Health Service Delivery Profile

Papua New Guinea

2012

Developed in collaboration between
WHO and the National Department of Health, Papua New Guinea

Papua New Guinea health service delivery profile

Demographic, socio-economic and health context

Lying just south of the equator, 160km north of Australia, Papua New Guinea (PNG) is part of an arc of mountains stretching from Asia, through Indonesia into the South Pacific, and consists of more than 600 islands. PNG has 19 provinces and the National Capital District in 4 administrative regions. The PNG 2011 census indicates a population of 7.06 million, with a national growth rate of 2.83% between 2000 and 2011. It is a young population with 38.2 under 15 years and 2.58% over 65 years. It is also a mainly rural population 87.5%, with 12.5% in urban areas and 318,000 people (4.5%) in the capital Port Moresby. The terrain is rugged mountainous and rich cultural diversity with hundreds of ethnic groups and more than 800 indigenous languages. The different cultural societies and clans are explicitly acknowledged in the nation's constitution, which states a wish for traditional villages and communities to remain as viable units of Papua New Guinean society and for active steps to be taken in their preservation. PNG has abundant natural resources (forest, land, fisheries, minerals) and ecosystems, and hosts a unique range of biodiversity. Between 1997-2010, 4 million people were affected by natural disasters with damages estimated at around US$100 million.

After being ruled by three external powers since 1884, Papua New Guinea gained its independence from Australia in 1975. Strong growth in the mining and resource sector has led to PNG becoming the seventh fastest-growing economy in the world as of 2011 (IMF). Despite this, the majority of the population still live in traditional societies and practice subsistence-based agriculture.

Table 1. Key development indicators in Papua New Guinea

Development indicators	Measure	Year	Source
Human development index	0.466	2011	UNDP
Gini coefficient	50.9	1996	World Bank. 2012
Adult literacy	60.9 (male 63.6, female 56.5)	2009	World Bank. 2012
Population living below the national poverty line (%)	28.0%	2009	ADB *PNG Fact Sheet 2011*
Total health expenditure	3.6% GDP	2010	World Bank. 2012
Life expectancy at birth	62.8	2011	World Bank. 2012
Infant mortality rate	47 per 1,000 live births	2010	ADB, *Basic Statistics 2012*
Under-5 mortality rate	61 per 1,000 live births	2010	ADB, *Basic Statistics 2012*
Maternal mortality rate	250 per 100,000 live births*	2008	ADB, *Basic Statistics 2012*

*GoPNG estimated MMR to be 733/100,000 based on the 2006 PNG Demographic and Health Survey

Life expectancy is shorter and infant mortality is higher than most neighbouring Pacific countries. Both infant and under-5 mortality have decreased steadily since 1990, but not sufficiently for PNG to meet its MDG 4 which calls for reductions by 2015 in under-5 mortality from 90 (in 2000) to 32 per 1000 live births, and in infant mortality from 64 (in 2000) to 24 per 1000 live births. Maternal mortality is a serious problem in PNG, 53% of births are attended by skilled health personnel. The leading health problems are communicable diseases, with malaria, tuberculosis, diarrhoeal diseases, and acute respiratory disease as major causes of morbidity and mortality. PNG has a generalized HIV epidemic, driven predominantly by heterosexual transmission. Care and treatment for people living with HIV have improved significantly since 2006. As with other countries in the Western Pacific Region, NCDs are also on the rise. The incidence of malaria is declining as is the proportion of babies born in hospitals with low birth weight. However, health improvement has not kept pace with the country's economic growth over the past 10 years.

Health strategies, objectives, and legislation

The National Health Plan 2011-2020 emphasizes strengthening primary health care services delivery and aligns its objectives with the Millennium Development Goals (MDGs). Values stated explicitly include equity, gender and people-centeredness, and the National Health Plan states that increasing

universal health coverage and equity in access for the rural majority and the urban poor is the first and most important objective. *The National Health Service Standards for Papua New Guinea 2011-2020* outlines a 7-level health service delivery structure and systematically describes a package of health services and the number, types and mix of staff that should be provided at each level of health care.

The following laws contribute to the regulatory framework for health system functioning in PNG: *Poisons and Dangerous Substances Act (1952)*; *Disaster Management Act (1984); HIV/AIDS Management and Prevention Act (2003);* The *Public Hospitals (Charges) Act (1972)* provides for user fees to be charged at public hospitals. The Organic Law on *Provincial Governments and Local Level Governments (1977)* devolved the management and service delivery of rural health services from the National Department of Health (NDoH) to the provincial and local governments. The *New Organic Law (1995)* went further and delegated public spending to the local governments.*);* The *Public Hospitals Act (1994)* made hospitals quasi-statutory authorities and had implications for rural delivery. The *National Health Administration Act (1997)* intended to provide a framework for coordination between the National Department of Health and provincial authorities, and the *Provincial Health Authority Act (2007)* provides for establishing a single provincial health authority to integrate the management of hospital services and rural (primary) health services, instead of hospitals being managed separately by NDoH and rural health services by provincial governments. Implementation of the *Provincial Health Authority Act (2007)* is voluntary has been taken up in three provinces: Milne Bay, Eastern Highlands and Western Highlands. The process is ongoing and impact closely watched.

