000 per year: K5,250,000 over 5 years
Develop a centre of excellence for neonatal care, for training and good model for other provincial hospitals	Build a new Special Care Nursery at PMGH, as a centre of excellence in neonatal care, emphasizing basic newborn care, low cost technology and standard treatment would provide a model for provincial hospitals throughout the country.		X	X	X				Funding achieved for new Special Care Nursery Building commenced Building completed and new SCN opened	NDoH Other donor partners	K5,000,000 (check with facilities)
Support a program of neonatal care and resuscitation training for nurses, midwives and doctors	Print and distribute the neonatal resuscitation poster to all hospitals and health centers where babies are born.	X	X						Copies of poster printed for every health facility Poster distributed	WHO Family Health Services	6000 copies = K120,000
	Conduct neonatal resuscitation training using the training modules in the WHO Pocketbook of Hospital Care for Children (maybe as part of IMCI training)		X	X	X	X	X	X	Number of health workers trained in neonatal resuscitation	Provincial paediatricians National IMCI coordinator	K200,000 per year (10,000 per province)
	Support neonatal clinical attachments to level 1 and 2 hospitals for nursing offices from level 4 and 3 hospitals	X	X	X	X	X	X	X	Number of health workers from Level 3 & 4 hospitals completing such attachments	Provincial Health Offices Provincial Hospitals Provincial paediatricians	K80,000 per provincial hospital (15 health workers per year for 30-day attachment)

STRATEGIC IMPLEMENTATION PLAN: 2009-2015
PROGRAM AREA: BREAST FEEDING, NUTRITION & MICRONUTRIENTS

Strategic objectives	Activities	Timeline							Process indicators	Responsible persons	Resources
		09	10	11	12	13	14	15			
Increase human resource capacity for child nutrition	Recruit a Senior National Nutritionist	X	X						Nutritionist recruited and working within NDoH		
	Create a position for nutritionist in all provinces	X	X	X	X	X	X	X	Positions created within new NDoH structure	NDoH Provincial Hospitals	
	Develop a training program for local nutritionist	X	X	X	X	X	X	X	Training program developed	Nutrition section FHS SMHS	
	Have a paediatrician trained in nutrition to help provide national leadership		X	X	X	X	X	X	Person identified and trained	Paediatric Society	
Improve coordination between programs	Review how best to integrate IMCI and Infant and Young Child Feeding (IYCF) to ensure consistency	X	X						Decision made about how best to implement these together	Family Health Services Paediatric Society	
Community promotion of breast feeding and adequate complementary feeding	Conduct IYCF training in all provinces	X	X	X	X	X	X	X	Number of provinces in which IYCF training conducted	Family Health Services WHO Nutrition section FHS	K800,000 per year (40,000 per province)
	Enforce Infant Feeding Act	X	X	X	X	X	X	X		Nutrition section, FHS Paediatric Society NDoH Su-Su Mamas Community groups	

Improve vitamin A coverage	Expansion of vitamin A supplementation into the second year of life, by additional doses at 18 and 24 months Add dose of vitamin A for post-natal mothers	X	X	X	X	X	X	X		Nutrition section, FHS Paediatric Society Child Health Advisory Committee NDoH	
Achieve high coverage of deworming	Albendazole for deworming, given with vitamin A at 12 months, and at 6 monthly intervals thereafter	X	X	X	X	X	X	X	Policy reviewed	Family Health Services Child Health Advisory Committee Paediatric Society	Incorporated within normal operational activities
Improve health facility and community services for management of malnutrition	Increase the availability of zinc sulphate as treatment for children with diarrhoea and with malnutrition	X	X						Evidence of widespread availability of zinc in health facilities and appropriate use of zinc by health workers	NDoH Provincial Health Offices	Incorporated within normal operational activities
	Encourage the fortification of staple foods, such as rice and flour with multiple micronutrients including iron, zinc, thiamin, riboflavin and folate	X	X	X	X	X	X	X		Nutrition section, FHS	

STRATEGIC IMPLEMENTATION PLAN: 2009-2015
PROGRAM AREA: QUALITY IMPROVEMENT OF HOSPITAL CARE

Strategic objectives	Activities	Timeline							Process indicators	Responsible persons	Resources
		09	10	11	12	13	14	15			
Ensure all sick children have access to good quality care	Develop Minimal Standards in Paediatric Care for provincial and district hospitals	X	X						Minimal standard developed and reviewed by Paediatric Society	Paediatric Society Dr David Mokela Family Health Services	K10,000
	Distribute the WHO <i>Pocketbook of Hospital Care for Children</i> to every child health worker in provincial and district hospitals	X	X	X	X	X	X	X	Appropriate numbers of the book distributed to every hospital in the country Evidence of use of the book by health workers in managing sick children	WHO Family Health Services	Refer to Standard Treatment & Clinical Guidelines
Improve oxygen systems and the treatment of pneumonia	Expand the oxygen systems program to all provincial and rural hospitals and major district health centers in the country	X	X	X					Number of provincial and district hospitals which have the oxygen system	Provincial Health Offices Provincial Hospitals Family Health Services	K250,000
	Maintain the oxygen program with review visits and training				X	X	X	X	Number of hospitals in which annual review visits conducted	NDoH (Family Health Services, Clinical Services and Equipment Branch)	K80,000 per year
Standardized hospital data reporting and paediatric surveillance	Extend the Standardized Hospital Reporting System to all provincial hospitals in the country	X	X						Number of hospitals participating by sending in data quarterly	Paediatric Disease Surveillance Officer Provincial paediatricians Dr David Mokela	100,000 for computer for all hospitals

