

**National Health Plan 2011–2020**  
**Volume 2 (Part A) Reference Data and**  
**National Health Profile**

Government of Papua New Guinea  
June 2010



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## Chapter 9

### Introduction



The *National Health Plan 2011–2020* contains two Volumes, of which this is the first part of the second volume. The purpose of Volume 2 is to provide a full set of reference data showing performance over the period of the previous *National Health Plan 2001–2010*, to provide a baseline against which performance over the next ten years can be measured, and to highlight in greater detail some of the context against which the policies and strategies described in Volume 1 can be understood.

This Part A of Volume 2 provides data and context from a whole-of-country perspective, while Part B is dedicated to health profiles for each province.

The data provided in Volume 2 will be useful for provinces and national-level program staff within the National Department of Health to establish benchmarks and targets in the Five-year Strategic Implementation Plans to be developed to support implementation of this Plan. Additionally, this Volume will serve as a reference manual for all health sector stakeholders.

### Sources and Limitations of Data

#### Population

Population data is from the *2000 National Census*, the *Papua New Guinea Demographic and Health Survey 1996: National Report*, and the *Papua New Guinea Demographic and Health Survey, 2006: National Report*. For a number of highlands provinces, the census counts for the under-1 population appear unreasonably low, resulting in overestimation of such things as immunisation coverage. Accordingly, the under-1 populations have been adjusted for the denominator of the immunisation indicators, by using one-fifth of the total under-5 population as the estimate of the under-1 population.

#### Resources for Health

The data was taken from the National Inventory of Health Facilities, which is conducted annually. Although it has been reviewed extensively, some remaining inaccuracies are inevitable. Many hospitals do not provide returns to this collection, or do so sporadically.

Because of this, only data for the rural facilities is presented. This ensures that trends will not be masked by the occasional recording in some years of a large number of staff from the provincial hospital.

### Disease Patterns

This information is based on data from the National Health Information System (NHIS) and the National Discharge Information System. While the overall patterns of diseases agree, detailed counts of individual conditions will vary between the two systems. This is caused mainly by variations in the data return rate for the two systems and, for larger hospitals, the fact that the data is supplied by two different hospital processes.

### Health Programs

Data for health programs comes mainly from the National Health Information System, with the HIV data supplied by the human immunodeficiency/sexually transmitted infection (HIV/STI) program.

### Staff data

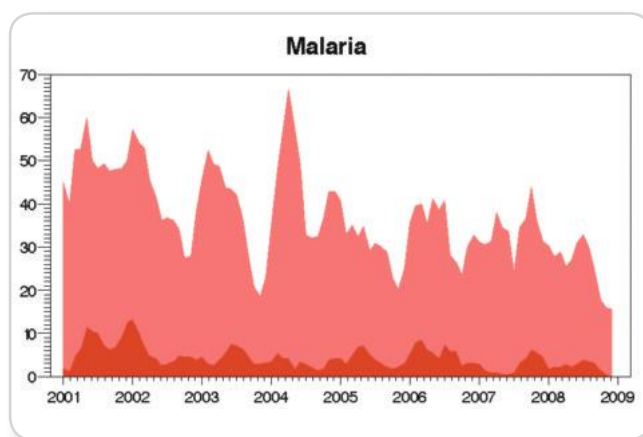
The time trend data presented in the provincial profiles is drawn from the yearly National Inventory of Health Facilities. The data on number of staff by province is drawn from a baseline study conducted by the Human Resources Branch of NDoH in late 2009.

### Ten-year Admission Patterns

For Papua New Guinea as a whole, for each region and for each province, the trend in admissions for all conditions collected through the NHIS are displayed, showing the trend in the number of admissions per month. The graphs incorporate some corrections for missing reports, outlier values have been removed, and the data has been smoothed by applying moving averages. The aim of this is so that month-to-month variations do not obscure the overall trends.

In general the monthly return rate to the NHIS is well above 92%, and usually reaches 95%. Unfortunately, while the overall return rate is very high, there are periods in the data where some major hospitals failed to supply data for some months at a time. The impact of this cannot be corrected by smoothing techniques and has obvious impacts on the presented graphs where it occurs.

**Example graph — Admissions to hospitals are shaded dark, while rural admissions appear in a lighter shade.**



## International Comparisons

### Demography and Health Resources

	Life Expectancy at Birth	Infant Mortality Rate	Under-5 Mortality Rate	Total Fertility Rate	Maternal Mortality Ratio
Fiji	69	16	18	2.60	34
Kiribati	-	46	63	3.40	56
Marshall Islands	-	49	54	4.40	74
Micronesia (FSM)	68	33	40	4.40	270
Samoa	71	22	27	4.20	29
Solomon Islands	63	53	70	4.80	140
Tonga	73	19	23	3.70	78
Vanuatu	70	28	34	4.40	68
Papua New Guinea	57	57	75	4.40	733
Industrialised Countries	79	5	6	-	8
Developing Countries	67	51	74	-	450
Least Developed Countries	55	84	130	-	870
Source of International Data	(4)	(4)	(4)	(1)	(4)
Source of PNG Data	(4)	(3)	(3)	(3)	(3)

Notes: Infant Mortality Rates are per 1,000 live births; Under-5 Mortality Rates are per 1,000 live births; Maternal Mortality Ratios are per 100,000 live births.

Resources for Health	Inputs to Health Sector			
	GNI per capita (USD)	% central govt. expenditure on health	Doctors per 1,000	Nurses per 1,000
Fiji	3,800	9	0.37	1.96
Kiribati	1,170	-	0.32	2.56
Marshall Islands	3,070	-	0.71	3.23
Micronesia (FSM)	2,470	-	0.54	2.01
Samoa	2,430	-	2.74	7.47
Solomon Islands	730	-	0.19	1.30
Tonga	2,320	7	0.39	2.95
Vanuatu	1,840	-	0.11	1.42
Papua New Guinea	850	7	0.06	0.56
Industrialised Countries	38,579	18	-	-
Developing Countries	2,405	3	-	-
Least Developed Countries	491	5	-	-
Source of International Data	(4)	(4)	(1)	(1)
Source of PNG Data	(4)	(4)	(2)	(2)

Notes: GNI (Gross National Income) per capita is based on USD calculated at the average foreign exchange rate over the period.

Sources of data: (1) Country Health Profiles 2009, WHO Manila.  
 (2) National Human Resource Counting Exercise, 2010.  
 (3) Demographic and Health Survey 2006, NSO, PNG.  
 (4) State of the World's Children 2009, UNICEF New York.

## Water, Sanitation, and Family Health

	% pop. using improved drinking water sources			% pop. using improved sanitation facilities			CP %	ANC coverage		TT %	Deliveries Supervised
	total	urban	rural	total	urban	rural		at least once	at least 4 times		
Fiji	47	43	51	71	87	55	44	-	-	94	-
Kiribati	65	77	53	33	46	20	21	88	-	-	-
Marshall Islands	-	-	-	-	-	-	34	-	-	-	-
Micronesia (FSM)	94	95	94	25	61	14	45	-	-	-	-
Samoa	88	90	87	100	100	100	43	-	-	5	-
Solomon Islands	70	94	65	32	98	18	7	-	-	84	-
Tonga	100	100	100	96	98	96	33	-	-	-	-
Vanuatu	-	-	-	-	-	-	28	-	-	88	-
Papua New Guinea	40	88	32	45	67	41	32	60	-	88	37
Industrialised Countries	100	100	98	100	100	99	72	-	-	-	-
Developing Countries	84	94	76	53	71	39	60	77	46	81	54
Least Developed Countries	62	81	55	33	49	27	29	64	32	81	32
Source of International Data	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Source of PNG Data	(2)	(2)	(2)	(2)	(2)	(2)	(1)	(3)		(3)	(3)

## Health Programs

	% Births <2500g	% <5 years underweight	Immunisation Coverage	
			3 <sup>rd</sup> dose TA	Measles
Fiji	10	-	83	81
Kiribati	5	-	94	93
Marshall Islands	12	-	93	94
Micronesia (FSM)	18	-	79	92
Samoa	4	-	71	63
Solomon Islands	13	16	79	78
Tonga	3	-	99	99
Vanuatu	6	-	76	65
Papua New Guinea	10	26	61	62
Industrialised Countries	7	-	96	94
Developing Countries	15	24	80	81
Least Developed Countries	17	30	79	79
Source of International Data	(1)	(1)	(1)	(1)
Source of PNG Data	(2)	(2)	(2)	(2)

Notes: % <5 years underweight: for all international data this represents the percentage of children 0–59 months who are below minus two standard deviations from median weight for age of the WHO Child Growth standards published in 2006.

Sources of data: (1) State of the World's Children 2009, UNICEF New York.  
(2) Annual Sector Review 2009, PNG.





## Chapter 10

### Population



## Demographic Rates

PNG Provinces		Demographic Rates 2000			
		Total Fertility Rate	Infant Mortality Rate	Life Expectancy at Birth	
				Male	Female
1	Western	5.6	66.0	54.0	54.7
2	Gulf	5.6	103.0	46.3	46.6
3	Central	4.9	47.0	56.2	56.7
4	NCD	3.5	22.0	58.5	59.9
5	MBP	4.8	89.0	53.5	54.8
6	Oro	5.5	59.0	54.1	55.0
7	SHP	4.5	61.0	53.8	56.7
8	Enga	4.2	69.0	52.3	52.7
9	WHP	4.3	48.0	55.6	56.8
10	Simbu	3.9	54.0	56.8	56.8
11	EHP	4.4	54.0	54.6	56.3
12	Morobe	4.6	80.0	51.2	52.3
13	Madang	5.6	78.0	51.0	51.3
14	ESP	5.4	79.0	51.3	53.1
15	WSP	5.6	105.0	45.6	48.5
16	Manus	4.6	45.0	59.0	58.2
17	NIP	5.4	52.0	57.8	58.1
18	ENB	5.0	54.0	56.6	57.7
19	WNB	5.8	55.0	56.7	56.7
20	ARB	5.1	47.0	58.8	60.4
<b>PNG TOTAL</b>		<b>4.6</b>	<b>64.0</b>	<b>53.7</b>	<b>54.8</b>

## Literacy Rates

PNG Provinces		Literacy Rates 10 years+		
		Male	Female	Total
1	Western	76.4%	66.1%	71.3%
2	Gulf	62.5%	50.9%	56.9%
3	Central	75.4%	68.6%	72.1%
4	NCD	92.3%	88.7%	90.7%
5	MBP	79.8%	76.2%	78.1%
6	Oro	72.9%	66.2%	68.7%
7	SHP	40.6%	32.2%	36.5%
8	Enga	40.2%	29.6%	35.0%
9	WHP	44.1%	32.6%	38.4%
10	Simbu	48.7%	34.5%	41.8%
11	EHP	51.0%	36.5%	43.9%
12	Morobe	69.5%	57.3%	63.6%
13	Madang	61.2%	48.8%	55.2%
14	ESP	59.7%	46.0%	52.7%
15	WSP	52.0%	36.4%	44.4%
16	Manus	87.8%	83.7%	85.8%
17	NIP	78.9%	75.8%	77.4%
18	ENB	82.4%	80.7%	81.6%
19	WNB	73.9%	66.9%	70.7%
20	ARB	78.4%	75.0%	76.7%
<b>PNG TOTAL</b>		<b>61.2%</b>	<b>50.9%</b>	<b>56.2%</b>

Notes: Literacy rates from 2000 Community Profile, NDO, PNG.

## General Population Statistics

PNG Provinces	Land Area (sq. km)	Total Population			Urban Population			Citizen Population			
		Size 2000	Annual Growth 1980-2000	Crude Pop. Density	Size 2000	Annual Growth 1980-2000	Percent of Total 2000	Size 2000	Annual Growth 1980-2000	Percent of Total 2000	
1 Western	99,300	153,304	3.3%	2	107	33,022	1.2	21.5%	148,356	3.2	96.8%
2 Gulf	34,500	106,898	2.6%	3	108	11,013	1.0	10.3%	106,660	2.6	99.8%
3 Central	29,500	183,983	2.3%	6	109	5,760	0.3	3.1%	183,805	2.3	99.9%
4 NCD	240	254,158	3.6%	1,052	121	254,158	1.0	100.0%	248,948	4.0	98.0%
5 MBP	14,000	210,412	2.5%	15	109	12,751	1.0	6.1%	210,056	2.5	99.8%
6 Oro	22,800	133,065	2.7%	6	110	11,371	1.0	8.5%	132,952	2.7	99.9%
7 SHP	23,800	546,265	4.2%	23	104	11,054	1.0	2.0%	546,001	2.6	100.0%
8 Enga	12,800	295,031	2.9%	23	108	7,519	1.2	2.5%	294,727	2.9	99.9%
9 WHP	8,500	440,025	2.5%	52	104	29,917	1.0	6.8%	439,336	2.6	99.8%
10 Simbu	6,100	259,703	1.9%	42	108	9,754	1.0	4.0%	259,536	1.9	99.9%
11 EHP	11,200	432,972	2.2%	38	106	26,311	0.14	6.1%	431,799	2.3	99.7%
12 Morobe	34,500	539,404	2.8%	16	109	136,435	1.0	25.1%	537,415	2.8	99.6%
13 Madang	29,000	365,106	2.7%	13	109	38,345	0.6	10.5%	364,407	2.8	99.8%
14 ESP	42,800	343,181	2.2%	8	101	31,983	0.3	9.3%	342,741	2.2	99.9%
15 WSP	36,300	185,741	2.4%	5	106	14,314	1.0	8.0%	185,193	2.4	99.7%
16 Manus	2,100	43,387	2.6%	21	107	7,212	1.0	17.0%	43,294	2.6	99.8%
17 NIP	9,600	118,350	2.9%	12	113	10,745	1.0	9.1%	117,994	3.0	99.7%
18 ENB	15,500	220,133	2.5%	14	111	10,290	0.5	4.7%	219,298	2.3	99.6%
19 WNB	21,000	184,508	3.6%	9	116	20,240	1.4	11.0%	183,997	3.7	99.7%
20 ARB	9,300	175,160	1.5%	15	106	4,107	2.0	2.3%	175,053	1.7	99.9%
<b>PNG TOTAL</b>	<b>462,840</b>	<b>5,190,786</b>	<b>2.7%</b>	<b>11</b>	<b>107.7</b>	<b>686,301</b>	<b>1.0</b>	<b>13.2%</b>	<b>5,171,548</b>	<b>2.8</b>	<b>99.6%</b>

Notes: Population from 2000 National Census, NSO, PNG.