The NDoH has responsibility for setting policies, developing standards and guidelines, procuring pharmaceuticals and medical supplies, surveillance, and managing public hospitals including Port Moresby General Hospital, one psychiatric specialist hospital and provincial hospitals. Provincial and local governments are responsible for funding and delivery of rural health services, and implementing all policies and programs according to the set goal and vision of the national government. Health advisors coordinate the health planning process within the provincial government planning framework. Hospitals have independent management boards that receive and administrate national, local and external finances for their service delivery.

Service delivery model and provider network

Service delivery in PNG is mainly provided at government and church health facilities, funded by a mix of government tax revenues, out-of-pocket payments and donor funds. The central government is responsible for the national referral hospital, one specialist, 4 regional and 16 provincial public hospitals. The majority of health service delivery is carried out by provincial and local governments in rural health services, including rural hospitals, health centres, health subcenters, and aid posts. All of these services offer a mix of public health and primary and community care (see Table 2).

In the National Health Plan and Service Standards, health care in PNG is envisioned as a hierarchical structure of 7 levels with level 1 as the least complex: basic health services provided through aid posts and community health posts, and level 7 as the most complex set of health services provided at the national referral hospital. The government aims to have established such a system by 2050.

Government-subsidized church health services are an integral part of the national health system, particularly in the most hard-to-reach areas of the country where they provide almost 50% of ambulatory services. Not-for-profit and organized under the Churches Medical Council, they manage their own plans and staffing, but are highly subsidized with over 80% of the service costs financed by the government, without any formal contractual arrangement. In principle churches are part of the local planning and decision-making process under the coordination of provincial and district authorities but in practice, participation is limited. Church organizations also run 6 of the 9 nursing schools and all 14 of the community health worker training schools, but again there is no formal contractual arrangement with the government for this, and no clear links with overall national health workforce planning or requirements.

Private sector organizations include for-profit enterprise-based services or employment-related health care programs, small for-profit private sector, women's and youth organizations, NGOs and an undocumented number of unregulated traditional healers. Some newer services are dependent upon external financial support and may not be well established in the community, while more well-known and long-established services receive strong community support.

Table 2. Number (and %) of selected health facilities and services provided in PNG, 2010

	Government	Mission	Other*	Total (%)
Provincial hospitals	20 (95.2)[1]	2[2] (4.8)		**22 (0.5)**
There is one provincial hospital in each province including Port Moresby General Hospital in the National Capital District which is also the national referral hospital. There is also one specialist psychiatric hospital run by the government. Four provincial hospitals double as regional hospitals. Currently all hospitals are funded by the government. Core clinical services and subspecialty clinical services are provided by respective medical specialists and specialist nurses on-site. In principle, a wide range of clinical support programs as well as public health programs are available in these tertiary hospitals. However, many provincial hospitals are experiencing lack of resources while Port Moresby General Hospital is serving a population larger than its capabilities.				
Urban clinics	48 (69.6)	10 (14.5)	11 (15.9)	**69 (1.7)**
Urban health clinics provide similar services as health centres				
District & rural hospitals	5 (35.7)	7 (50.5)	2 (14.3)	**14 (0.3)**
Provide full basic health services including medical, surgical, obstetric, paediatric, trauma and 24-hour emergency care for both inpatients and outpatients. District hospitals cover a population of 40,000 to 300,000 depending on availability and accessibility of other health facilities nearby.				
Health centres	149 (74.1)	48 (23.8)	4 (2.1)	**201 (4.8)**
Rural health centres and sub enters provide services including management of chronic and acute conditions, basic surgical care, deliveries, and paediatric care, and function as intermediary referral points between district lower level facilities and district hospitals. The government more commonly runs the larger health centres, Health centres serve a population of 5,000 to 20,000				
Health sub enters	158 (36.9)	263 (61.5)	7 (1.6)	**428 (10.2)**
Rural. Deliver the same services as health centres (above). Church groups more commonly run the smaller sub enters.				
Aid posts (open) 2008	2,672 (77%)			**2,672 (63.9)**
Rural aid posts comprise more than 70 percent of all health facilities and deliver basic health care including mother and child care, and community-based health promotion. Staffed by community health workers with two years training. Aid posts are designed to cover a population group of about 1,000 people each.				
Aid posts (closed) 2008	776 (23%)			**776 (18.6**)
A significant number have closed due to shortages in funding, staff, and other resources. Where there are no aid posts, village health volunteers, village birth attendants and Marasin Meri (medicine women) provide basic first aid and health education in villages and homes.				
Total	**3,828 (91.5)**	**330 (7.9)**	**24 (0.6)**	**4,181 (100)**
	Government	**Mission**	**Other***	**Total (%)**