	Support human resource capacity and logistics within Family Health Services and provincial hospitals for Paediatric Surveillance and Hospital Reporting	X	X	X	X	X	X	X	Position created within new structure Number of hospitals participating by sending in data quarterly	Paediatric Disease Surveillance Officer Family Health Services	National position created during restructuring: K25,000 per year
Surveillance system for vaccine preventable diseases	Funding for latex agglutination antigen testing for CSF pathogens	X	X	X	X	X	X	X			K100,000 for antigen test kits for 20 hospitals

STRATEGIC IMPLEMENTATION PLAN: 2009-2015
PROGRAM AREA: MALARIA

Strategic objectives	Activities	Timeline							Process indicators	Responsible persons	Resources
		09	10	11	12	13	14	15			
Improve the prevention and management of malaria among mothers and children	Publish the revised malaria guidelines in the 9 th Edition of the Standard Treatment Book.	X	X						Revised treatment guidelines included in STM	Dr Ilomo (paediatric malaria focal person) A-Prof Tefuarani (as STM editor)	Refer to STM section
	Support efforts to increase the use of rapid diagnostics in clinical decision making	X	X	X	X	X	X	X	Evidence of increased use of RDTs	Family Health Services	Global Fund for Malaria and NDoH
	Consider the implications of research on intermittent chemoprophylaxis measures for infants (IPTi)		X	X					Studies reviewed by Paediatric Society and CHAC	Paediatric Society Child Health Advisory Committee	
	Include artesunate suppositories for pre-referral treatment in health centers in the STM, and ensure procurement and distribution.	X	X						Included in STM Evidence of availability and use in health centers	Dr Ilomo (paediatric malaria focal person) A-Prof Tefuarani (as STM editor)	
	Improve reporting mechanisms from the district to provincial health level and to NHIS, and improving the reporting of malaria cases and case fatality rates from hospitals.	X	X						Reports on malaria CFR from the Paediatric Hospital Reporting System Number of hospitals providing reports	Paediatric Disease Surveillance Officer	
	Improve the tendering	X	X	X	X	X	X	X		NDoH	

	process, procurement and supply of all essential drugs and supplies. Establish a sustainable mechanism to deliver antimalarial drugs and related supplies to all levels of the health service										
Surveillance for malaria	Develop sentinel site surveillance for malaria in 4 regions	X	X	X	X	X	X	X			Malaria microscopist and clerk in each site: K30,000 per year for each of 4 regions: 600,000

STRATEGIC IMPLEMENTATION PLAN: 2009-2015
PROGRAM AREA: TUBERCULOSIS

Strategic objectives	Activities	Timeline							Process indicators	Responsible persons	Resources
		09	10	11	12	13	14	15			
Improve the ability of health workers to diagnose and treat TB	Roll-out fixed-dose combination (FDC) therapy for childhood TB	X	X						FDC drugs for child TB provided by Global Drug Facility FDC drugs distributed to all health centers and hospitals	National TB Program Provincial Health Offices	NTP and StopTB
	Update Standard Treatment Book to include guidelines for child TB including standardized regimens for FDC therapy.	X							STM updated with new TB drug recommendations	Dr Harry Poka (paediatric TB focal person) Paediatric Society	Refer to STM NTP and StopTB
	Publish and distribute Child TB booklet to every health facility	X	X						Appropriate numbers of the booklet distributed to every hospital in the country Evidence of use by health workers	National TB Program WHO	NTP and StopTB
	Provide training for health workers in the use of fixed-dose combination therapy, child TB detection and case management using the Child TB Booklet.	X	X						Number of provinces in which child TB training done	Dr Harry Poka National TB Program	NTP and StopTB
Improve coordination and leadership of child TB	Create and fund a position of TB Paediatrician, as the focal		X	X	X	X	X	X	Position created within new NDoH structure	National TB Program	

	point for child TB										
	Evaluate a model of better follow-up at a district and community level.		X	X	X				Proposal developed Model trialed and evaluated	National TB Program Dr Harry Poka	NTP and StopTB