Estimates provided by the National Statistical Office based on intercensal change in population.

Sex ratio is the number of men for every woman.

## Population Projection 2011–2020

PNG Provinces	Growth Rates	Total Population by Province											
		2000	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1 Western	3.3	153,304	212,109	219,109	226,339	233,808	241,524	249,494	257,728	266,233	275,018	284,094	293,469
2 Gulf	2.6	106,898	138,180	151,773	145,459	149,241	153,121	157,102	161,187	165,378	169,677	174,089	178,615
3 Central	2.3	183,983	230,960	236,272	241,706	247,266	252,953	258,771	264,722	270,811	277,040	283,412	289,930
4 NCD	3.6	254,158	361,995	375,027	388,528	402,515	417,005	432,018	447,570	463,683	480,375	497,669	515,585
5 MBP	2.5	210,412	269,345	276,079	282,981	290,055	297,306	304,739	312,358	320,167	328,171	336,375	344,784
6 Oro	2.7	133,065	173,688	178,378	183,194	188,140	193,220	198,437	203,795	209,297	214,948	220,752	226,712
7 SHP	4.2	546,265	824,291	858,911	894,985	932,575	971,743	1,012,556	1,055,084	1,099,397	1,145,572	1,193,686	1,243,821
8 Enga	2.9	295,031	392,663	404,050	415,768	427,825	440,232	452,999	466,136	479,653	493,563	507,877	522,605
9 WHP	2.5	440,025	563,270	577,352	591,786	606,580	621,745	637,288	653,221	669,551	686,290	703,447	721,033
10 Simbu	1.9	259,703	313,485	319,441	325,511	331,695	337,998	344,419	350,963	357,632	364,427	371,351	378,407
11 EHP	2.2	432,972	538,231	550,072	562,174	574,541	587,181	600,099	613,302	626,794	620,584	654,677	669,079
12 Morobe	2.8	539,404	710,960	730,867	751,331	772,368	793,995	816,227	839,081	862,575	886,727	911,556	937,079
13 Madang	2.7	365,106	476,566	498,433	502,648	516,219	530,157	544,472	559,172	574,270	589,775	605,699	622,053
14 ESP	2.2	343,181	426,611	435,996	445,588	455,391	465,410	475,649	486,113	496,808	507,737	518,908	530,324
15 WSP	2.4	185,741	235,454	241,105	246,891	252,817	258,884	265,098	271,460	277,975	284,646	291,478	298,473
16 Manus	2.6	43,387	56,082	57,540	59,036	60,571	62,146	63,762	65,420	67,120	68,866	70,656	72,493
17 NIP	2.9	118,350	157,515	162,083	166,783	171,620	176,597	181,718	186,988	192,411	197,991	203,732	209,641
18 ENB	2.5	220,133	281,789	288,834	296,055	303,456	311,042	318,818	326,789	334,959	343,333	351,916	360,714
19 WNB	3.6	184,508	262,792	272,253	282,054	292,208	302,727	313,625	324,916	336,613	348,731	361,285	374,291
20 ARB	1.5	175,160	203,280	206,329	209,424	212,566	215,754	218,990	222,275	225,609	228,993	232,428	235,915
<b>PNG TOTAL</b>	<b>2.7</b>	<b>5,190,786</b>	<b>6,829,266</b>	<b>7,020,903</b>	<b>7,218,240</b>	<b>7,421,458</b>	<b>7,630,741</b>	<b>7,846,281</b>	<b>8,068,278</b>	<b>8,296,935</b>	<b>8,532,464</b>	<b>8,775,085</b>	<b>9,025,023</b>

### 2000 Population Breakdown by Age Group and Province

PNG Provinces	Growth Rate (%)	Total Pop.	<1 year		1-4 years		7 years		13 years		5-14 years		15-44 years		>45 years			
			No.	%	No.	%	No.	%	No.	%	No.	%	Women	Total	No.	%		
1 Western	3.3	153,304	5,131	3.3	20,266	13.2	4,578	3.0	3,736	2.4	42,369	27.6	33,443	21.8	69,123	45.1	16,415	10.7
2 Gulf	2.6	106,898	3,039	2.8	13,830	12.9	3,174	3.9	2,549	2.4	30,399	28.4	23,517	22.0	48,401	44.3	11,229	10.5
3 Central	2.3	183,983	4,829	2.6	22,231	12.1	5,569	3.0	4,398	2.4	50,316	27.3	39,910	21.7	81,896	44.5	24,711	13.4
4 NCD	3.6	254,158	5,985	2.4	25,258	9.9	6,161	2.4	5,167	2.0	56,985	22.4	64,285	25.3	141,850	55.8	24,080	9.5
5 MBP	2.5	210,412	6,778	3.2	25,348	12.0	6,013	2.9	4,797	2.3	54,694	26.0	46,623	22.2	96,236	45.7	27,356	13.0
6 Oro	2.7	133,065	4,304	3.2	17,305	13.0	3,900	2.9	3,120	2.3	36,158	27.2	28,604	21.5	59,849	45.0	15,449	11.6
7 SHP	4.2	546,265	6,287	1.2	52,226	9.6	13,725	2.5	10,514	1.9	144,795	26.5	137,232	25.1	270,353	49.5	72,604	13.3
8 Enga	2.9	295,031	2,735	0.9	26,770	9.1	6,901	2.3	5,401	1.8	75,450	25.6	74,284	25.2	147,011	49.8	43,065	14.6
9 WHP	2.5	440,025	7,338	1.7	47,528	10.8	10,952	2.5	7,442	1.7	104,644	23.8	108,235	24.6	211,539	48.1	68,976	15.7
10 Simbu	1.9	259,703	4,155	1.6	24,968	9.6	6,425	2.5	4,519	1.7	60,155	23.2	61,963	23.9	122,895	47.3	47,530	18.3
11 EHP	2.2	432,972	7,856	1.8	49,368	11.4	11,990	2.8	8,541	2.0	110,731	25.6	102,078	23.6	201,853	46.6	63,164	14.6
12 Morobe	2.8	539,404	15,598	2.9	63,699	11.8	14,969	2.8	11,927	2.2	137,099	25.4	124,725	23.1	257,264	47.7	65,744	12.2
13 Madang	2.7	365,106	11,569	3.2	48,166	13.2	10,903	3.0	8,654	2.4	100,330	27.5	80,380	22.0	165,101	45.2	39,940	10.9
14 ESP	2.2	343,181	11,543	3.4	44,984	13.1	10,084	2.9	8,178	2.4	93,378	27.2	76,589	22.3	149,817	43.7	43,459	12.7
15 Sandaun	2.4	185,741	5,990	3.2	24,049	12.9	5,633	3.0	4,418	2.4	51,084	27.5	40,732	21.9	82,410	44.4	22,208	12.0
16 Manus	2.6	43,387	1,257	2.9	5,179	11.9	1,231	2.8	1,092	2.5	11,701	27.0	9,512	21.9	19,434	44.8	5,816	13.4
17 NIP	2.9	118,350	3,985	3.4	15,265	12.9	3,608	3.0	2,736	2.3	31,544	26.7	24,901	21.0	52,428	44.3	15,128	12.8
18 ENB	2.5	220,133	6,717	3.1	27,071	12.3	6,247	2.8	5,422	2.5	58,595	26.6	48,671	22.1	101,629	46.2	26,121	11.9
19 WNB	3.6	184,508	6,074	3.3	24,768	13.4	5,351	2.9	4,128	2.2	48,787	26.4	39,447	21.4	86,170	46.7	18,709	10.1
20 ARB	1.5	175,160	4,548	2.6	22,683	12.9	5,049	2.9	4,544	2.6	49,030	28.0	39,482	22.5	79,402	45.3	19,497	11.1
<b>PNG TOTAL</b>	<b>2.7</b>	<b>5,190,786</b>	<b>125,718</b>	<b>2.4</b>	<b>600,962</b>	<b>11.6</b>	<b>142,463</b>	<b>2.7</b>	<b>111,283</b>	<b>2.1</b>	<b>1,348,244</b>	<b>26.0</b>	<b>1,204,613</b>	<b>23.2</b>	<b>2,444,661</b>	<b>47.1</b>	<b>671,201</b>	<b>12.9</b>

## 2008 Population Projection by Age Group and Province

PNG Provinces	Growth Rate (%)	Total Pop.	<1 year		1-4 years		7 years		13 years		5-14 years		15-44 years			>45 years		
			No.	%	No.	%	No.	%	No.	%	No.	%	Women	%	Total	%	No.	%
1 Western	3.3	198,773	6,654	3.3	26,278	13.2	5,937	3.0	4,844	2.4	54,935	27.6	43,363	21.8	89,623	45.1	21,284	10.7
2 Gulf	2.6	131,265	3,732	2.8	16,982	12.9	3,898	3.0	3,129	2.4	37,329	28.4	28,877	22.0	59,433	45.3	13,789	10.5
3 Central	2.3	220,691	5,792	2.6	26,666	12.1	6,679	3.0	5,275	2.4	60,354	27.3	47,872	21.7	98,236	44.5	29,639	13.4
4 NCD	3.6	337,274	7,941	2.4	33,517	9.9	8,177	2.4	6,857	2.0	75,619	22.4	85,307	25.3	188,238	55.8	31,955	9.5
5 MBP	2.5	256,367	8,258	3.2	30,212	11.8	7,326	2.9	5,845	2.3	66,640	26.0	56,808	22.2	117,255	45.7	33,332	13.0
6 Oro	2.7	164,676	5,326	3.2	21,416	13.0	4,826	2.9	3,862	2.3	44,748	27.2	35,399	21.5	74,066	45.0	19,119	11.6
7 SHP	4.2	759,180	8,737	1.2	72,584	9.6	19,075	2.5	14,612	1.9	201,230	26.5	190,721	25.1	375,727	49.5	100,902	13.3
8 Enga	2.9	370,843	3,437	0.9	33,649	9.1	8,674	2.3	6,790	1.8	94,838	25.6	93,371	25.2	184,787	49.8	54,132	14.6
9 WHP	2.5	536,129	8,942	1.7	57,908	10.8	13,346	2.5	9,066	1.7	127,500	23.8	131,874	24.6	257,738	48.1	84,041	15.7
10 Simbu	1.9	301,904	4,830	1.6	29,024	9.6	7,469	2.5	5,253	1.7	69,931	23.2	72,031	23.9	142,866	47.3	55,254	18.3
11 EHP	2.2	515,308	9,352	1.8	58,756	11.4	14,272	2.8	10,166	2.0	131,788	25.6	121,490	23.6	240,237	46.6	75,174	14.6
12 Morobe	2.8	672,758	19,454	2.9	79,449	11.8	18,670	2.8	14,875	2.2	170,993	25.4	155,560	23.1	320,867	47.7	81,997	12.2
13 Madang	2.7	451,837	14,315	3.2	59,609	13.2	13,491	3.0	10,710	2.4	124,163	27.5	99,473	22.0	204,322	45.2	49,426	10.9
14 ESP	2.2	408,442	13,738	3.4	53,538	13.1	12,002	2.9	9,734	2.4	111,135	27.2	91,154	22.3	178,307	43.7	51,723	12.7
15 Sandaun	2.4	224,547	7,242	3.2	29,073	12.9	6,810	3.0	5,341	2.4	61,755	27.5	49,243	21.9	99,628	44.4	26,847	12.0
16 Manus	2.6	53,276	1,543	2.9	6,359	11.9	1,511	2.8	1,340	2.5	14,368	27.0	11,679	21.9	23,863	44.8	7,141	13.4
17 NIP	2.9	148,762	5,009	3.4	19,189	12.9	5,536	3.0	3,439	2.3	39,650	26.7	31,300	21.0	65,900	44.3	19,016	12.8
18 ENB	2.5	268,211	8,184	3.1	32,985	12.3	7,611	2.8	6,606	2.5	71,393	26.6	59,300	22.1	123,824	46.2	37,482	14.0
19 WNB	3.6	244,846	8,061	3.3	32,867	13.4	7,102	2.9	5,478	2.2	64,742	26.4	52,347	21.4	114,349	46.7	24,829	10.1
20 ARB	1.5	197,316	5,122	2.6	25,553	13.0	5,688	2.9	5,118	2.6	55,231	28.0	44,476	22.5	90,322	45.8	21,639	11.0
<b>PNG TOTAL</b>	<b>2.7</b>	<b>6,462,406</b>	<b>155,669</b>	<b>2.4</b>	<b>745,614</b>	<b>11.5</b>	<b>177,098</b>	<b>2.7</b>	<b>138,339</b>	<b>2.1</b>	<b>1,678,344</b>	<b>26.0</b>	<b>1,501,648</b>	<b>23.2</b>	<b>3,049,588</b>	<b>47.2</b>	<b>838,723</b>	<b>13.0</b>

Source: National Statistical Office (Projection).