Source*: National Health Plan 2011-2020. Vol.2* and *Health Human Resource Review of the World Bank*, 2007

[1] Includes 4 hospitals that also play the role of Regional Hospitals
[2] Jiwaka and Vunapope have a designated role as interim provincial Hospitals

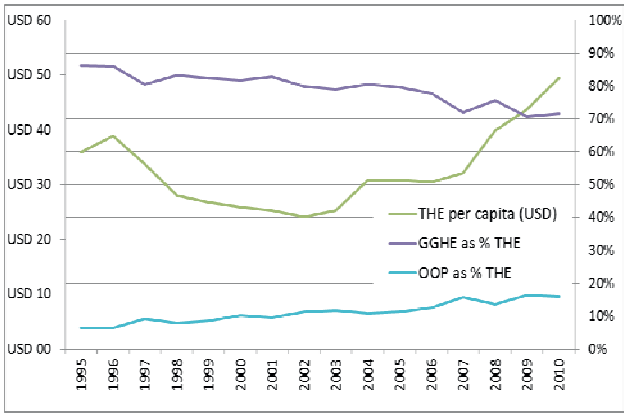
In the private sector, large employers may provide onsite health care for families of employees and surrounding communities, and complement government health services. NGOs and civil society organizations play an important role in the delivery of primary health services especially in areas with limited access to government health services. NGOs assisted in introducing Village Birth Attendants as part of community based family health care. NGOs may operate their own rural hospitals and urban clinics and provide supportive health services such as ambulance services, community outreach programs and 24 hour emergency call centres.

Traditional medicine is an important part of the health system in PNG, and the Government adopted the National Policy on Traditional Medicine in 2007. The policy identifies ways of integrating traditional medicine into the country's Primary Health Care system. Traditional healers are permitted to practice at village and district level. Traditional healers and medicinal plants have become important health resources in rural areas, particularly where aid posts and health centres have closed.

Development Partner support to local tuberculosis (TB) services in very remote communities in Western Province is assisting patients to receive TB treatment without having to travel. A new purpose-built sea ambulance is making monthly medical outreach trips along the coast of South Fly and also makes it possible for patients and suspected new cases of TB to be transported back to Daru Hospital for further diagnosis and treatment.

Health financing

Figure 2. Trends in Health Financing indicators in PNG 1990 to 2010



Expenditures on health services are mainly paid for by government from general taxation and with substantial support from external donors. Of the total health expenditure (THE) in 2010, government health expenditure made up 79%, and out-of-pocket payments 15.9%. Total external resources for health were 23.9% of THE. The role of private insurance is small in PNG. Figure 2 shows that although general government health expenditure (GGHE) as a percentage of THE has been declining overall since 1995, because of economic growth, per capita spending on health has been increasing since 2002, and in 2010 was USD49.47. Out-of-pocket expenditure has also increased but at a slower rate.

In principle, all public health and primary health care services are free of charge. However since health function grants do not always reach the facility level on time, staff at those facilities tend to charge user fees in order to keep facilities functioning. Fees in church facilities are usually displayed in public view and are generally higher than fees in public facilities. The *Public Hospitals (Charges) Act (1972)* provides for user fees in public hospitals, but not health centres or aid posts. In 2010, 55.9% of private expenditure on health was from out-of-pocket payments. The 2005 GoPNG policy decision for the establishment of a health insurance scheme is yet to be implemented, but a compulsory health insurance scheme for public servants and private sector employees is planned.

Human resources

PNG has low numbers of health professionals per head of population: 5.3 nurses/midwives and less than 1 doctor per 10,000 people. Community health workers comprise almost 35% and nursing officers about 30% of the total health workforce, while medical officers and health extension officers (intermediate level workers bridging the gap between doctors and nurses) together comprise less than 8% (see Table 3).

Rural health services lack sufficient health workforce. Many aid posts have closed partly due low motivation for staff to work in remote, financially unstable and frequently dangerous environments. Many rural hospitals do not retain medical officers with more than 80 percent of the medical officers

working in urban areas. Medical officers are also often responsible for hospital administration and management. Further staff attrition results when medical officers leave. These factors, combined with an aging workforce mean that short- and long-term human resource supply gaps are expected.