STRATEGIC IMPLEMENTATION PLAN: 2009-2015
PROGRAM AREA: HIV and AIDS

Strategic objectives	Activities	Timeline							Process indicators	Responsible persons	Resources
		09	10	11	12	13	14	15			
Improve the prevention of HIV infection in newborns	Increase voluntary counseling and testing, PPTCT and ART and ready-to-use therapeutic feeds to 20 hospitals	X	X							Dr Mobumo Kiromat	NDoH and National HIV roll-out program
	Update to newer and more effective PPTCT and ART regimens	X	X	X						Dr Mobumo Kiromat Paediatric Society	NDoH and National HIV roll-out program
Improve the care of children with HIV	Increase access to ART in all provincial hospitals	X	X	X	X	X	X	X			NDoH and National HIV roll-out program
	Ensure all affected children receive cotrimoxazole and isoniazid prophylaxis		X		X		X			All health facilities All paediatricians Paediatric Society	K150,000 biannually, for provincial training
	Inclusion of HIV step in IMCI check list	X								Family Health Services Paediatric Society	Refer to IMCI budget
	Provide nutritional support to children with HIV, including Ready-to-Use Therapeutic Feeds	X	X	X	X	X	X	X		Provincial and district hospitals Clinton Foundation UNICEF	Refer to nutrition section
	Update to new and more effective ART			X	X					Paediatric Society Dr Mobumo Kiromat	
Improve coordination and leadership of child HIV	Create and fund a position of HIV Paediatrician, as the focal		X	X	X	X	X	X			

	point for child HIV										
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STRATEGIC IMPLEMENTATION PLAN: 2009-2015
PROGRAM AREA: PAEDIATRICIANS TRAINING

Strategic objectives	Activities	Timeline							Process indicators	Responsible persons	Resources
		09	10	11	12	13	14	15			
Achieve the National Health Minimum Standard on specialist (Paediatrician) manpower: a minimum of two Paediatricians in all provinces and 5 in Level 1 hospital (PMGH)	Train 23 new paediatricians to achieve the minimal standards of two paediatricians in each province by 2015 Increase Paediatric Training positions at PMGH to 6 Encourage provinces to create service positions for registrar training	X	X	X	X	X	X	X	Number of new paediatricians trained each year Number of new trainees entering the DCH and MMed programs	SMHS	
Improving the evidence base for child health	Research projects for MMed / DCH								Research projects completed	SMHS	K50,000 per year
Develop a paediatric workforce with appropriate subspecialty skills.	Support training in cardiology, neonatology, HIV medicine, adolescent health, oncology and nutrition.	X	X	X	X	X	X	X	Persons identified to receive training in these specialty areas Training organized and completed Number of paediatricians fulfilling these roles	SMHS NDoH Other educational institution partners	

STRATEGIC IMPLEMENTATION PLAN: 2009-2015 PROGRAM AREA: POLICY DEVELOPMENT IN CHILD HEALTH											
Strategic objectives	Activities	Timeline							Process indicators	Responsible persons	Resources
Policy development in child health		09	10	11	12	13	14	15			
	Printing of Child Health Policy and Plan	X	X	X				X			K200,000
	Support the Paediatrics Mid-Year meeting each June, and the Paediatric Mini-Symposium in September as major forums for child health policy development advice to the Department	X	X	X	X	X	X	X	Meetings successfully conducted twice a year Meeting report and recommendations completed and submitted to CHAC Recommendations considered by CHAC Number of recommendations adopted and enacted	Family Health Services Paediatric Society	K150,000 per year
	Support the Child Health Advisory Committee as the major technical advisory body on child health	X	X	X	X	X	X	X	Meetings conducted quarterly Meeting report with recommendations completed and distributed	Family Health Services Dr William Lagani (Chair, CHAC)	K30,000 per year

STRATEGIC IMPLEMENTATION PLAN: 2009-2015
PROGRAM AREA: CHILD HEALTH NURSES

Strategic objectives	Activities	Timeline							Process indicators	Responsible persons	Resources
		09	10	11	12	13	14	15			
To achieve the standard of one child health nurse in every health centre and at least one per shift in every hospital	Increased training of child health nurses	X	X	X	X	X	X	X	Number of graduate child health nurses	SMHS Pacific Adventist University Goroka University Other training colleges	

STRATEGIC IMPLEMENTATION PLAN: 2009-2015
PROGRAM AREA: ADOLESCENT HEALTH

Strategic objectives	Activities	Timeline							Process indicators	Responsible persons	Resources
		09	10	11	12	13	14	15			
Provide appropriate facilities for adolescent health services	Strengthen existing school clinics to provide information to adolescents	X	X	X	X	X	X	X		Department of Education	
	Advocacy for establishment of adolescent centers in provinces	X	X	X	X	X	X	X	Number of provinces in which appropriate adolescent services established	Dr Wendy Pameh (as adolescent health focal person) Provincial hospitals Provincial paediatricians Community groups / NGOs	Provinces to budget
Improve human resources for adolescent health	Provide training for a paediatrician in adolescent health, to act as a national resource-person for this area	X	X						Paediatrician having undergone some training in this area	SMHS Other educational institution partners	K20,000
Create model of adolescent areas in children's wards in hospital										Dr Wendy Pameh	K40,000
Support immunization programs for adolescents	Introduction of HPV										
National coordination / technical assistance / leadership	Total National Department of Health, leadership in adolescent health										K100,000 per year