2010 Population Projection by Age Group and Province

PNG Provinces	Growth Rate (%)	Total Pop.	<1 year		1-4 years		7 years		13 years		5-14 years		15-44 years		>45 years			
			No.	%	No.	%	No.	%	No.	%	No.	%	Women	%	Total	%	No.	%
1 Western	3.3	212,109	7,101	3.3	28,041	13.2	6,335	3.0	5,169	2.4	58,621	27.6	46,272	21.8	95,636	45.1	22,712	10.7
2 Gulf	2.6	138,180	3,929	2.8	17,877	12.9	4,103	3.0	3,293	2.4	39,296	28.4	30,398	22.0	62,563	45.3	14,516	10.5
3 Central	2.3	230,960	6,061	2.6	27,906	12.1	6,990	3.0	5,520	2.4	63,162	27.3	50,099	21.7	102,806	44.5	31,018	13.4
4 NCD	3.6	361,995	8,523	2.4	35,974	9.9	8,776	2.4	7,360	2.0	81,161	22.4	91,560	25.3	202,036	55.8	34,297	9.5
5 MBP	2.5	269,345	8,676	3.2	31,741	11.8	7,697	2.9	6,141	2.3	79,014	26.0	59,684	22.2	123,191	45.7	35,019	13.0
6 Oro	2.7	173,688	5,618	3.2	22,588	13.0	5,090	2.9	4,073	2.3	47,197	27.2	37,337	21.5	78,120	45.0	20,165	11.6
7 SHP	4.2	824,291	9,486	1.2	78,810	9.6	20,711	2.5	15,865	1.9	218,489	26.5	207,078	25.1	407,951	49.5	109,556	13.3
8 Enga	2.9	392,663	3,640	0.9	35,629	9.1	9,185	2.3	7,190	1.8	100,418	25.6	98,865	25.2	195,660	49.8	57,317	14.6
9 WHP	2.5	563,270	9,395	1.7	60,840	10.8	14,022	2.5	9,525	1.7	133,955	23.8	138,550	24.6	270,786	48.1	88,296	15.7
10 Simbu	1.9	313,485	5,016	1.6	30,137	9.6	7,756	2.5	5,455	1.7	72,614	23.2	74,795	23.9	148,346	47.3	57,374	18.3
11 EHP	2.2	538,231	9,768	1.8	61,370	11.4	14,909	2.8	10,619	2.0	137,650	25.6	126,895	23.6	250,923	46.6	78,518	14.6
12 Morobe	2.8	710,960	20,559	2.9	83,961	11.8	19,730	2.8	15,720	2.2	180,793	25.4	164,394	23.1	339,087	47.7	86,653	12.2
13 Madang	2.7	476,566	15,099	3.2	62,871	13.2	14,229	3.0	11,296	2.4	130,958	27.5	104,917	22.0	215,505	45.2	52,132	10.9
14 ESP	2.2	426,611	14,349	3.4	55,920	13.1	12,536	2.9	10,167	2.4	116,079	27.2	95,208	22.3	186,239	43.7	54,024	12.7
15 Sandaun	2.4	235,454	7,594	3.2	30,486	12.9	7,140	3.0	5,600	2.4	64,755	27.5	51,635	21.9	104,467	44.4	28,151	12.0
16 Manus	2.6	56,082	1,624	2.9	6,694	11.9	1,590	2.8	1,411	2.5	15,125	27.0	12,295	21.9	25,120	44.8	7,518	13.4
17 NIP	2.9	157,515	5,303	3.4	20,318	12.9	4,803	3.0	3,642	2.3	41,983	26.7	33,142	21.0	69,778	44.3	20,134	12.8
18 ENB	2.5	281,789	8,599	3.1	34,655	12.3	7,996	2.8	6,940	2.5	75,007	26.6	62,303	22.1	130,093	46.2	39,379	14.0
19 WNB	3.6	262,792	8,652	3.3	35,276	13.4	7,623	2.9	5,879	2.2	69,488	26.4	56,183	21.4	122,730	45.7	26,649	10.1
20 ARB	1.5	203,280	5,277	2.6	26,325	13.0	5,860	2.9	5,273	2.6	56,900	28.0	45,820	22.5	93,052	45.8	22,293	11.0
<b>PNG TOTAL</b>	<b>2.7</b>	<b>6,829,267</b>	<b>164,268</b>	<b>2.4</b>	<b>787,417</b>	<b>11.5</b>	<b>187,081</b>	<b>2.7</b>	<b>146,138</b>	<b>2.1</b>	<b>1,773,574</b>	<b>26.0</b>	<b>1,587,430</b>	<b>23.2</b>	<b>3,224,090</b>	<b>47.2</b>	<b>885,721</b>	<b>13.0</b>

## 2011 I Population Projection by Age Group and Province

PNG Provinces	Growth Rate (%)	Total Pop.	<1 year		1-4 years		7 years		13 years		5-14 years		15-44 years		>45 years			
			No.	%	No.	%	No.	%	No.	%	No.	%	Women	%	Total	%	No.	%
1 Western	3.3	219,109	7,335	3.3	28,966	13.2	6,544	3.0	5,340	2.4	60,555	27.6	47,799	21.8	98,792	45.1	23,461	10.7
2 Gulf	2.6	141,773	4,031	2.8	18,342	12.9	4,210	3.0	3,379	2.4	40,318	28.4	31,188	22.0	64,190	45.3	14,893	10.5
3 Central	2.3	236,272	6,200	2.6	28,548	12.1	7,151	3.0	5,647	2.4	64,615	27.3	51,251	21.7	105,171	44.5	31,731	13.4
4 NCD	3.6	375,027	8,830	2.4	37,269	9.9	9,092	2.4	7,625	2.0	84,083	22.4	94,856	25.3	209,309	55.8	46,332	12.4
5 MBP	2.5	276,079	8,893	3.2	32,535	11.8	7,889	2.9	6,295	2.3	71,764	26.0	61,176	22.2	126,271	45.7	35,897	13.0
6 Oro	2.7	178,378	5,770	3.2	23,198	13.0	5,227	2.9	4,183	2.3	48,471	27.2	38,345	21.5	80,229	45.0	20,709	11.6
7 SHP	4.2	858,911	9,884	1.2	82,120	9.6	21,581	2.5	16,531	1.9	227,666	26.5	215,775	25.1	425,085	49.5	114,157	13.3
8 Enga	2.9	404,050	3,746	0.9	36,662	9.1	9,451	2.3	7,399	1.8	103,330	25.6	101,732	25.2	201,334	49.8	58,979	14.6
9 WHP	2.5	577,352	9,630	1.7	62,361	10.8	14,373	2.5	9,763	1.7	137,304	23.8	142,014	24.6	277,556	48.1	110,503	19.1
10 Simbu	1.9	319,441	5,111	1.6	30,710	9.6	7,903	2.5	5,559	1.7	73,994	23.2	76,216	23.9	151,165	47.3	58,464	18.3
11 EHP	2.2	550,072	9,983	1.8	62,720	11.4	15,237	2.8	10,853	2.0	140,678	25.6	129,687	23.6	256,443	46.6	80,245	14.6
12 Morobe	2.8	730,867	21,135	2.9	86,312	11.8	20,282	2.8	16,160	2.2	185,763	25.4	168,997	23.1	348,581	47.7	89,079	12.2
13 Madang	2.7	489,433	15,507	3.2	64,569	13.2	14,613	3.0	11,601	2.4	134,633	27.5	107,750	22.0	216,194	44.2	53,540	10.9
14 ESP	2.2	435,996	14,665	3.4	68,150	15.6	12,812	2.9	10,391	2.4	118,633	27.2	97,303	22.3	190,336	43.7	55,213	12.7
15 Sandaun	2.4	241,105	7,776	3.2	31,218	12.9	7,311	3.0	5,734	2.4	66,309	27.5	52,874	21.9	106,974	44.4	28,827	12.0
16 Manus	2.6	57,540	1,666	2.9	6,868	11.9	1,631	2.8	1,448	2.5	15,518	27.0	12,615	21.9	25,773	44.8	7,713	13.4
17 NIP	2.9	162,083	5,457	3.4	20,907	12.9	4,942	3.0	3,748	2.3	43,201	26.7	34,103	21.0	71,802	44.3	20,718	12.8
18 ENB	2.5	288,834	8,814	3.1	35,521	12.3	8,196	2.8	7,114	2.5	76,882	26.6	77,361	26.8	133,345	46.2	40,363	14.0
19 WNB	3.6	272,253	8,965	3.3	36,546	13.4	7,897	2.9	6,091	2.2	71,990	26.4	58,206	21.4	127,149	46.7	27,608	10.1
20 ARB	1.5	206,329	5,356	2.6	26,720	13.0	5,948	2.9	5,352	2.6	57,754	28.0	46,507	22.5	94,448	45.8	22,627	11.0
<b>PNG TOTAL</b>	<b>2.7</b>	<b>7,020,903</b>	<b>168,753</b>	<b>2.4</b>	<b>820,241</b>	<b>11.7</b>	<b>192,292</b>	<b>2.7</b>	<b>150,210</b>	<b>2.1</b>	<b>1,823,320</b>	<b>26.0</b>	<b>1,645,755</b>	<b>23.4</b>	<b>3,310,147</b>	<b>47.1</b>	<b>941,062</b>	<b>13.4</b>



2012 Population Projection by Age Group and Province

PNG Provinces	Growth Rate (%)	Total Pop.	<1 year		1-4 years		7 years		13 years		5-14 years		15-44 years		>45 years			
			No.	%	No.	%	No.	%	No.	%	No.	%	Women	%	Total	%	No.	%
1 Western	3.3	226,340	7,577	3.3	29,922	13.2	6,760	3.0	5,516	2.4	62,553	27.6	49,376	21.8	102,052	45.1	24,235	10.7
2 Gulf	2.6	145,459	4,136	2.8	18,800	12.9	4,319	3.0	3,467	2.4	41,366	28.4	31,999	22.0	65,859	45.3	15,280	10.5
3 Central	2.3	241,706	6,343	2.6	29,205	12.1	7,315	3.0	5,777	2.4	66,101	27.3	52,430	21.7	107,590	44.5	32,461	13.4
4 NCD	3.6	388,528	9,148	2.4	38,611	9.9	9,419	2.4	7,900	2.0	87,110	22.4	98,271	25.3	216,844	55.8	48,000	12.4
5 MBP	2.5	282,981	9,115	3.2	33,348	11.8	8,086	2.9	6,452	2.3	73,558	26.0	62,705	22.2	129,428	45.7	36,794	13.0
6 Oro	2.7	183,194	5,926	3.2	23,824	13.0	5,368	2.9	4,296	2.3	49,780	27.2	39,393	21.5	82,395	45.0	21,268	11.6
7 SHP	2.2	894,985	10,299	1.2	85,569	9.6	22,487	2.5	17,225	1.9	237,228	26.5	224,838	25.1	442,939	49.5	118,952	13.3
8 Enga	2.9	415,767	3,855	0.9	37,725	9.1	9,725	2.3	7,614	1.8	106,327	25.6	104,682	25.2	207,173	49.8	60,689	14.6
9 WHP	2.5	591,786	9,871	1.7	63,920	10.8	14,732	2.5	10,007	1.7	140,737	23.8	145,564	24.6	284,495	48.1	113,266	19.1
10 Simbu	1.9	325,510	5,208	1.6	31,293	9.6	8,053	2.5	5,665	1.7	75,400	23.2	77,666	23.9	154,037	47.3	59,575	18.3
11 EHP	2.2	562,174	10,203	1.8	64,100	11.4	15,572	2.8	11,092	2.0	143,773	25.6	132,540	23.6	262,085	46.6	82,010	14.6
12 Morobe	2.8	751,331	21,727	2.9	88,729	11.8	20,850	2.8	16,612	2.2	190,964	25.4	173,729	23.1	358,341	47.7	91,573	12.2
13 Madang	2.7	502,648	15,926	3.2	66,312	13.2	15,008	3.0	11,914	2.4	138,125	27.5	110,659	22.0	222,031	44.2	54,986	10.9
14 FSP	2.2	445,588	14,988	3.4	69,649	15.6	13,094	2.9	10,620	2.2	121,243	27.2	99,444	22.3	194,523	43.7	56,428	12.7
15 Sandaun	2.4	246,892	7,963	3.2	31,967	12.9	7,486	3.0	5,872	2.4	67,900	27.5	54,143	21.9	109,541	44.4	29,519	12.0
16 Manus	2.6	59,036	1,709	2.9	7,047	11.9	1,673	2.8	1,486	2.5	15,921	27.0	12,943	21.9	26,443	44.8	7,914	13.4
17 NIP	2.9	166,783	5,615	3.4	21,513	12.9	5,085	3.0	3,857	2.3	44,454	26.7	35,092	21.0	73,884	44.3	21,319	12.8
18 ENB	2.5	296,055	9,034	3.1	36,409	12.3	8,401	2.8	7,292	2.5	78,804	26.6	79,295	26.8	136,679	46.2	41,372	14.0
19 WNB	3.6	282,054	9,288	3.3	37,864	13.4	8,181	2.9	6,310	2.2	74,582	26.4	60,301	21.4	131,726	46.7	28,602	10.1
20 ARB	1.5	209,424	5,436	2.6	27,121	13.0	6,037	2.9	5,432	2.6	58,440	27.9	47,205	22.5	95,865	45.8	22,966	11.0
<b>PNG TOTAL</b>	<b>2.7</b>	<b>7,218,241</b>	<b>173,365</b>	<b>2.4</b>	<b>842,929</b>	<b>11.7</b>	<b>197,655</b>	<b>2.7</b>	<b>154,405</b>	<b>2.1</b>	<b>1,874,367</b>	<b>26.0</b>	<b>1,692,266</b>	<b>23.4</b>	<b>4,403,930</b>	<b>47.2</b>	<b>967,209</b>	<b>13.4</b>