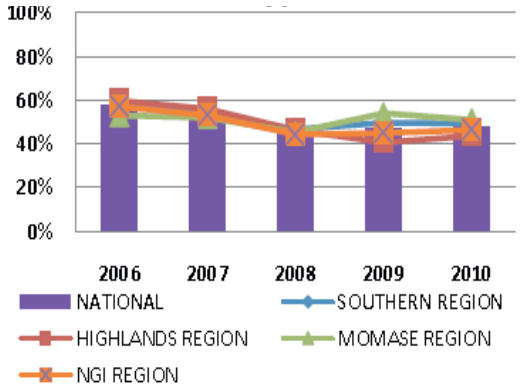
Table 3. Number (and %) of health workforce in PNG by cadre and workplace, 2008

	Hospitals Number (%)	Health centres, Subcentres, aid posts Number (%)	Total (%)	Health workers per 10,000 population
Medical officers	326 (83.2)	66 (16.8)	392 (3.0)	0.6
Health extension officers	87 (19.2)	365 (80.8)	452 (3.5)	0.6
Nurses, midwives	1,622 (42.9)	2,155 (57.1)	3,777 (29.3)	5.3
Community health workers	1,093 (24.6)	3,356 (75.4)	4,449 (34.5)	6.3
Dental officers	69 (56.1)	54 (43.9)	123 (1.0)	0.2
Other allied health workers	2,032 (54.9)	1,672 (45.1)	3,704 (28.7)	5.2
Total	**5,229 (40.5)**	**7,668 (59.5)**	**12,897**	**18.3**

Data from National Health Plan 2011-2020 Vol. 2.

Medicines and therapeutic goods

Figure 3. % months with adequate medical supplies



In 2012 the government of PNG updated the Standard Treatment Guidelines, the Essential Medicines List and developed its first National Medicines Formulary. Securing essential drugs has historically been a major problem and availability of basic essential medical supplies in health centres rarely surpassed 60% between 1999 and 2010. This means health facilities typically go without drugs for up to half the year (Fig 3). Government continues to implement reforms to improve procurement and distribution networks. Provincial transit stores have lacked adequate facilities to store and distribute medicines and vaccines. However, engagement of third party procurement and distribution channels for drug kits, supported by development partners, resulted in 83% availability of essential medicines for 2011. Initial kits estimated to cover 40% of clinic catchment population needs, will progressively be enhanced to kits estimated to cover 100% of the population needs. Storage facilities at rural health centres and aid posts need to be upgraded for safe-keeping of drugs, vaccines, and intravenous fluids. Continuing education is needed for health managers to strengthen skills in management of drugs and supplies. Illegal sale of medical supplies is common.

Referrals and linkages through the provider network

Rural aid posts are intended to be the point of entry into the health system. However, where aid posts have closed or cannot provide adequate staff or medical supplies, health centers and district hospitals have become primary care centers for many. People in urban areas can choose their first entry into the system as self-referrals to any level of service is permitted. The “Minimum Standards for District Health Services in PNG (2001)” define the principles guiding the referral of patients based on standard treatment manuals and the “Nurses Standard Procedure Manual (1993). The national health service standards (2010) define the model of service delivery. These standards specify the referral protocols and t state that community health workers should play an advocacy role within the community with regards to referrals in emergencies and that medical officers and nursing officers

should manage referrals vertically and horizontally whenever the situation warrants. Additional referral protocols for specific health conditions are being developed by technical groups and institutions that specialise in the conditions.

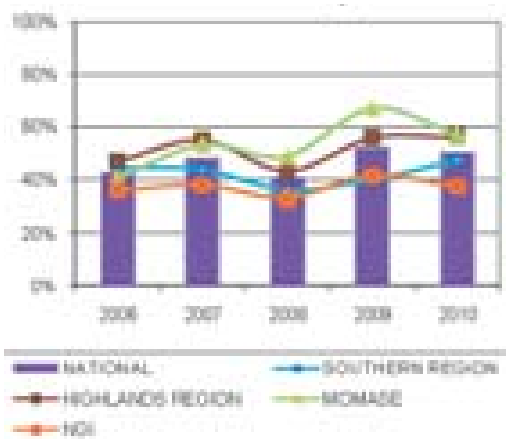
Referrals are made up levels, and theoretically can be made down levels. Where there is appropriate medical capacity patients will be referred to such facilities. . There can also be referrals between public and private sectors. Referrals are initiated by a referral letter, and the patient is responsible for travelling to the referred health facility with the referral letter. Costs and lack of transport and fuel often limit the ability of the patient to follow through with the referral. There are no well-defined control measures or incentives to encourage providers to follow referral protocols.