STRATEGIC IMPLEMENTATION PLAN: 2009-2015
PROGRAM AREA: CHILD PROTECTION AND SOCIAL SERVICES

Strategic objectives	Activities	Timeline							Process indicators	Responsible persons	Resources
		09	10	11	12	13	14	15			
Improved reporting, documentation and surveillance systems for child abuse and neglect		X	X	X	X	X	X	X	Child abuse reporting systems in place		
Improved preventative and treatment services for children at risk of neglect and abuse		X	X	X	X	X	X	X			
Health workers better prepared to contribute to identifying and managing at-risk, abused or neglected children	Paediatrician trained in child abuse and child protection, child legislation, strategies for protection, prevention and management Incorporation of training on child abuse and child protection in MCH courses and post-graduate child health nursing courses	X	X	X	X	X	X	X	Paediatrician trained in child abuse and child protection Incorporation of training on child abuse and child protection in MCH courses and post-graduate child health nursing courses		
Total National Department of Health	Total National Department of Health, leadership / technical assistance in child protection										K100,000 per year

STRATEGIC IMPLEMENTATION PLAN: 2009-2015
PROGRAM AREA: CHILD DISABILITY

Strategic objectives	Activities	Timeline							Process indicators	Responsible persons	Resources
		09	10	11	12	13	14	15			
Increased support to community organizations who work with disabled children. Strengthened multi-disciplinary health services for children with disabilities Training of nurses and paediatricians in supporting children with disabilities.	Incorporation of training on disability in MCH courses and post-graduate child health nursing courses Paediatrician trained in child disability and rehabilitation										
	Total National Department of Health, leadership / technical assistance in disability										K100,000 per year

STRATEGIC IMPLEMENTATION PLAN: 2009-2015
PROGRAM AREA: SPECIAL AREAS: HEART DISEASE, CHILDHOOD CANCER

Strategic objectives	Activities	Timeline							Process indicators	Responsible persons	Resources
		09	10	11	12	13	14	15			
Improve the management of childhood cancer and ensure wide access to services	Develop appropriate guidelines for referral, and recommendations for managing cancer at a provincial level		X	X					Referral guidelines developed	Dr Mobumo Kiromat Dr David Mokela Paediatric Society	K40,000
	Support central coordination and improve data collection and surveillance on pattern of childhood malignancies	X	X	X	X	X	X	X		Dr David Mokela Paediatric Disease Surveillance Officer	See Paediatric Hospital Reporting System
	Improve diagnostic services, particularly histopathology services									CPHL Chief Pathologist	NDoH national function
	Ensure appropriate drug regimes are available, including drugs for effective palliative care	X	X	X	X	X	X	X	Evidence of uninterrupted stocks of essential chemotherapy and analgesia		NDoH national function
	Plan for a young paediatrician to train in oncology			X	X	X			Paediatrician identified and training completed	SMHS Other educational institution partners	NDoH national function, SMHS
	Establish Paediatric Cancer Units (10 beds ward) attached to PMGH and National Cancer Unit in Lae					X	X	X	Evidence of improved services for children with cancer	NDoH PMGH Paediatric Department Angau hospital	K50,000 per year=250,000
	Skill development for 5								Number of nurses trained in childhood cancer	PMGH Other educational	K50,000 per

	nurses in childhood cancer								management	institution partners	year=250,000
Heart Disease	Support the annual Operation Open Heart	X	X	X	X	X	X	X	Number of children having surgery each year through OOH	A-Prof Nakapi Tefuarani Dr Mathias Tovilu	K100,000 per year
	Support the training of a paediatrician in cardiology	X	X						Paediatrician identified and training completed	SMHS PMGH Other educational institution partners	

Appendix 1. Costing - in Kina

Program Area: Management of childhood illnesses (IMCI)

Objective/Activity	2009	2010	2011	2012	2013	2014	2015
Objective1. Achieve commitment of national, provincial district authorities & educational institutions for nation-wide full implementation of IMCI strategy.	190000	193600					
Objective2. To develop national action plan of implementation of IMCI strategy based on micro planning exercise.	567500	578300					
Objective3. Look for & secure resources for nation- wide implementation.	15000	15300					
Objective4. Build capacity for implementation	1957500	1994700	2032600	2071300	2110600	2150700	2191,600
Objective5. Health worker's skills	1125243	1146623	1168408	1190608	1213230	1206281	1259770
Objective6. Improve health system support	1910000	1946290					
Objective7. To improve community & family practice & care of the sick child at the community level through implementing community IMCI	2198143	2239897	2282466	2325833	2370023	2415054	2460940
Program Area: Standard Treatment & Clinical Guidelines							