## 2013 Population Projection by Age Group and Province

PNG Provinces	Growth Rate (%)	Total Pop.	<1 year		1-4 years		7 years		13 years		5-14 years		15-44 years			>45 years		
			No.	%	No.	%	No.	%	No.	%	No.	%	Women	%	Total	%	No.	%
1 Western	3.3	233,809	7,827	3.3	30,909	13.2	6,983	3.0	5,698	2.4	64,618	27.6	51,006	21.8	105,420	45.1	25,035	10.7
2 Gulf	2.6	149,241	4,243	2.8	19,289	12.9	4,432	3.0	3,557	2.4	42,442	28.4	32,831	22.0	67,571	45.3	15,678	10.5
3 Central	2.3	247,265	6,488	2.6	28,876	12.1	7,484	3.0	5,910	2.4	67,621	27.3	53,636	21.7	110,065	44.5	33,207	13.4
4 NCD	3.6	402,515	9,477	2.4	40,001	9.9	9,758	2.4	8,184	2.0	90,246	22.4	101,809	25.3	224,651	55.8	49,728	12.4
5 MBP	2.5	290,055	9,343	3.2	34,182	11.8	8,288	2.9	6,614	2.3	75,397	26.0	64,273	22.2	132,663	45.7	37,714	13.0
6 Oro	2.7	188,140	6,086	3.2	24,468	13.0	5,513	2.9	4,412	2.3	51,124	27.2	40,447	21.5	84,620	45.0	21,842	11.6
7 SHP	2.2	932,575	10,732	1.2	89,163	9.6	23,432	2.5	17,949	1.9	247,192	26.5	235,281	25.1	461,542	49.5	123,948	13.3
8 Enga	2.9	427,825	3,966	0.9	38,819	9.1	10,007	2.3	7,834	1.8	109,410	25.6	107,718	25.2	213,181	49.8	62,449	14.6
9 WHP	2.5	606,580	10,118	1.7	65,518	10.8	15,101	2.5	10,257	1.7	144,255	23.8	149,203	24.6	291,607	48.1	116,097	19.1
10 Simbu	1.9	331,695	5,307	1.6	31,888	9.6	8,206	2.5	5,772	1.7	76,832	23.2	79,142	23.9	156,964	47.3	60,797	18.3
11 EHP	2.2	574,541	10,427	1.8	65,510	11.4	15,915	2.8	11,336	2.0	146,936	25.6	135,456	23.6	267,851	46.6	83,815	14.6
12 Morobe	2.8	772,369	22,335	2.9	91,213	11.8	21,434	2.8	17,078	2.2	196,311	25.4	178,593	23.1	368,375	47.7	94,137	12.2
13 Madang	2.7	516,219	16,356	3.2	68,103	13.2	15,413	3.0	12,236	2.4	141,855	27.5	113,647	22.0	228,026	44.2	56,470	10.9
14 ESP	2.2	455,391	15,317	3.4	71,182	15.6	13,382	2.9	10,853	2.4	123,910	27.2	101,631	22.3	198,803	43.7	57,669	12.7
15 Sandaun	2.4	252,817	8,154	3.2	32,734	12.9	7,666	3.0	6,013	2.4	69,530	27.5	55,442	21.9	112,170	44.4	30,227	12.0
16 Manus	2.6	60,571	1,754	2.9	7,230	11.9	1,717	2.8	1,524	2.5	16,335	27.0	13,280	21.9	27,131	44.8	8,119	13.4
17 NIP	2.9	171,620	5,778	3.4	22,137	12.9	5,233	3.0	3,969	2.3	45,743	26.7	36,110	21.0	76,027	44.3	21,937	12.8
18 ENB	2.5	303,456	9,260	3.1	37,319	12.3	8,611	2.8	7,474	2.5	80,774	26.6	81,277	26.8	140,096	46.2	42,406	14.0
19 WNB	3.6	292,208	9,622	3.3	39,227	13.4	8,476	2.9	6,537	2.2	77,267	26.4	62,472	21.4	136,469	46.7	29,632	10.1
20 ARB	1.5	212,565	5,518	2.6	27,528	13.0	6,128	2.9	5,514	2.6	59,317	27.9	47,913	22.5	97,303	45.8	23,311	11.0
<b>PNG TOTAL</b>	<b>2.7</b>	<b>7,421,459</b>	<b>178,109</b>	<b>2.4</b>	<b>866,296</b>	<b>11.7</b>	<b>203,178</b>	<b>2.7</b>	<b>158,720</b>	<b>2.1</b>	<b>1,927,115</b>	<b>26.0</b>	<b>1,740,166</b>	<b>23.4</b>	<b>3,500,532</b>	<b>47.2</b>	<b>994,129</b>	<b>13.4</b>

2014 Population Projection by Age Group and Province

PNG Provinces	Growth Rate (%)	Total Pop.	<1 year		1-4 years		7 years		13 years		5-14 years		15-44 years		>45 years			
			No.	%	No.	%	No.	%	No.	%	No.	%	Women	%	Total	%	No.	%
1 Western	3.3	241,524	8,085	3.3	31,929	13.2	7,213	3.0	5,886	2.4	66,750	27.6	52,689	21.8	108,899	45.1	25,861	10.7
2 Gulf	2.6	153,121	4,345	2.8	19,791	12.9	4,547	3.0	3,649	2.4	43,545	28.4	33,684	22.0	69,328	45.3	16,085	10.5
3 Central	2.3	252,953	6,638	2.6	30,563	12.1	7,656	3.0	6,046	2.4	69,177	27.3	54,869	21.7	112,596	44.5	33,971	13.4
4 NCD	3.6	417,006	9,818	2.4	41,441	9.9	10,110	2.4	8,479	2.0	93,495	22.4	105,474	25.3	232,738	55.8	51,518	12.4
5 MBP	2.5	297,307	9,577	3.2	35,037	11.8	8,496	2.9	6,779	2.3	77,282	26.0	65,880	22.2	135,980	45.7	38,657	13.0
6 Oro	2.7	193,220	6,250	3.2	25,128	13.0	5,662	2.9	4,531	2.3	52,504	27.2	41,539	21.5	86,905	45.0	22,432	11.6
7 SHP	2.2	971,743	11,182	1.2	92,908	9.6	24,416	2.5	18,703	1.9	257,574	26.2	244,121	25.1	480,927	49.5	129,153	13.3
8 Enga	2.9	440,232	4,081	0.9	39,945	9.1	10,297	2.3	8,062	1.8	112,583	25.6	110,842	25.2	2,129,363	49.8	64,260	14.6
9 WHP	2.5	621,745	10,370	1.7	67,156	10.8	15,478	2.5	10,514	1.7	147,861	23.8	152,934	24.6	298,897	48.1	119,000	19.1
10 Simbu	1.9	337,997	5,408	1.6	32,494	9.6	8,362	2.5	5,882	1.7	78,292	23.2	80,654	23.9	159,946	47.3	61,860	18.3
11 EHP	2.2	587,181	10,656	1.8	66,951	11.4	16,265	2.8	11,585	2.0	150,169	25.6	138,436	23.6	273,743	46.6	85,659	14.6
12 Morobe	2.8	793,995	22,961	2.9	93,767	11.8	22,034	2.8	17,556	2.2	201,808	25.4	183,594	23.1	378,689	47.7	96,773	12.2
13 Madang	2.7	530,157	16,797	3.2	69,942	13.2	15,829	3.0	12,566	2.4	145,685	27.5	116,716	22.0	235,183	44.2	57,995	10.9
14 FSP	2.2	465,409	15,654	3.4	72,748	15.6	13,676	2.9	11,092	2.4	126,636	27.2	103,867	22.3	203,177	43.7	58,938	12.7
15 Sandaun	2.4	258,885	8,349	3.2	33,520	12.9	7,850	3.0	6,157	2.4	71,199	27.5	56,773	21.9	114,862	44.4	30,953	12.0
16 Manus	2.6	62,146	1,799	2.9	7,418	11.9	1,762	2.8	1,564	2.5	16,760	27.0	13,625	21.9	27,836	44.8	8,330	13.4
17 NIP	2.9	176,597	5,946	3.4	22,779	12.9	5,385	3.0	4,084	2.3	47,070	26.7	37,157	21.9	78,232	44.3	22,573	12.8
18 ENB	2.5	311,043	9,492	3.1	38,252	12.3	8,826	2.8	7,661	2.5	82,794	26.6	83,309	26.8	143,598	46.2	43,467	14.0
19 WNB	3.6	302,728	9,968	3.3	40,639	13.4	8,781	2.9	6,773	2.2	80,048	26.4	64,721	21.4	141,381	46.7	30,698	10.1
20 ARB	1.5	215,754	5,601	2.6	27,941	13.0	6,220	2.9	5,596	2.6	60,207	27.9	48,631	22.5	98,762	45.8	23,661	11.0
<b>PNG TOTAL</b>	<b>2.7</b>	<b>7,630,742</b>	<b>182,988</b>	<b>2.4</b>	<b>890,348</b>	<b>11.7</b>	<b>208,864</b>	<b>2.7</b>	<b>163,164</b>	<b>2.1</b>	<b>1,981,438</b>	<b>26.0</b>	<b>1,789,506</b>	<b>23.5</b>	<b>3,600,042</b>	<b>47.2</b>	<b>1,021,845</b>	<b>13.4</b>

## 2015 Population Projection by Age Group and Province

PNG Provinces	Growth Rate (%)	Total Pop.	<1 year		1-4 years		7 years		13 years		5-14 years		15-44 years			>45 years		
			No.	%	No.	%	No.	%	No.	%	No.	%	Women	Total	%	No.	%	
1 Western	3.3	241,524	8,085	3.3	31,929	13.2	7,213	3.0	5,886	2.4	66,750	27.6	52,689	21.8	108,899	45.1	25,861	10.7
2 Gulf	2.6	153,121	4,345	2.8	19,791	12.9	4,547	3.0	3,649	2.4	43,545	28.4	33,684	22.0	69,328	45.3	16,085	10.5
3 Central	2.3	252,953	6,638	2.6	30,563	12.1	7,656	3.0	6,046	2.4	69,177	27.3	54,869	21.7	112,596	44.5	33,971	13.4
4 NCD	3.6	417,006	9,818	2.4	41,441	9.9	10,110	2.4	8,479	2.0	93,495	22.4	105,474	25.3	232,738	55.8	51,518	12.4
5 MBP	2.5	297,307	9,577	3.2	35,037	11.8	8,496	2.9	6,779	2.3	77,282	26.0	65,880	22.2	135,980	45.7	38,657	13.0
6 Oro	2.7	193,220	6,250	3.2	25,128	13.0	5,662	2.9	4,531	2.3	52,504	27.2	41,539	21.5	86,905	45.0	22,432	11.6
7 SHP	2.2	971,743	11,182	1.2	92,908	9.6	24,416	2.5	18,703	1.9	257,574	26.2	244,121	25.1	480,927	49.5	129,153	13.3
8 Enga	2.9	440,232	4,081	0.9	39,945	9.1	10,297	2.3	8,062	1.8	112,583	25.6	110,842	25.2	2129,363	49.8	64,260	14.6
9 WHP	2.5	621,745	10,370	1.7	67,156	10.8	15,478	2.5	10,514	1.7	147,861	23.8	152,934	24.6	298,897	48.1	119,000	19.1
10 Simbu	1.9	337,997	5,408	1.6	32,494	9.6	8,362	2.5	5,882	1.7	78,292	23.2	80,654	23.9	159,946	47.3	61,860	18.3
11 EHP	2.2	587,181	10,656	1.8	66,951	11.4	16,265	2.8	11,585	2.0	150,169	25.6	138,436	23.6	273,743	46.6	85,659	14.6
12 Morobe	2.8	793,995	22,961	2.9	93,767	11.8	22,034	2.8	17,556	2.2	201,808	25.4	183,594	23.1	378,689	47.7	96,773	12.2
13 Madang	2.7	530,157	16,797	3.2	69,942	13.2	15,829	3.0	12,566	2.4	145,685	27.5	116,716	22.0	235,183	44.2	57,995	10.9
14 ESP	2.2	465,409	15,654	3.4	72,748	15.6	13,676	2.9	11,092	2.4	126,636	27.2	103,867	22.3	203,177	43.7	58,938	12.7
15 Sandaun	2.4	258,885	8,349	3.2	33,520	12.9	7,850	3.0	6,157	2.4	71,199	27.5	56,773	21.9	114,862	44.4	30,953	12.0
16 Manus	2.6	62,146	1,799	2.9	7,418	11.9	1,762	2.8	1,564	2.5	16,760	27.0	13,625	21.9	27,836	44.8	8,330	13.4
17 NIP	2.9	176,597	5,946	3.4	22,779	12.9	5,385	3.0	4,084	2.3	47,070	26.7	37,157	21.9	78,232	44.3	22,573	12.8
18 ENB	2.5	311,043	9,492	3.1	38,252	12.3	8,826	2.8	7,661	2.5	82,794	26.6	83,309	26.8	143,598	46.2	43,467	14.0
19 WNB	3.6	302,728	9,968	3.3	40,639	13.4	8,781	2.9	6,773	2.2	80,048	26.4	64,721	21.4	141,381	46.7	30,698	10.1
20 ARB	1.5	215,754	5,601	2.6	27,941	13.0	6,220	2.9	5,596	2.6	60,207	27.9	48,631	22.5	98,762	45.8	23,661	11.0
<b>PNG TOTAL</b>	<b>2.7</b>	<b>7,846,282</b>	<b>188,008</b>	<b>2.4</b>	<b>915,106</b>	<b>11.7</b>	<b>214,719</b>	<b>2.7</b>	<b>167,739</b>	<b>2.1</b>	<b>2,037,384</b>	<b>26.0</b>	<b>1,840,330</b>	<b>23.5</b>	<b>3,702,533</b>	<b>47.2</b>	<b>1,050,380</b>	<b>13.4</b>



## Chapter 11

### Resources for Health (2001–2008)



## Equipment Available by Province

PNG Provinces	Total Facilities	Percentage of facilities with:				
		Phone/ Radio	Transport	Fridge	Microscope	Manuals*
1 Western	41	93%	44%	27%	17%	88%
2 Gulf	20	85%	50%	80%	15%	90%
3 Central	33	67%	33%	73%	24%	82%
4 NCD	14	57%	50%	79%	36%	79%
5 MBP	40	85%	85%	98%	38%	95%
6 Oro	19	100%	26%	74%	16%	84%
7 SHP	66	61%	30%	86%	12%	77%
8 Enga	30	77%	47%	83%	20%	93%
9 WHP	41	63%	41%	78%	27%	85%
10 Simbu	29	86%	45%	93%	28%	93%
11 EHP	36	92%	69%	97%	25%	83%
12 Morobe	46	85%	57%	72%	22%	89%
13 Madang	44	89%	50%	93%	41%	80%
14 ESP	42	95%	81%	93%	24%	74%
15 WSP	36	92%	31%	75%	17%	86%
16 Manus	13	100%	69%	100%	23%	100%
17 NIP	30	90%	93%	90%	23%	90%
18 ENB	20	100%	90%	85%	50%	90%
19 WNB	32	97%	78%	84%	25%	88%
20 ARB	32	91%	22%	81%	22%	97%
<b>Southern region</b>	167	83%	51%	69%	25%	87%
<b>Highlands region</b>	202	73%	44%	87%	21%	85%
<b>Momase region</b>	168	90%	55%	83%	26%	82%
<b>Islands region</b>	127	94%	69%	87%	28%	92%
<b>PNG TOTAL</b>	<b>664</b>	<b>84%</b>	<b>53%</b>	<b>81%</b>	<b>24%</b>	<b>86%</b>

Notes: \* Percentage of facilities with at least two Standard Treatment Manuals.