The national referral hospital at level 7 provides a nationwide referral role for urgent and critical care as well as a range of specialist care. However, it is currently providing primary, secondary and tertiary services, which challenges efficiency and results in overcrowding and long waits.

There is some coordination and communication between health services. Nursing officers at health centres provide supervision to community health workers and village health volunteers. Dental therapists and community health workers from health centres visit schools. In health centres and district hospitals where some speciality expertise is not available, specialists from provincial hospitals visit periodically. Provincial health authorities and a supervisory team from hospitals undertake visits to lower level health facilities. According to the annual sector reports 56 % of health facilities received supervisory visits from district and provincial health officers in 2010 and 62% in 2011. High frequency radio has been an important mode of communication and is used for supervisory activities, clinical consultations, discussion of patient cases and transmission of health information. On average 78% of facilities have either telephone or radio. Projects funded by international partners increasingly seek to build partnerships between the provincial governments, NGOs, and civil society organizations to effectively conduct health promotion activities in local communities.

Quality

Figure 1. % of facilities in PNG with water to the delivery room



With isolation and access problems, supervision and maintaining quality in rural facilities is difficult. Figure 3 shows that in 2010 less than 60% of facilities had water supply to their delivery room. All health services may voluntarily apply to be accredited based on standards outlined in *Quality standards for health services in PNG (1991).* Since the late 1990s, 14 provincial hospitals have been awarded for compliance to the standards, but no health centers, urban clinic or aid posts have been accredited. However, some of these facilities have not maintained or sustained their high levels of compliance with the standards to date. Health Facility Design Standards are recommended for future projects as part of the national standards 2011-2020. The current national health standards also states that standard treatment guidelines should be implemented and practised by all levels of health care. But, NDoH clinical practice manuals are only used for selected diseases in hospital settings, and use is not common in rural areas.

Professional academic bodies are relatively well developed, and promote professional and ethical standards of care and provide advice to public hospital boards and the government. In principle, clinical specialist visit health facilities are meant to occur at least every 6 months. In practice, rural health workers often feel isolated and not well supported.

Equity

The vision and goal of the *National Health Plan 2011-2020* are firmly based in the values of primary health care such as equity and people-centeredness. Increasing equity in access to rural health services is the first and most important objective. However, poor access and quality of services, user fees and associated expenses are barriers to accessing health care, especially to the rural majority of PNG. Rural areas are further disadvantaged by logistical difficulties associated with the harsh terrain and subsequent high service costs and lower access to services and other health resources. A recent study (Bauze et al, 2012) found that district-level under-five mortality rates correlate strongly with poverty levels and access to services.

Gender equality is a significant challenge and systemic violations of women's rights exist throughout PNG. Women and girls have substantially less access to health care and education services than males. Violence against women and gender-based violence high, with two-thirds of women estimated to have experienced it[4]. On the positive side, the *Lukautim Pikinini Act (2009*) provides a legal framework for child protection, but still requires concerted efforts to ensure full implementation.

Demands and constraints on the service delivery model

The government is working to overcome a series of problems in the health sector, including: access difficulties, deterioration of rural health facilities, distribution of essential drugs and equipment and migration of human resources out of the country.

Key health services delivery constraints include: lack of facilities in rural areas, lack of policies to hold providers accountable for access to basic health services, inefficient state-church cooperation in service delivery, and lack of protocols, control measures and incentives for referral procedures. There are also factors outside the health system: lack of hard infrastructure such as transportation, energy, water and communication system, high level of illiteracy, and population growth in an already resource limited setting adds to the risk of conflict and increases health service demand.

In recent years here have been several efforts to improve the overall health system. Some highlights include the Provincial Health Authority Act (2007); direct facility funding; 100% drug kits for health centres and aid posts; and a health sector improvement plan that aligns donor funds to the existing government system and national health priorities. These have efforts are yet to be evaluated.

Health Vision 2050 is a forty-year strategy that is expected to transform the current health service delivery system in Papua New Guinea, and includes the progressive introduction of community health posts, district hospitals, regional specialist hospitals, and national referral hospitals. Health sector development will have to be coupled with overall social development in order to achieve better health service delivery and improved health status for the people in PNG.

Implementation progress

Despite high quality planning, effective implementation of plans and monitoring progress are hampered by a lack of resources and social and geographic challenges. The national health standards 2001, and the new 2011-2020, have not been widely implemented.