Objective/Activity	2009	2010	2011	2012	2013	2014	2015
Objective. To Have the latest recommendations in the standard treatment manual available to every health workers. Activity. Revised the 2010 9 th edition standard treatment manual	10000						
Activity. Publish & distribute the 2010 standard treatment manual to all health workers in the country		150000	152850				
Activity. Revise the 2015 standard treatment manual						7500	7643
Activity. Publish & distribute the 2015 standard treatment manual						178000	178325
Activity. Revise & reprint Paediatrics for Doctors in PNG						100000	101900
Objective. Revise & reprint child for Nurses & HEOs in PNG		160000	163040				
Objective. WHO's pocket book of hospital care for children		50000	50950	51918	52904	53909	54934
Objective. Shan's Drug Doses		4000	4076	4153	4232	4313	4395
Program Area: Neonatal Care							
Objective/Activity	2009	2010	2011	2012	2013	2014	2015
Objective. Implement minimum standards of neonatal care in provincial & district hospitals	50000	50950					
Objective. Promotion of breast feeding. Activity. Revitalize baby friendly hospitals	14285	14557	14834	15115	15403	15695	15994

Objective. Make info available to all mothers. Activity. Print & distribute baby books & new mother's brochure to all health facilities			1250000	1273750	1297951	1322612	1347742
Objective. Develop a centre of excellence for neonatal care training. Activity. Build a new special care nursery at PMGH.		1666666	1698333	1730602			
Activity. Conduct neonatal resuscitation training		200000	203800	207672	211618	21`5639	219736
Activity. Support clinical attachments for level 1 & 2 hospitals for nurses	1520000	1548880	1578308	1608296	1638854	1669992	1701722
Program Area: Breast feeding, Nutrition & Micronutrients							
Objective/Activity	2009	2010	2011	2012	2013	2014	2015
Objective. Community promotion of breast feeding & adequate complementary feeding. Activity. Conduct IVCF training in all provinces	800000	815200	830689	846472	862555	878943	895643
Program Area. Quality improvement of hospital care							
Objective/Activity	2009	2010	2011	2012	2013	2014	2015
Objective. Ensure all children have access to good quality care. Activity. Develop minimal standards in paediatric care	5000	5095					
Activity. Expand the oxygen system program to all provincial & district hospitals	83333	84917	86530				

Activity. Manage the oxygen system with review visit & training				80000	81500	83069	84647
Objective. Standard hospital data reporting & paediatric surveillance . Activity. Extend the standardized hospital reporting system to all provincial hospitals	50000	50950					
Activity. Support human resource capacity& logistics within family health services & provincial hospitals	25000	25475	25959	26452	26955	27467	27989
Objective. Surveillance system for vaccine preventable diseases Activity. Funding for latex agglutination antigen testing for CSF pathogens	14286	14557	14834	15115	15403	15694	15994
Program Area: Malaria							
Objective/Activity	2009	2010	2011	2012	2013	2014	2015
Objective. Surveillance sites for malaria Activity. Develop sentinel sites for malaria in 4 regions	120000	122280	124603	126971	129383	131841	134346
Program Area. HIV/AIDS							
Objective/Activity	2009	2010	2011	2012	2013	2014	2015
Objective. Improve the care of children with HIV. Activity. All affected children receive cotrimoxazole & isoniazide prophylaxis		150000		150850		155754	
Program Area. Paediatric Training							

Objective/Activity	2009	2010	2011	2012	2013	2014	2015
Objective. Improve evidence base for child health. Activity. Research project s for MMed & DCH		50000	50950	51918	52904	53909	54934
Program Area: Policy Development in Child Health							
Objective/Activity	2009	2010	2011	2012	2013	2014	2015
Objective. Policy development in child health. Activity. Print child health policy & plan	50000	50950	51918				52904
Activity. Support paediatric mid-year meeting in June & paediatric mini symposium in Sep	150000	152850	155754	158713	161729	164802	167933
Activity. Support the child health Advisory Committee	30000	30570	31151	31743	32346	32960	33587
Program Area: Adolescent Health							
Objective/Activity	2009	2010	2011	2012	2013	2014	2015
Objective. Improve human resource for adolescent health. Activity. Provide training for a paediatrician in adolescent health.	10000	10190					
Objective. Create model of adolescent areas in children' s wards	40000						
Objective National coordination of technical assistance leadership. Activity. Total NDoH leadership in adolescent health		100000	101900	103836	105809	107819	109867