Source: National Inventory of Health Facilities 2008.

### Number of Health Facilities by Province

PNG Provinces	Health Centres					Mission					Other					Total					Aid Posts		No. Closed 2008	%	
	HP	UC	HC	SC	Tot.	HP	UC	HC	SC	Tot.	HP	UC	HC	SC	Tot.	HP	UC	HC	SC	Tot.	Church	Open 2008			New
1 Western	1	1	9	6	17	0	1	2	19	22	0	0	1	1	2	1	2	12	26	41	54%	272	0	50	18%
2 Gulf	1	1	7	3	12	0	0	3	8	11	0	0	0	0	1	1	10	11	23	48%	81	0	23	30%	
2 Central	1	1	6	10	18	0	0	2	14	16	0	0	0	2	2	1	1	8	26	36	44%	85	0	5	6%
4 NCD	1	11	0	0	12	0	1	0	0	1	0	4	1	0	5	1	16	1	0	18	6%				
5 MBP	1	1	8	6	16	0	0	2	23	25	0	0	0	0	1	1	10	29	41	61%	146	0	31	22%	
6 Oro	1	1	6	6	14	0	0	1	4	5	0	0	0	0	1	1	7	10	19	26%	105	0	39	43%	
7 SHP	1	1	9	21	32	0	0	1	38	39	0	0	0	0	1	1	10	59	71	55%	224	0	60	27%	
8 Enga	1	2	4	13	20	0	1	3	9	14	0	0	1	0	2	3	8	22	35	40%	160	0	81	56%	
9 WHP	1	2	9	6	18	0	3	5	20	28	0	0	0	0	1	5	14	26	46	61%	99	0	23	23%	
10 Simbu	1	1	6	14	22	0	0	2	8	10	0	0	0	0	1	1	8	22	32	31%	72	0	17	24%	
11 EHP	1	3	6	10	20	0	1	0	15	16	0	0	0	0	1	4	6	25	36	44%	180	0	91	51%	
12 Morobe	6	1	16	9	34	0	1	4	9	14	0	2	0	0	2	11	20	18	50	28%	203	0	76	37%	
13 Madang	5	2	14	9	27	0	0	5	11	16	0	0	0	2	2	3	19	22	45	36%	211	0	40	20%	
14 ESP	4	2	8	4	16	0	2	1	24	27	0	0	0	0	1	5	9	28	43	63%	243	0	58	24%	
15 WSP	5	1	7	3	12	0	0	3	22	25	0	0	0	0	1	1	10	25	37	68%	130	1	48	37%	
16 Manus	1	2	6	0	9	0	0	3	0	3	0	0	1	0	1	2	10	0	13	23%					
17 NIP	1	1	3	15	20	0	0	5	6	11	0	1	0	0	1	2	8	21	32	34%	58	0	22	38%	
18 ENB	1	2	10	6	19	0	0	1	11	12	0	0	0	1	1	2	11	18	32	38%	97	0	12	12%	
19 WNB	1	1	5	8	15	0	0	3	10	13	0	4	0	0	4	5	8	18	32	41%	125	0	9	20%	
20 ARB	1	2	10	9	22	0	0	2	12	14	0	0	0	1	1	2	12	22	37	38%	180	2	56	31%	
<b>Southern Highlands</b>	6	16	36	36	89	0	2	10	68	80	0	4	2	3	9	6	22	48	102	178	45%	690	0	156	23%
<b>Momase</b>	5	9	34	34	112	1	5	11	90	107	0	0	1	0	1	6	14	46	154	220	49%	735	0	280	38%
<b>Islands</b>	4	15	45	45	89	0	3	13	66	82	0	2	0	2	4	4	20	58	93	175	47%	787	1	225	29%
<b>PNG TOTAL</b>	5	8	34	34	85	0	0	14	39	53	0	5	1	2	8	5	13	49	79	146	41%	460	2	115	25%
<b>PNG TOTAL</b>	<b>20</b>	<b>48</b>	<b>149</b>	<b>158</b>	<b>375</b>	<b>1</b>	<b>10</b>	<b>48</b>	<b>263</b>	<b>322</b>	<b>0</b>	<b>11</b>	<b>4</b>	<b>7</b>	<b>22</b>	<b>21</b>	<b>69</b>	<b>201</b>	<b>428</b>	<b>719</b>	<b>45%</b>	<b>2,672</b>	<b>3</b>	<b>776</b>	<b>29%</b>

## Number of Staff by Province

### A. Total Staff by Province

Notes: NO \* = Nursing Officer + Nursing Officer (midwife)  
Others \* = Including Admin Support Staff, Driver, Cleaner, Other Support Staff and Casuals  
Aid Post staff are recorded under the Health Centre under which they operate

PNG Provinces	2009 Urban Population	2009 Rural Population	2009 Total Population	Health Centre Staff and Hospital Staff												
				SSMO	SMO	MO	HEO	NO*/NO (mid.)	CHW	Malaria/EHO	Dental Officer/Therapist	RLA/Med. Lab. Asst.	Other AHW	Others*	TOTAL	
1 Western	44,229	161,103	205,332	0	2	9	7	129	160	1	2	4	3	40	357	
2 Gulf	13,875	120,803	134,678	0	0	10	10	63	129	0	2	3	0	86	303	
2 Central	7,068	218,698	225,766	0	0	0	11	57	178	16	0	6	1	73	342	
4 NCD	349,415	0	349,415	12	52	21	14	473	313	3	15	10	10	695	1,618	
5 MBP	15,924	246,852	262,776	4	2	14	33	237	273	18	12	9	9	225	836	
6 Oro	14,452	154,669	169,121	0	0	13	17	100	162	5	3	7	6	68	381	
7 SHP	16,008	775,059	791,067	0	4	9	27	325	472	12	10	18	6	161	1,044	
8 Enga	9,725	371,873	381,598	1	3	20	25	183	197	11	11	15	6	150	622	
9 WHP	37,362	512,169	549,531	0	2	21	36	305	306	12	2	11	19	310	1,024	
10 Simbu	11,554	296,087	307,641	0	3	11	38	250	396	7	6	1	3	109	824	
11 EHP	32,003	494,642	526,645	2	12	26	33	273	294	10	14	12	3	216	895	
12 Morobe	174,930	516,666	691,596	5	11	23	7	174	242	3	7	9	9	200	690	
13 Madang	48,735	415,302	464,037	0	0	10	32	182	358	5	7	12	6	95	707	
14 ESP	38,902	378,525	417,427	0	9	7	19	157	112	26	2	13	13	146	504	
15 WSP	17,720	212,216	229,936	0	1	6	17	135	164	4	4	6	9	140	486	
16 Manus	9,086	45,576	54,662	0	1	5	16	53	105	2	1	3	3	38	227	
17 NIP	13,898	139,178	153,076	3	2	8	27	156	126	6	10	9	3	157	507	
18 ENB	12,851	262,075	274,926	0	8	14	27	267	182	7	6	15	7	106	639	
19 WNB	27,828	225,835	253,663	1	2	12	30	156	184	7	7	8	6	106	519	
20 ARB	4,696	195,580	200,276	1	2	8	26	102	96	7	2	5	6	117	372	
<b>Southern Highlands</b>	<b>444,963</b>	<b>902,125</b>	<b>1,347,088</b>	<b>16</b>	<b>56</b>	<b>67</b>	<b>92</b>	<b>1,059</b>	<b>1,215</b>	<b>43</b>	<b>34</b>	<b>39</b>	<b>29</b>	<b>1,187</b>	<b>3,837</b>	
<b>Momase</b>	<b>106,652</b>	<b>2,449,830</b>	<b>2,556,482</b>	<b>3</b>	<b>24</b>	<b>87</b>	<b>159</b>	<b>1,336</b>	<b>1,665</b>	<b>52</b>	<b>43</b>	<b>57</b>	<b>37</b>	<b>946</b>	<b>4,409</b>	
<b>Islands</b>	<b>280,287</b>	<b>1,522,709</b>	<b>1,802,996</b>	<b>5</b>	<b>21</b>	<b>46</b>	<b>75</b>	<b>648</b>	<b>876</b>	<b>38</b>	<b>20</b>	<b>40</b>	<b>37</b>	<b>581</b>	<b>2,387</b>	
<b>PNG TOTAL</b>	<b>900,261</b>	<b>5,742,908</b>	<b>6,643,169</b>	<b>29</b>	<b>116</b>	<b>247</b>	<b>452</b>	<b>3,777</b>	<b>4,449</b>	<b>162</b>	<b>123</b>	<b>176</b>	<b>128</b>	<b>3,238</b>	<b>12,897</b>	



**B. Staff at Health Centres by Province**

PNG Provinces	2009 Urban Population	2009 Rural Population	2009 Total Population	Health Centre Staff													TOTAL
				SSMO	SMO	MO	HEO	NO*/NO (mid.)	CHW	Malaria/EHO	Dental Officer/Therapist	RLA/Med. Lab. Asst.	Other AHW	Others*			
1 Western	44,229	161,103	205,332	0	0	4	4	107	127	0	1	2	0	22	267		
2 Gulf	13,875	120,803	134,678	0	0	3	7	43	111	0	0	1	0	25	190		
2 Central	7,068	218,698	225,766	0	0	0	9	44	154	16	0	6	0	40	269		
4 NCD	349,415	0	349,415	0	0	4	12	119	99	0	0	6	0	84	324		
5 MBP	15,924	246,852	262,776	0	0	2	20	150	220	8	5	4	0	127	536		
6 Oro	14,452	154,669	169,121	0	0	0	11	68	119	5	2	0	0	16	221		
7 SHP	16,008	775,059	791,067	0	2	1	22	237	425	7	3	12	0	113	822		
8 Enga	9,725	371,873	381,598	1	3	9	21	135	171	8	3	9	0	112	472		
9 WHP	37,362	512,169	549,531	0	0	7	34	187	207	3	2	5	0	179	624		
10 Simbu	11,554	296,087	307,641	0	0	2	35	160	336	7	1	1	0	45	587		
11 EHP	32,003	494,642	526,645	0	0	3	31	113	213	10	12	6	0	152	540		
12 Morobe	174,930	516,666	691,596	0	0	1	4	49	164	3	3	4	0	23	251		
13 Madang	48,735	415,302	464,037	0	0	0	25	93	276	5	2	5	0	57	463		
14 ESP	38,902	378,525	417,427	0	2	2	12	92	81	26	1	6	0	107	329		
15 WSP	17,720	212,216	229,936	0	0	3	14	74	134	4	1	2	0	74	306		
16 Manus	9,086	45,576	54,662	0	0	0	13	29	83	2	0	0	0	15	142		
17 NIP	13,898	139,178	153,076	0	0	8	24	129	104	6	9	6	0	108	394		
18 ENB	12,851	262,075	274,926	0	1	6	20	192	127	7	5	8	0	81	447		
19 WNB	27,828	225,835	253,663	0	0	0	24	85	137	7	3	0	0	37	293		
20 ARB	4,696	195,580	200,276	0	0	2	23	49	68	7	1	1	0	40	191		
<b>Southern Highlands</b>	<b>444,963</b>	<b>902,125</b>	<b>1,347,088</b>	<b>0</b>	<b>0</b>	<b>13</b>	<b>63</b>	<b>531</b>	<b>830</b>	<b>29</b>	<b>8</b>	<b>19</b>	<b>0</b>	<b>314</b>	<b>1,807</b>		
<b>Momase</b>	<b>106,652</b>	<b>2,449,830</b>	<b>2,556,482</b>	<b>1</b>	<b>5</b>	<b>22</b>	<b>143</b>	<b>832</b>	<b>1,352</b>	<b>35</b>	<b>21</b>	<b>33</b>	<b>0</b>	<b>601</b>	<b>3,045</b>		
<b>Islands</b>	<b>280,287</b>	<b>1,522,709</b>	<b>1,802,996</b>	<b>0</b>	<b>2</b>	<b>6</b>	<b>55</b>	<b>308</b>	<b>655</b>	<b>38</b>	<b>7</b>	<b>17</b>	<b>0</b>	<b>261</b>	<b>1,349</b>		
<b>PNG TOTAL</b>	<b>900,261</b>	<b>5,742,908</b>	<b>6,643,169</b>	<b>1</b>	<b>8</b>	<b>57</b>	<b>365</b>	<b>2,155</b>	<b>3,356</b>	<b>131</b>	<b>54</b>	<b>84</b>	<b>0</b>	<b>1,457</b>	<b>7,668</b>		