In 2010 the NDoH and development partners adopted a health sector Performance Assessment Framework for the sector which is based on 29 core indicators. These indicators cover numbers of health services, health personnel, health services resources, health expenditure, and patient visits. Data on selected indicators are presented in Table 4. The 2011 review stated that there was an improvement in health service inputs, although not enough to see overall improved outputs or outcomes.

The 2009 MDG progress summary report shows improving infant and under-5 mortality rates (see Fig 4), but a maternal mortality rate among the highest in the world and HIV/AIDS as a growing challenge.

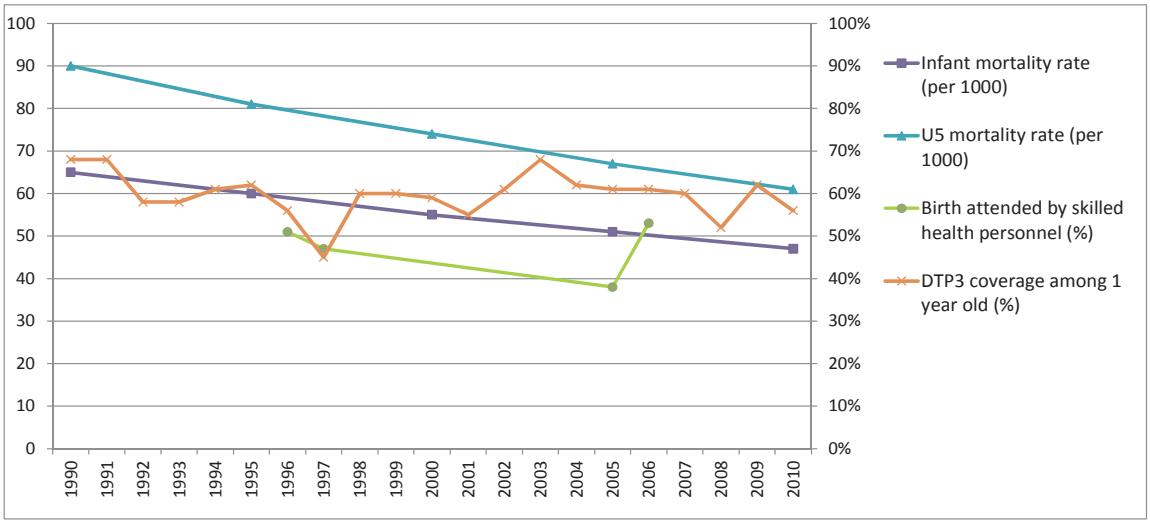
PNG's Human Development Index has increased steadily from 0.31 in 1980 to 0.47 in 2011. This is a slightly greater increase than the world average, but considerably less than the increase for the Asia Pacific region overall (see Fig 5).

Table 4. Trends on selected health system indicators in PNG, 2006 – 2011

Indicator	2006	2008	2010	2011
Aid posts open (%)	70	71	70	67
Health centres that have received at least one supervisory visit from district or provincial management staff (%)	62	62	56	62
Health centres and hospitals with functioning radio and/or telephone (%)	87	84	78	71
Health centres that have running water in the delivery room (%)	43	41	50	48
Period in a year without a stock-out of selected essential medical supplies* (%)	57	46	47	83*
Provincial health expenditure as a proportion to the estimated minimum health expenditure required (%)	75.2	80.5	u.a	u.a
Births attended by skilled personnel at health facilities (%)	44	43	40	42.7
Pregnant women who attended at least one antenatal visit (%)	70	71	62	64.7
Average number of rural outreach program per 1,000 children under 5 years in 20 provinces	29	25	42	38
Average number of outpatient visits to health centres and hospitals per person per year	1.75	1.59	1.62	1.31