Program Area: Child Protection & Social Services							
Objective/Activity	2009	2010	2011	2012	2013	2014	2015
Objective. Total NDoH.	100000	101900	103836	105809	107810	109867	111955
Activity. Total NDoH leadership technical assistance in child protection							
Program Area: Child Disability							
Activity. Total NDoH leadership technical assistance in disability	100000	101900	103836	105809	107810	109868	111955
Program Area: Heart Diseases & Childhood Cancer							
Objective/Activity	2009	2010	2011	2012	2013	2014	2015
Activity. Develop appropriate guidelines for referrals & recommendations for managing cancer		20000	20380				
Activity. Establish paediatric cancer unit 10 beds in PMGH & in NCU in Lae					50000	50950	51918
Activity. Skill demand for 5 nurses		50000	50950	51918	52904	53909	54934
Activity. Support the annual OOH	100000	101900	103836	105809	107819	109868	111955
TOTAL for ALL PROGRAM AREAS	11145290	13998497	12456791	12440662	10809742	11210776	11565262

Note: Assumption: The costs of the strategic plan have been adjusted annually to reflect the projected costs of goods and services as forecasted by the Department of Treasury. That is has been increased by a factor of 1.9% per annum over the period 2009-2015.

Appendix 2. Projection of paediatrician training 2009-2015

Hospital Classification	Current (2008)	Projected number by 2015	Additional required by 2015
Level 1 Hospitals: National Referral Hospital			
1. PMGH	5	7	3 *
2. UPNG (Lecturers)	2	3	2 *
Level 2 Hospitals: Regional Referral Hospitals			
1. AngauLae - MOMASE	3	4	2 *
2. Mt. Hagen – Highlands Region	1	3	2
3. NongaRabaul – Islands Region	1	3	2
4. PMGH - (Southern/Central/NCD)	1	2	1
Level 3 Hospitals: General Specialist Hospitals			
1. Goroka	2 (+1)	3	0
2. Alotau	1	2	1
3. Madang	2	2	0
4. Wewak	1 (-1)	2	1
Level 4 Hospitals			
1. Daru	1	1	
2. Kerema	0	1	1
3. Popondetta	1	2	1
4. Kundiawa	1	2	1
5. Wabag	0	1	1
6. Mendi	0	1	1
7. Vanimu	1	2	1
8. Lorengau	0	1	1
9. Kavieng	1	2	1
10. Buka	1	2	1
11. Kimbe	2	2	
Total			23

* Assumes attrition / retirement of one person

Appendix 3. Projection of paediatrician sub-specialty training 2012-2020

Sub-Specialty Areas	Current	In-Training	2012 – 2020
Paediatric Cardiology	1	1	4
Southern Region (Port Moresby)	1		1
Momase Region (Lae)			1
Highlands Region (Mt. Hagen)			1
New Guinea Islands (Rabaul)			1
Paediatric Oncology	0	0	2
Port Moresby			1
Lae			1
Neonatology	0	1	2
Port Moresby	0		1
Lae	0		1
Goroka	0		1
Paediatric HIV Medicine	1	0	4
Southern Region (Port Moresby)			1
Momase Region (Lae)			1
Highlands Region (Mt. Hagen)			1
New Guinea Islands (Rabaul)			1
Respiratory Medicine - TB	0	0	4
Southern Region (Port Moresby)			1
Momase Region (Lae)			1
Highlands Region (Mt. Hagen)			1
New Guinea Islands (Rabaul)			1
Disability / Rehabilitation	0	0	2
Port Moresby			1
Lae			1
Nutrition	0	0	4
Southern Region (Port Moresby)			1
Momase Region (Lae)			1
Highlands Region (Mt. Hagen)			1
New Guinea Islands (Rabaul)			1

The workforce plan does not mean an additional paediatrician should be trained in each of these sub-specialty or program areas in addition to the general paediatrician workforce projections in Appendix 1. Rather the skills in each of these areas should exist at a regional level in most cases it is envisaged that general paediatricians will be up-skilled in such areas to provide services in their regions.

Appendix 4. Monitoring

There are several systems for data collection that are relevant to children:

- The National Health Information System (NHIS)
- Vaccine preventable disease surveillance
- Acute flaccid paralysis surveillance
- Acute Fever and Rash surveillance
- Demographic & Health Survey (DHS)
- Census
- Paediatric Hospital Reporting System
- EPI program data
- National TB program
- HIV program including Prevention of Parent to Child Transmission (PPTCT) data

Appendix 5. Child health hotline and contact addresses

Child Health Hotline:

For questions relating to paediatric care and child health:

Specific program areas

Your provincial paediatrician will be able to guide you on all questions relating to child health and paediatrics. The following people may change roles or contact details during the life of this plan

IMCI

National Coordinator – Dr Gilchrist Oswyn
phone number: 6411200
Email address: alotaugh@daltron.com.pg

EPI and vaccines

Dr William Lagani (Acting Director Family Health Services)
Email: william_lagani@health.gov.pg; Tel: 301 3841 or
Mr. Steven Toikilik Email: stoikilik@cbsc.org.pg

Standard Treatment Manual for Common Illnesses in Children and other Clinical guidelines

Dr David Mokela (Chief Paediatrician Port Moresby General Hospital). Tel: 324 8282 or Email: dkmokela@daltron.com.pg