### C. Staff at Hospitals by Province

PNG Provinces	2009 Urban Population	2009 Rural Population	2009 Total Population	Hospital Staff														TOTAL
				SSMO	SMO	MO	HEO	NO*/NO (mid.)	CHW	Malaria/EHO	Dental Officer/Therapist	RLA/Med. Lab. Asst.	Other AHW	Others*				
1 Western	44,229	161,103	205,332	0	2	5	3	22	33	1	1	2	3	18	90			
2 Gulf	13,875	120,803	134,678	0	0	7	3	20	18	0	2	2	0	61	113			
2 Central	7,068	218,698	225,766	0	0	0	2	13	24	0	0	0	1	33	73			
4 NCD	349,415	0	349,415	12	52	17	2	354	214	3	15	4	10	611	1,294			
5 MBP	15,924	246,852	262,776	4	2	12	13	87	53	10	7	5	9	98	300			
6 Oro	14,452	154,669	169,121	0	0	13	6	32	43	0	1	7	6	52	160			
7 SHP	16,008	775,059	791,067	0	2	8	5	88	47	5	7	6	6	48	222			
8 Enga	9,725	371,873	381,598	0	0	11	4	48	26	3	8	6	6	38	150			
9 WHP	37,362	512,169	549,531	0	2	14	2	118	99	9	0	6	19	131	400			
10 Simbu	11,554	296,087	307,641	0	3	9	3	90	60	0	5	0	3	64	237			
11 EHP	32,003	494,642	526,645	2	12	23	2	160	81	0	2	6	3	64	355			
12 Morobe	174,930	516,666	691,596	5	11	22	3	125	78	0	4	5	9	177	439			
13 Madang	48,735	415,302	464,037	0	0	10	7	89	82	0	5	7	6	38	244			
14 ESP	38,902	378,525	417,427	0	7	5	7	65	31	0	1	7	13	39	175			
15 WSP	17,720	212,216	229,936	0	1	3	3	61	30	0	3	4	9	66	180			
16 Manus	9,086	45,576	54,662	0	1	5	3	24	22	0	1	3	3	23	85			
17 NIP	13,898	139,178	153,076	3	2	0	3	27	22	0	1	3	3	49	113			
18 ENB	12,851	262,075	274,926	0	7	8	7	75	55	0	1	7	7	25	192			
19 WNB	27,828	225,835	253,663	1	2	12	6	71	47	0	4	8	6	69	226			
20 ARB	4,696	195,580	200,276	1	2	6	3	53	28	0	1	4	6	77	181			
<b>Southern</b>	<b>444,963</b>	<b>902,125</b>	<b>1,347,088</b>	<b>16</b>	<b>56</b>	<b>54</b>	<b>29</b>	<b>528</b>	<b>385</b>	<b>14</b>	<b>26</b>	<b>20</b>	<b>29</b>	<b>873</b>	<b>2,030</b>			
<b>Highlands</b>	<b>106,652</b>	<b>2,449,830</b>	<b>2,556,482</b>	<b>2</b>	<b>19</b>	<b>65</b>	<b>16</b>	<b>504</b>	<b>313</b>	<b>17</b>	<b>22</b>	<b>24</b>	<b>37</b>	<b>345</b>	<b>1,364</b>			
<b>Momase</b>	<b>280,287</b>	<b>1,522,709</b>	<b>1,802,996</b>	<b>5</b>	<b>19</b>	<b>40</b>	<b>20</b>	<b>340</b>	<b>221</b>	<b>0</b>	<b>13</b>	<b>23</b>	<b>37</b>	<b>320</b>	<b>1,038</b>			
<b>Islands</b>	<b>68,359</b>	<b>868,244</b>	<b>936,603</b>	<b>5</b>	<b>14</b>	<b>31</b>	<b>22</b>	<b>250</b>	<b>174</b>	<b>0</b>	<b>8</b>	<b>25</b>	<b>25</b>	<b>243</b>	<b>797</b>			
<b>PNG TOTAL</b>	<b>900,261</b>	<b>5,742,908</b>	<b>6,643,169</b>	<b>28</b>	<b>108</b>	<b>190</b>	<b>87</b>	<b>1,622</b>	<b>1,093</b>	<b>31</b>	<b>69</b>	<b>92</b>	<b>128</b>	<b>1,781</b>	<b>5,229</b>			



## Chapter 12

### Disease Patterns (2001–2008)



## Data for Papua New Guinea

### Leading Causes of Morbidity and Mortality

Figure 1 Percentage of admissions by cause

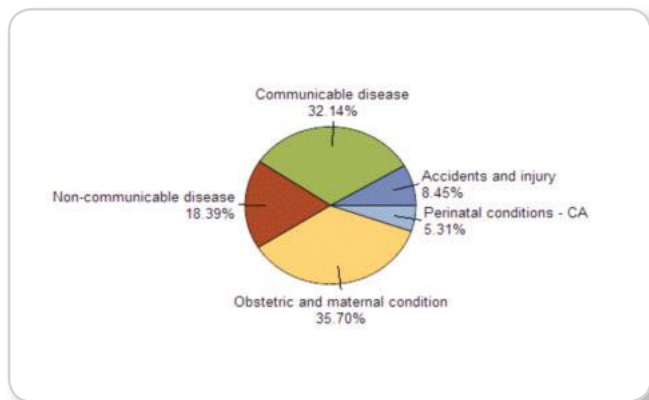


Figure 2 Total bed day usage by cause of admission

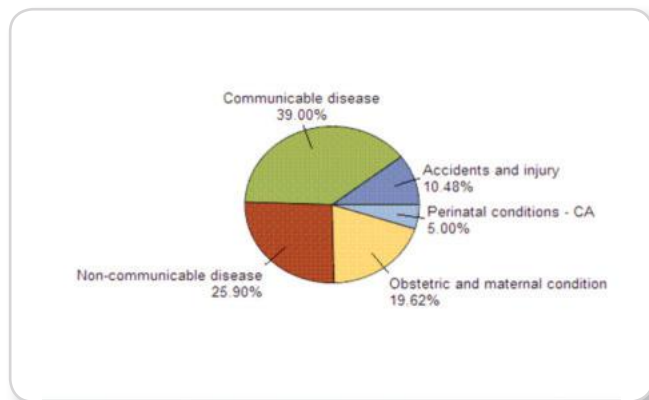


Figure 3 Inpatient deaths by cause of admission

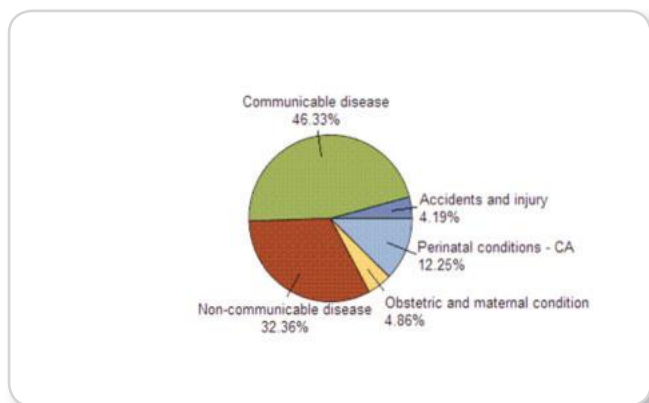


Figure 4 Admissions to rural facilities by cause of admission

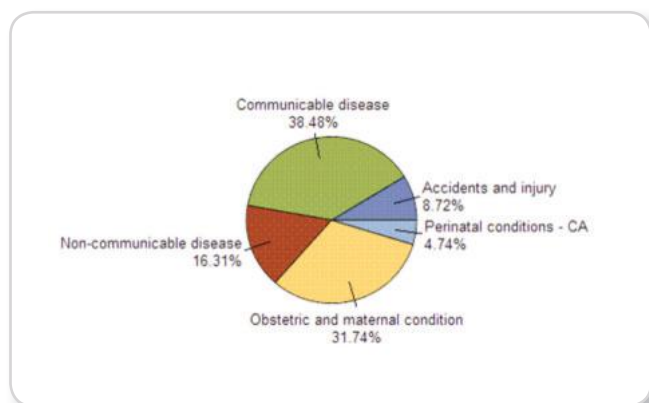
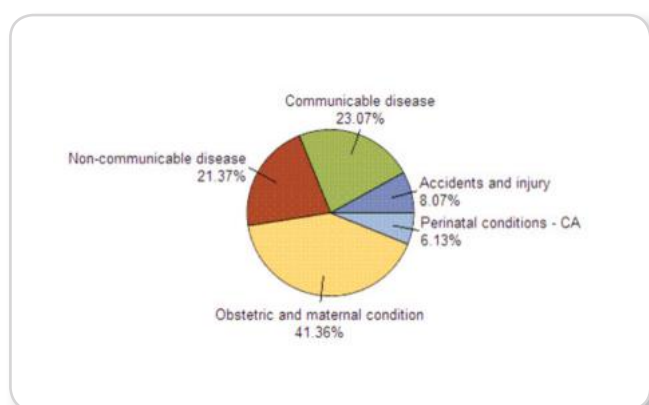
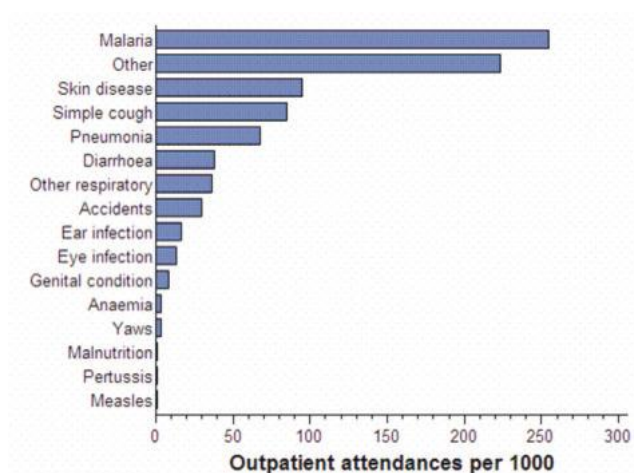


Figure 5 Admission to hospitals by cause of admission

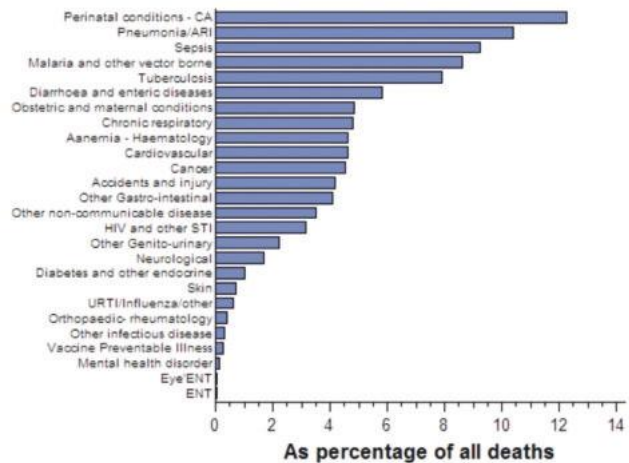
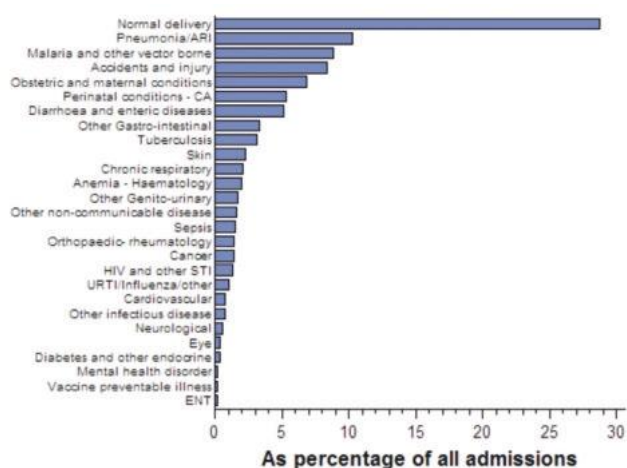


Outpatients per 1,000 population (2007–2008)		% of total
Malaria	254.3	28.98
Skin disease	95.0	10.83
Simple cough	84.7	9.65
Pneumonia	67.8	7.73
Diarrhoea	38.4	4.38
Other respiratory	36.3	4.14
Accidents	30.1	3.43
Ear infection	16.4	1.87
Eye infection	13.3	1.52
Genital condition	8.7	0.99
Anaemia	3.7	0.42
Yaws	3.1	0.35
Malnutrition	1.3	0.15
Pertussis	0.6	0.07
Measles	0.1	0.01
Other	223.7	25.49
<b>Total</b>	<b>877.5</b>	<b>100%</b>