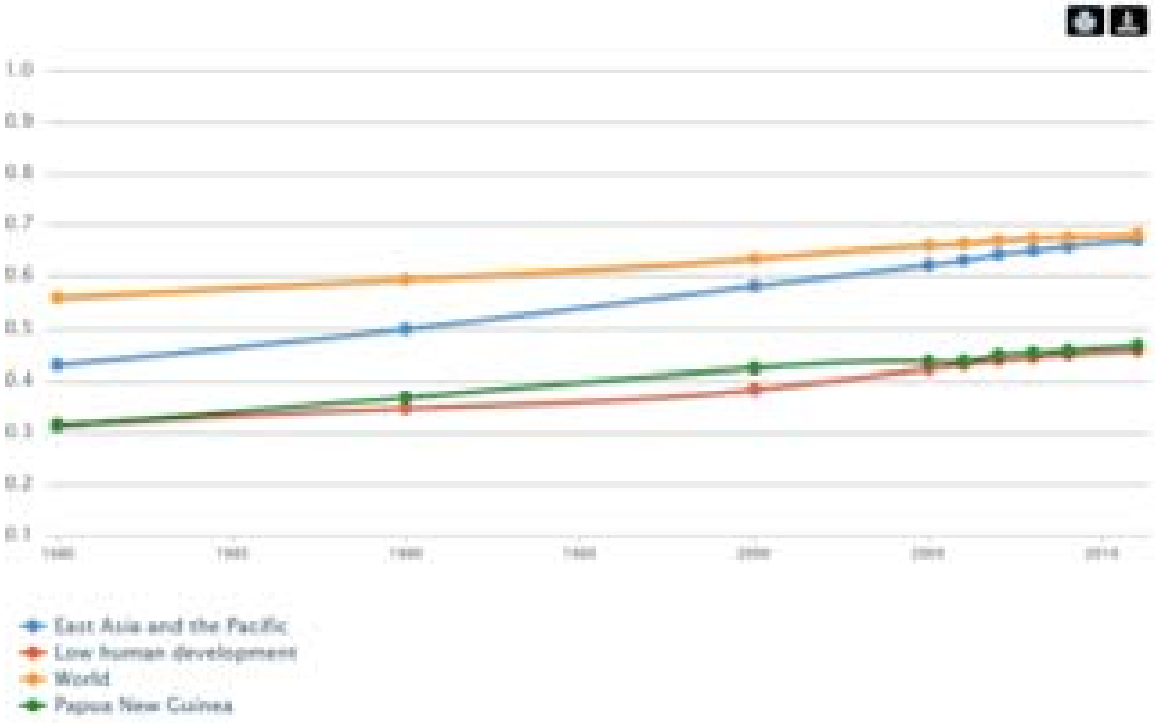
Source: *2011 and 2012 Annual Sector Performance Review, PNG NDoH.*
* 8 essential medical supplies: Oral hydration solution, Measles vaccine, oxygen, Amoxicillin, Anti-malarial drugs, Ergometrine (maternal care), Depo-provera (family planning), baby books

Figure 4. Trends on child health indicators in PNG, 1990 – 2010



Source: WHO Global Health Observatory, Country Statistics

Figure 5. Human Development Index: Trends 1980 – 2010, World and PNG



Source: UNDP, Papua New Guinea, Country Profile: Human Development Indicators
http://hdrstats.undp.org/en/countries/profiles/PNG.html

Traditional medicine practice

Papua New Guinea is extraordinarily rich in plant diversity, with around 5% of the world's biodiversity, and each of its ethnic groups has a long tradition of using plants and animal materials for treating illnesses. Currently medicinal plant preparations are used to treat various ailments such as sexually transmitted diseases, asthma, diarrhoea/ dysentery, body/abdominal pain, headaches, boils/sores, tuberculosis, cold/cough, fever/ malaria and insect bites.

According to a 1999 national report, 80% population in PNG has used herbal medicines and traditional medicine therapies. However, most people use both traditional medicine and Western medicine. For people living in the most remote parts of PNG, for example the Lihir Islands, distance from public health services often means that a traditional healer is their only option.

There is a high level of acceptance of traditional medicine by doctors trained in conventional medicine, and traditional healers do not object to their patients seeking to conventional medical treatment. This mutual tolerance and acceptance contributes to the majority of the population utilising both forms of treatment.

Despite the diversity of ethnic groups in PNG, there are several common concepts and beliefs around health and illness, including a universal belief in the power of sorcery, belief in the importance of adherence to customary law, and belief in the healing power of herbs and incantation. It should be noted that the national policy on traditional medicine explicitly excludes the use of sorcery.

A national office for traditional medicine within the NDoH and the Traditional Medicines Task Force, were established in 1999. NDoH officially endorsed medicinal plant use in 2005 through the announcement of a *Traditional Medicines Health Care Initiative.* This involved a nationwide survey and establishing a traditional medicines database. The *National Policy on Traditional Medicines (2007*) aims to improve the quality and delivery traditional medicine and its practices, and incorporate traditional medicine into the primary health care system.

The Taskforce is now charged with promoting the *National Policy on Traditional Medicine (2007)* nationwide, selecting 'safe and effective' traditional medicines, developing a training manual for traditional practitioners in primary care, and formalizing Traditional Healer Guilds in the each province. A traditional medicine section is included in the *National Health Plan 2001-2010*. Cost of traditional medicine is not covered by the government.

Providers of traditional medicine

There is limited information on the number of traditional medicine practitioners in Papua New Guinea. The national traditional medicines database lists 400 practitioners. There are currently no traditional medicine training or education programmes at college or university level and no traditional medicine research institutein PNG.