Nutrition and breast feeding

Susu Mamas Toll Free Hotline 7200 MAMA: 72006262
Mrs. Wila Saweri Nutritionist National Department of Health: Email: wila_saweri@health.gov.pg

Improving quality of hospital care / Neonatal care

Your provincial paediatrician
Dr David Mokela (Chief Paediatrician)

Malaria in children

Dr Illomo Email: ihwaihwanje@dwu.ac.pg or hilomo@daltron.com.pg

Tuberculosis in children

Dr Harry Poka (Paediatrician Madang) Email: guhimud74@yahoo.com

HIV in children

Dr Mobumo Kiromat (Paediatrician PMGH)

Paediatrician training

Dr David Mokela (Chief Paediatrician PMGH). Email: dkmokela@daltron.com.pg
Professor John Vince: Email: jvince@datec.net.pg

Adolescent Health

Dr Wendy Pameh (School of Medicine & Health SciencesUPNG):

Email: wpameh@global.net.pg

Heart disease in children

Associate Professor Nakapi Tefuarani (cardiology paediatricianPMGH).

Email: ntefuarani@datec.net.pg

Paediatric surgery

Dr MacLee Mathew (Paediatric SurgeonANGAU)

For general information about this **Child Health Policy and Plan** and information on the **Child Health Advisory Committee** contact Dr William Lagani (CoordinatorChild Health Advisory Committee). Email: william_lagani@health.gov.pg. Tel: 301 3841

Appendix 6. Core indicators and potential mechanism for monitoring

This Plan would require the following information be collected reported and published annually:

Statistic	Mechanism for data collection
Population based	
Under-5 mortality rate	DHScensus
Infant mortality rate	DHScensus
Neonatal mortality rate	DHScensus
Proportion of infants exclusively breast fed to 6 months of age	DHScensusNational Nutrition Surveys
Percentage of children who are <80% expected weight for age (underweight or malnourished)	DHScensusNational Nutrition Surveys
Coverage rates for all vaccines	EPI program
Vaccine preventable disease incidence	NHISPaediatric Reporting System
Proportion of children who are fully immunized by age 1 year	EPI program vaccine coverage surveysNHISDHS
Percentage of babies who receive Heb B vaccine in first 24 hours of life	EPI program vaccine coverage surveysNHISDHS
Proportion of mothers attending 3 or more ANC's	NHISDHScensus
Proportion of primiparous mothers receiving 2 doses of tetanus toxoid	EPI program dataDHS
Proportion of mothers receiving IPT	NHIS
Proportion of mothers having supervised health facility deliveries	NHISDHS
Percentage of mothers delivering who have received bed-nets	NHISDHScensus
Health facility-based outcome data	
Case fatality rates for Under 5 children	

Case fatality rates for neonates Case fatality rates for VLBW birth asphyxia and neonatal infections	Paediatric Reporting System NHIS
Case fatality rates for severe pneumonia	
Case fatality rates for diarrhoea	
Case fatality rates for meningitis	
Case fatality rates for malaria	
Case fatality rates for severe malnutrition	
New cases of paediatric HIV	Paediatric Reporting System HIV program data
Access to prevention of parent to child transmission (PPTCT) prophylaxis	PPTCT program
New cases of Haemophilus influenzae type b and Streptococcus pneumonia meningitis	Paediatric Reporting System
Incidence of childhood TB and treatment completion rates	National TB program DOTS data system Paediatric Reporting System
Health facility-based program progress data	
Proportion of health facilities that have a nurse training in IMCI	IMCI program data
Proportion of health facilities that have a trained midwife	Human resources mapping data
Proportion of health facilities that have a trained child health nurse	Human resources mapping data
Proportion of health facilities with a microscopist or RDTs	Human resources mapping data
Proportion of health facilities with health worker trained in childhood TB detection and management	National TB Program
Proportion of health facilities that have a nurse trained in IYCF counseling	Human resources mapping data IMCI program data