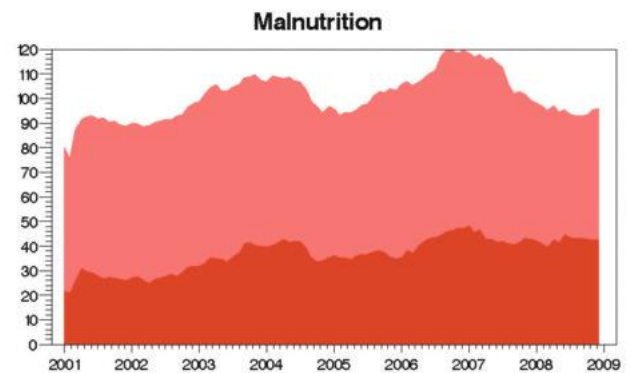
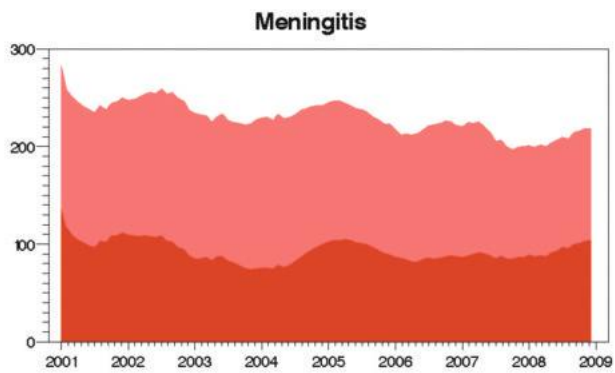
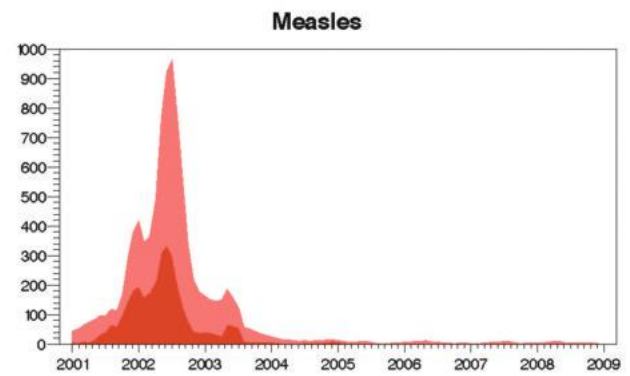
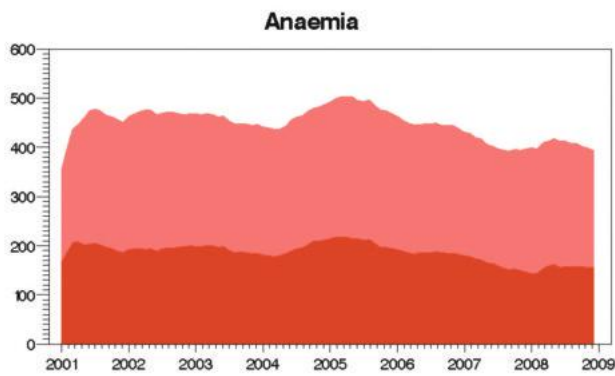
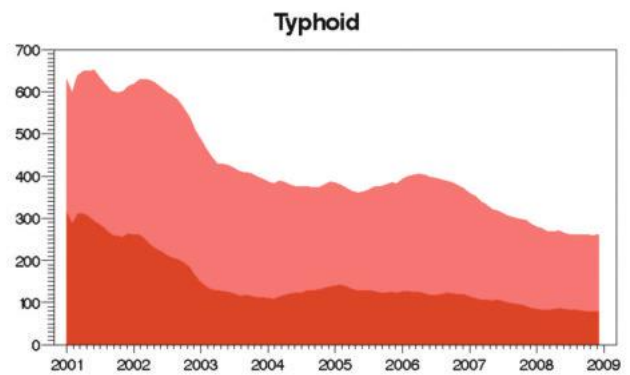
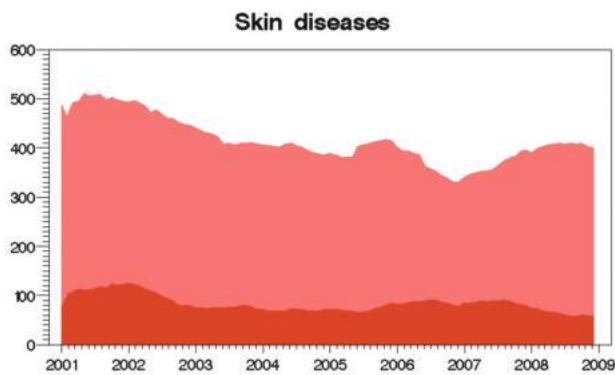
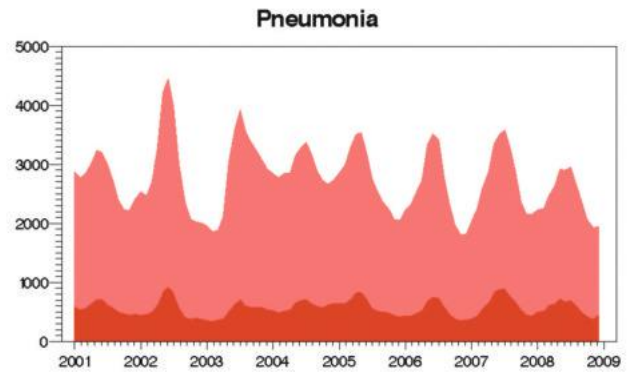
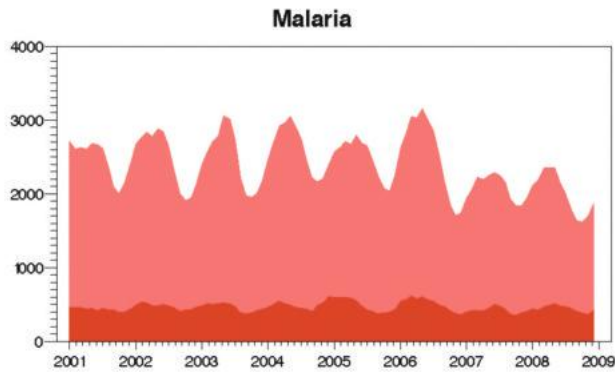


Total bed days (2008)		% of total
Normal delivery	218,455	14.75
Tuberculosis	184,617	12.47
Accidents and injury	156,016	10.54
Pneumonia/ARI	135,366	9.14
Malaria and other vector-borne	100,316	6.78
Perinatal conditions – CA	75,644	5.11
Obstetric and maternal conditions	77,601	5.24
Diarrhoea and enteric	62,816	4.24
Other gastro-intestinal	49,433	3.34
Skin	46,564	3.15
Chronic respiratory	39,973	2.70
Sepsis	37,560	2.54
Orthopaedic – Rheumatology	35,764	2.42
Cancer	36,078	2.44
Anaemia – Haematology	35,500	2.40
Other genito-urinary	31,926	2.16
HIV and other STIs	27,399	1.85
Cardiovascular	18,646	1.26
Other non-communicable	31,534	2.13
URTI/influenza/other	14,497	0.98
Mental health disorder	14,075	0.95
Neurological	13,761	0.93
Other infectious	13,538	0.91
Diabetes and other endocrine	11,506	0.78
Eye	6,709	0.45
Vaccine preventable illness	2,823	0.19
ENT	2,435	0.16
<b>Total</b>	<b>1,480,552</b>	<b>100%</b>

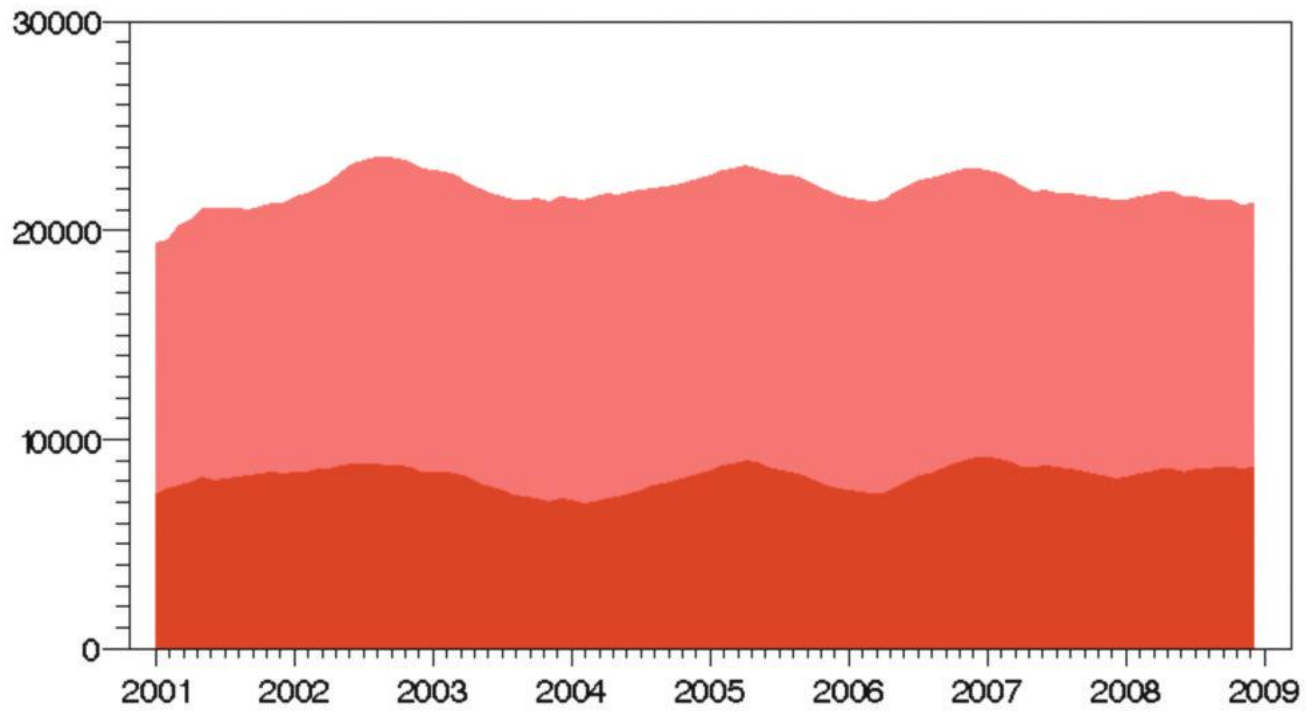
Admissions per 100,000 (2008)			Deaths per 100,000 (2008)		
		% of total			% of total
Normal delivery	1,041.1	28.83	Perinatal conditions – CA	13.00	12.25
Pneumonia/ARI	372.0	10.30	Pneumonia/ARI	11.00	10.41
Malaria and other vector-borne	322.5	8.93	Sepsis	9.80	9.23
Accidents and injury	305.2	8.45	Malaria and other vector-borne	9.10	8.60
Obstetric and maternal conditions	247.9	6.87	Tuberculosis	8.40	7.90
Perinatal conditions – CA	191.9	5.31	Diarrhoea and enteric	6.20	5.84
Diarrhoea and enteric	183.6	5.08	Obstetric and maternal conditions	5.10	4.86
Other gastro-intestinal	120.5	3.34	Chronic respiratory	5.10	4.79
Tuberculosis	110.7	3.07	Anaemia – Haematology	4.90	4.60
Skin	82.5	2.28	Cardiovascular	4.90	4.60
Chronic respiratory	74.7	2.07	Cancer	4.80	4.51
Anaemia – Haematology	73.2	2.03	Accidents and injury	4.44	4.19
Other genito-urinary	60.8	1.68	Other gastro-intestinal	4.35	4.10
Other non-communicable	59.5	1.65	Other non-communicable	3.70	3.49
Sepsis	52.5	1.45	HIV and other STIs	3.34	3.15
Orthopaedic – rheumatology	51.2	1.42	Other genito-urinary	2.37	2.23
Cancer	49.1	1.36	Neurological	1.78	1.68
HIV and other STIs	47.5	1.32	Diabetes and other endocrine	1.07	1.01
URTI/influenza/other	37.6	1.04	Skin	0.76	0.72
Cardiovascular	29.8	0.83	URTI/influenza/other	0.67	0.63
Other infectious	27.8	0.77	Orthopaedic – rheumatology	0.45	0.42
Neurological	22.8	0.63	Other infectious	0.33	0.31
Diabetes and other endocrine	13.2	0.37	Vaccine preventable illness	0.26	0.25
Eye	12.9	0.36	Mental health disorder	0.14	0.13
Mental health disorder	7.7	0.21	Eye	0.06	0.06
Vaccine preventable illness	6.4	0.18	ENT	0.02	0.01
ENT	6.2	0.17	Perinatal conditions – CA	12.99	12.25
<b>Total</b>	<b>3,610.8</b>	<b>100%</b>	<b>Total</b>	<b>109.10</b>	<b>100%</b>



### Monthly Admissions to Health Facilities



### Total

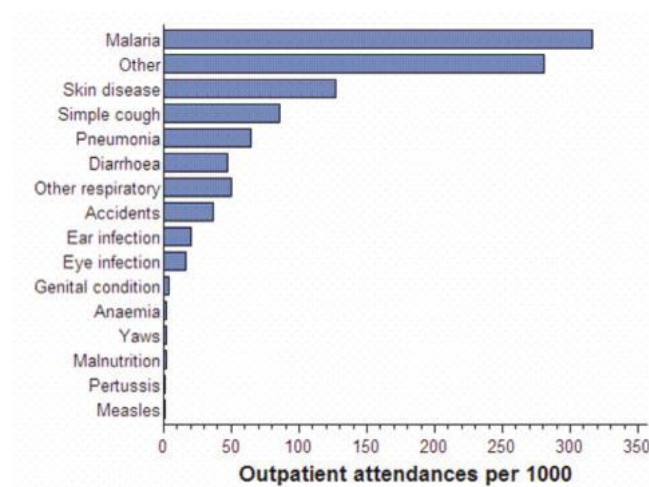




## Data for Southern Region

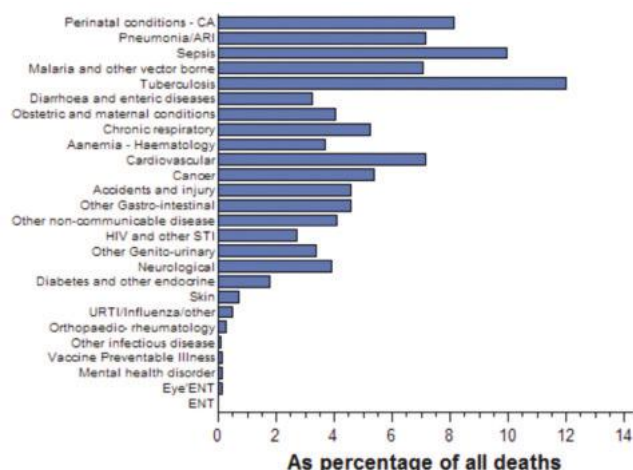
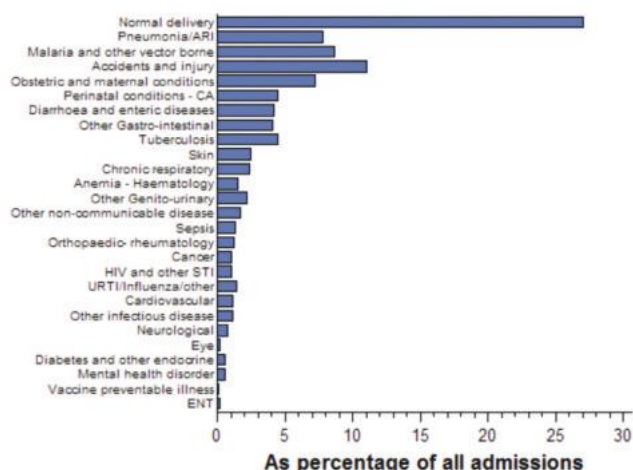
### Leading Causes of Morbidity and Mortality