Quality and safety of traditional medicine

Currently there is no regulation for herbal medicines or the practice of traditional medicine, though laws relating to the *National Policy on Traditional Medicines (2007*) are currently in development. The Traditional Medicines Database, first started in 1999, holds details on medicinal plants and traditional medicines, and is viewed as a national resource. The Traditional Medicines Task Force uses the database to identify candidate herbal medicines for inclusion in the primary health care formulary.

The Traditional Medicines Database was part of the 2005 traditional medicine health care initiative and endorsement of the use of medicinal plants. Since then, herbal medicines have been able to be sold with medical, health and nutrient content claims.

PNG has no pharmacopoeia. However, *Medicinal Plants in Papua New Guinea* was published in 2009 with support from the WHO regional office.

References

- Asante, A and Hall, J. *A Review of Health Leadership and Management Capacity in Papua New Guinea*. University of New South Wales, Sydney, Human Resources for Health Hub, 2011.
- AusAID Office of Development Effectiveness. *Working Paper 1: Papua New Guinea Country Report*. In: Evaluation of Australian AID to Health Service Delivery in Papua New Guinea, Solomon Islands and Vanuatu. June 2009.
- Mandie-Filer, A, Bolger, J and Hauck, V. *Papua New Guinea's health sector - A review of capacity, change and performance issues*. (ECDPM Discussion Paper 57F). Maastricht: ECDPM. Available on: http://www.ecdpm.org/dp57F
- National Department of Health, Papua New Guinea. 2010 *Sector Performance Annual Review*. Government of Papua New Guinea, 2010.
- National Department of Health, Papua New Guinea. *National Health Service Standards for Papua New Guinea Vol.1. 2011-2020*. Government of Papua New Guinea, June 2011 (Draft).
- National Department of Health, Papua New Guinea. *Papua New Guinea National Health Plan 2011-2020, Performance Assessment Framework*. Government of Papua New Guinea, 2011.
- National Department of Health, Papua New Guinea. Transforming our Health System towards Health Vision 2050. *National Health Plan 2011-2020, Volume 1: Policies and Strategies*. Government of Papua New Guinea, June 2010.
- National Department of Health. Assessment of Sector Performance, 2006-2010: National Report. *2011 Sector Performance Annual Review*. Government of Papua New Guinea, 2011.
- *Papua New Guinea: Health Human Resource Review*. Meeting human resource constraints and improving health outcomes. World Bank, 2011 (unpublished document)
- United Nations Development Programme. Sustainability and Equity: A Better Future for All. *Human Development Report 2011*. New York, UNDP, 2011.
- World Bank. Gini Index (Papua New Guinea), 1992-1996. Available on: http://data.worldbank.org/indicator/SI.POV.GINI?page=3.
- World Bank, Strategic Directions for Human Development in Papua New Guinea, 2007, http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2007/09/21/000310607_20070921131918/Rendered/PDF/409240PAPER0PN101OFFICIAL0USE0ONLY1.pdf
- World Health Organization. *Achieving the Health-Related MDGs in the Western Pacific Region Progress Report 2010*. Manila, WHO WPRO, 2010.
- World Health Organization. *Country Cooperation Strategy, PNG, 2010-2015*. Manila, WHO WPRO, 2010.
- World Health Organization. Global Health Observatory Data Repository. Available on: http://apps.who.int/ghodata/
- World Health Organization. *Western Pacific Country Health Information Profiles (CHIPS): 2011 Revision*. Manila, WHO WPRO, 2011.

References for Traditional medicine

- *Assessment, Conservation and Development of PNG Biological Resources, AP 1: Traditional Medicines in Papua New Guinea*. Available on: http://www.pharmacy.utah.edu/ICBG/AP1/ajax2.htm#trad; http://www.pharmacy.utah.edu/ICBG/AP1/ajax2.htm#tmhci
- MacFarlane J. Common themes in the literature on traditional medicine in Papua New Guinea. *PNG Med J*, 2009, 52(1-2): 44-53
- Macintyre M, Foale S, Bainton N, Moktel B. Medical Pluralism and the Maintenance of a Traditional Healing Technique on Lihir, Papua New Guinea. Pimatisiw in: *A Journal of Aboriginal and Indigenous Community Health*, *3* 1: 87-99. 2005. http://www.pimatisiwin.com/uploads/1667128617.pdf
- World Health Organization. *Regional strategy for Traditional Medicine in the Western Pacific (2011-2020)*.Manila, WHO WPRO, 2012. Available on: http://www.wpro.who.int/publications/2012/regionalstrategyfortraditionalmedicine_2012.pdf
- World Health Organization. *The Second WHO Global Survey on National Policy and Regulation for Traditional and Complementary/ Alternative Medicine*. WHO, 2011 (Draft).