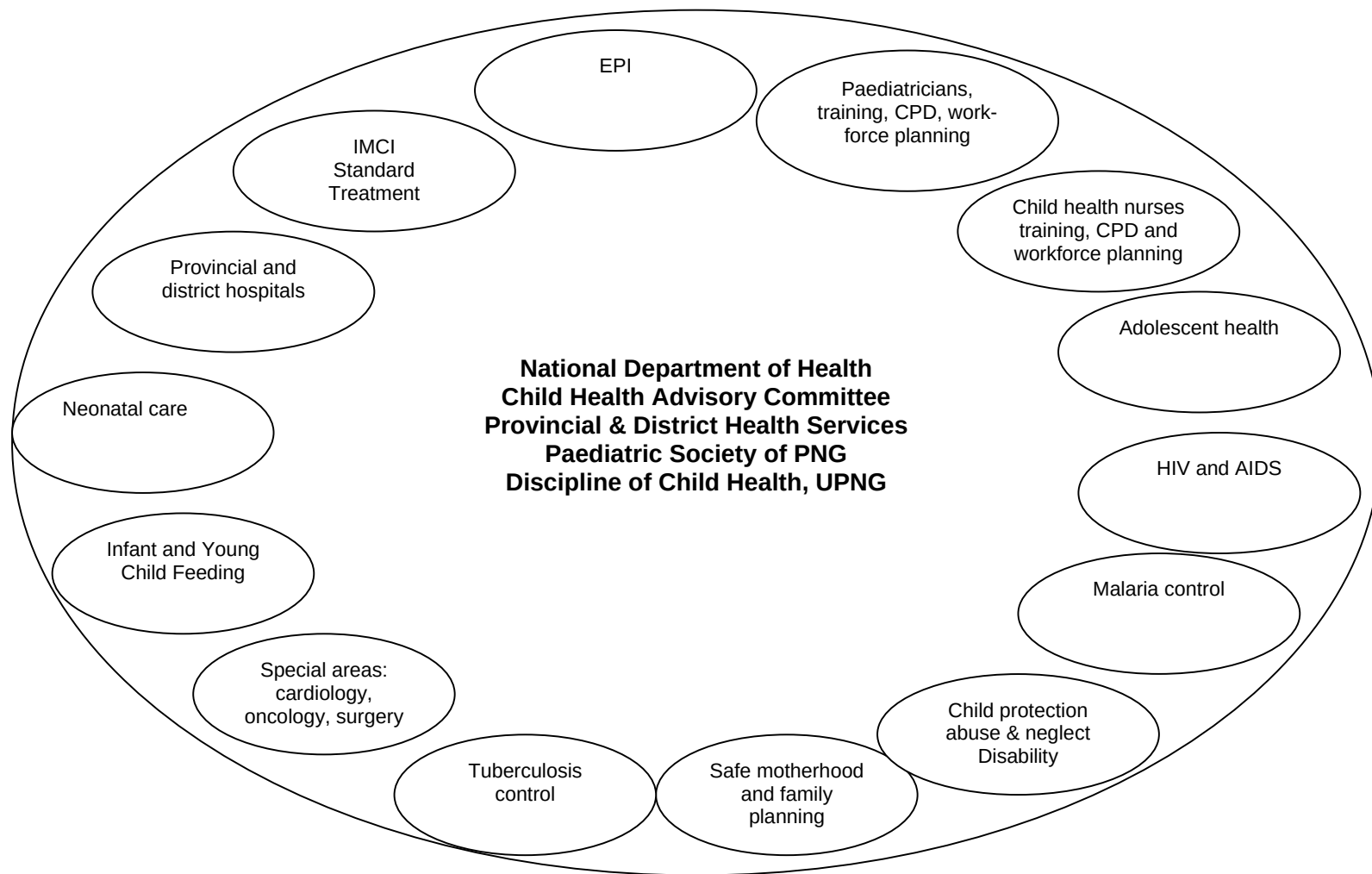


Figure 5. PNG Child Health Program

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EPI & Child Health Advisory Committee:	Dr William Lagani
IMCI:	Dr Gilchrist OswynDr Norbert Rhelis (WHO)
HIV-AIDS & Paediatric Cancer:	Dr Mobumo Kiromat
Infant and Young Child Feeding:	Dr Dale FrankA-Prof Nakapi Tefuarani
Nutrition:	Mrs. Wila Saweri
Neonatal Health / Safe Motherhood:	Dr Mary BakiDr Theresa Rhongap
Adolescent Health & CPD:	Dr Wendy Pameh
Paediatric Training:	Prof John VinceDr David Mokela
Paediatric Cardiology:	Assoc Prof Nakapi Tefuarani
Standard Treatment:	Dr Stella JimmyAssoc Prof Nakapi Tefuarani
Tuberculosis:	Dr Harry PokaDr David Mokela

The following people participated in workshops in June 2008September 2008 and June 2009 where the Child Health Plan was revised and the final version completed:

Dr David Mokela	Dr Mobumo Kiromat
Dr William Lagani	Dr Hilda Polume
Mr. Enoch Posanai	Dr Job Hawap
Prof John Vince	A-Prof Nakapi Tefuarani
Dr Gilchrist Oswyn	A-Prof Trevor Duke
Dr Benjamin Tahija	Dr Tito Langas
Dr Patrick Kiromat	Dr Lucas Mauta
Dr Beryl Vetuna	Dr Guapo Kiage
Dr Ilomo Hwaihwanje	Dr Theresa Rongap
Dr Alphonse Rongap	Dr Magdalyn Kaupa
Dr Naomi Pomat	Dr Wendy Pameh
Dr Kone Sobi	Dr James Amini
Dr Dale Frank	Dr Harry Poka
Dr Jerry Tanumei	Dr Cornelia Kilalang
Dr Francesca Failing	Dr Lepani Waqatakirewa (WHO)

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