Outpatients per 1,000 population (2007–2008)		% of total
Malaria	316.0	29.96
Skin disease	127.0	12.04
Simple cough	86.0	8.15
Pneumonia	64.8	6.14
Other respiratory	50.5	4.79
Diarrhoea	46.8	4.44
Accidents	36.6	3.47
Ear infection	19.9	1.89
Eye infection	16.1	1.53
Genital condition	3.8	0.36
Anaemia	2.3	0.22
Malnutrition	1.7	0.16
Yaws	1.6	0.15
Pertussis	0.5	0.05
Measles	0.1	0.01
Other	280.9	26.64
<b>Total</b>	<b>1,054.6</b>	<b>100%</b>

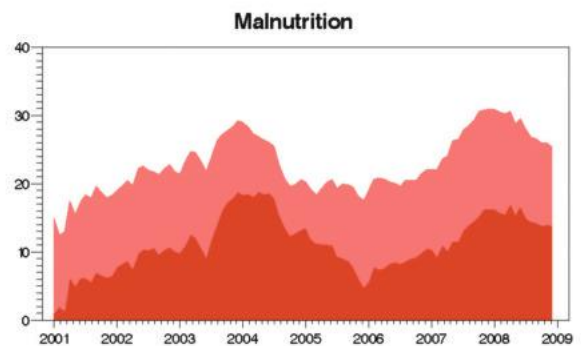
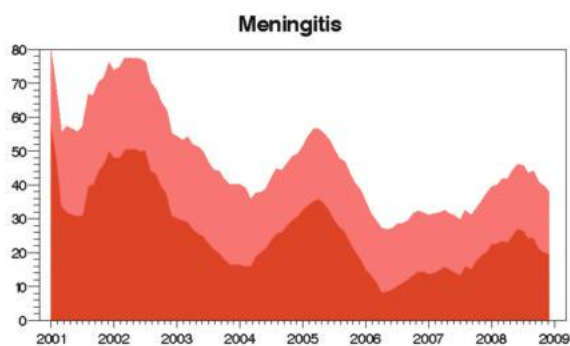
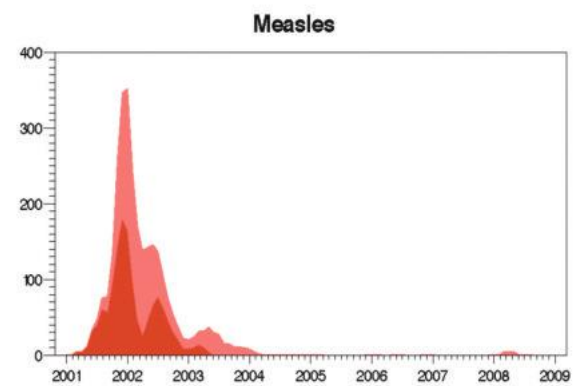
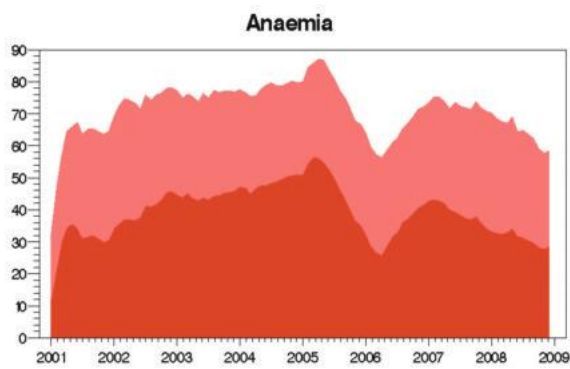
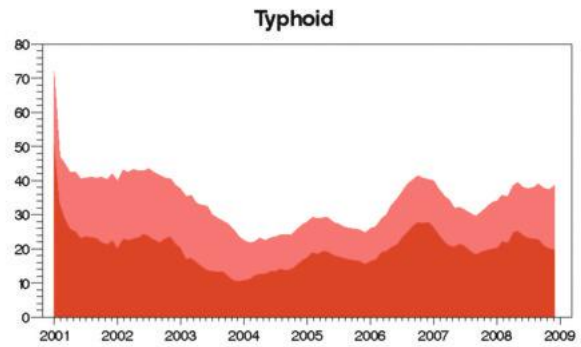
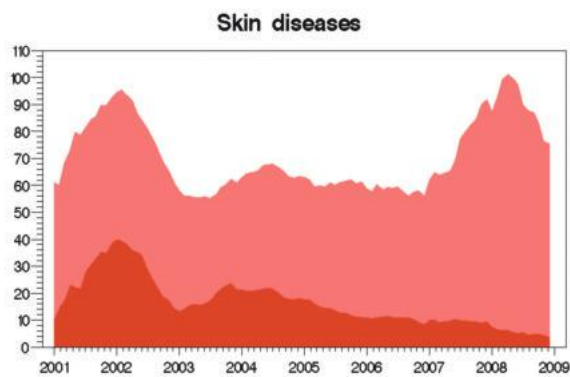
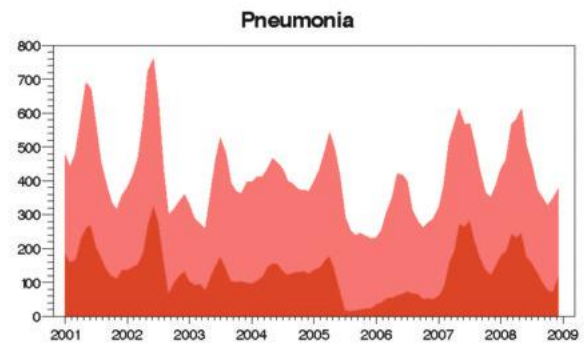
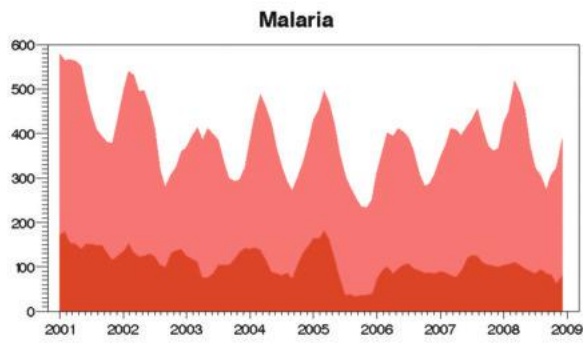


Total bed days (2008)		% of total
Tuberculosis	51,308	15.90
Normal delivery	50,004	15.50
Accidents and injury	371,132	11.51
Pneumonia/ARI	19,687	6.10
Malaria and other vector-borne	18,074	5.60
Obstetric and maternal conditions	14,971	4.64
Perinatal conditions – CA	11,912	3.69
Mental health disorder	12,305	3.81
Other gastro-intestinal	10,911	3.38
Skin	10,284	3.19
Diarrhoea and enteric	9,586	2.97
Other genito-urinary	9,040	2.80
Sepsis	8,188	2.54
Chronic respiratory	8,074	2.50
Cancer	6,795	2.11
Orthopaedic – Rheumatology	5,985	1.85
Anaemia – Haematology	5,501	1.70
Cardiovascular	5,066	1.57
Neurological	4,327	1.34
HIV and other STIs	4,238	1.31
URTI/influenza/other	4,032	1.25
Diabetes and other endocrine	3,884	1.20
Other non-communicable	6,057	1.88
Other infectious disease	3,230	1.00
Eye	985	0.31
ENT	571	0.18
Vaccine preventable illness	521	0.16
<b>Total</b>	<b>656,668</b>	<b>100%</b>

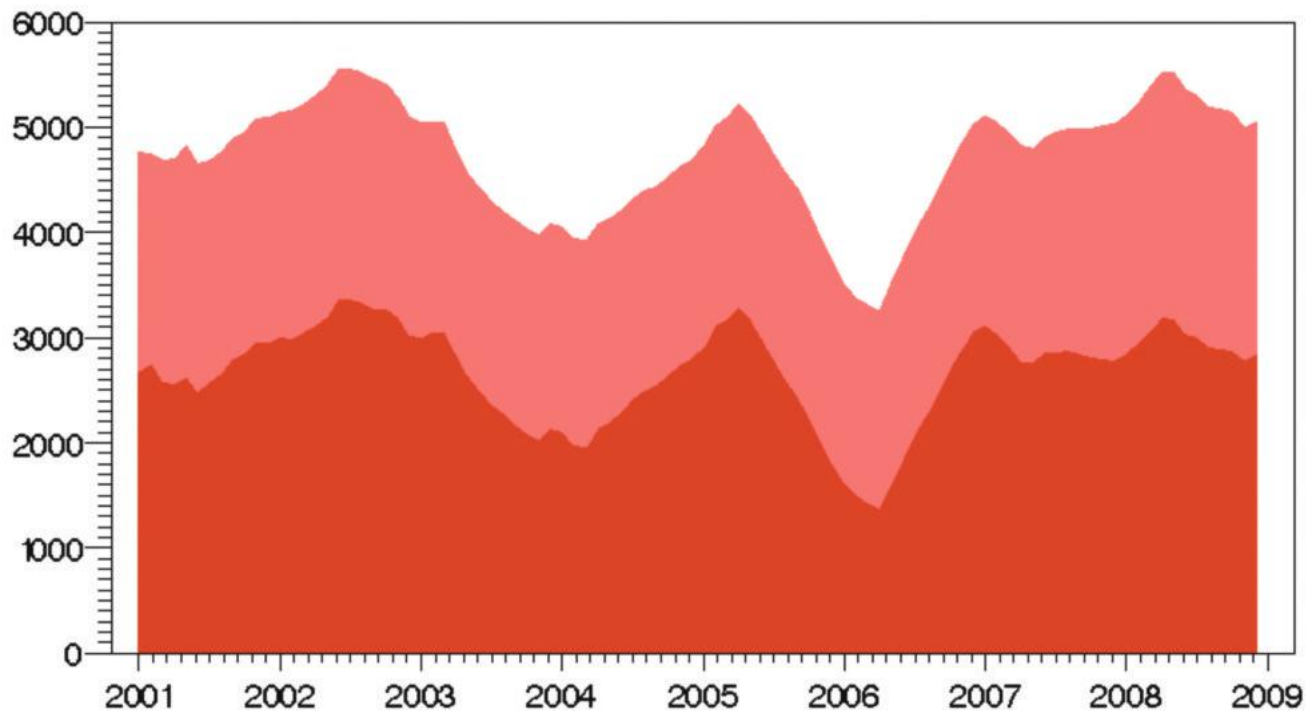
Admissions per 100,000 (2008)		% of total	Deaths per 100,000 (2008)		% of total
Normal delivery	892.4	26.98	Tuberculosis	13.00	12.01
Accidents and injury	365.1	11.04	Sepsis	10.80	9.96
Malaria and other vector-borne	286.2	8.65	Perinatal conditions – CA	8.80	8.13
Pneumonia/ARI	258.4	7.81	Cardiovascular	7.70	7.14
Obstetric and maternal conditions	239.7	7.25	Pneumonia/ARI	7.70	7.14
Perinatal conditions – CA	149.8	4.53	Malaria and other vector-borne	7.64	7.07
Tuberculosis	148.4	4.49	Cancer	5.81	5.37
Diarrhoea and enteric	138.4	4.18	Chronic respiratory	5.65	5.23
Other gastro-intestinal	135.5	4.10	Accidents and injury	4.97	4.59
Skin	81.1	2.45	Other gastro-intestinal	4.97	4.59
Chronic respiratory	79.8	2.41	Other non-communicable	4.43	4.10
Other genito-urinary	73.0	2.21	Obstetric and maternal conditions	4.35	4.03
Other non-communicable	55.1	1.67	Neurological	4.20	3.89
Anaemia – Haematology	50.8	1.54	Anaemia – Haematology	3.97	3.67
URTI/influenza/other	47.4	1.43	Other genito-urinary	3.67	3.39
Sepsis	44.2	1.34	Diarrhoea and enteric	3.51	3.25
Orthopaedic – rheumatology	41.2	1.25	HIV and other STIs	2.90	2.69
Cardiovascular	37.1	1.12	Diabetes and other endocrine	1.91	1.77
Other infectious	35.2	1.06	Skin	0.76	0.71
Cancer	34.1	1.03	URTI/influenza/other	0.54	0.49
HIV and other STIs	32.6	0.99	Orthopaedic – rheumatology	0.31	0.28
Neurological	25.9	0.78	Eye	0.15	0.14
Diabetes and other endocrine	19.2	0.58	Mental health disorder	0.15	0.14
Mental health disorder	18.5	0.56	Vaccine preventable illness	0.15	0.14
Eye	7.2	0.22	Other infectious	0.08	0.07
ENT	7.0	0.21			
Vaccine preventable illness	4.7	0.14			
<b>Total</b>	<b>3,308.0</b>	<b>100%</b>	<b>Total</b>	<b>108.10</b>	<b>100%</b>



### Monthly Admissions to Health Facilities



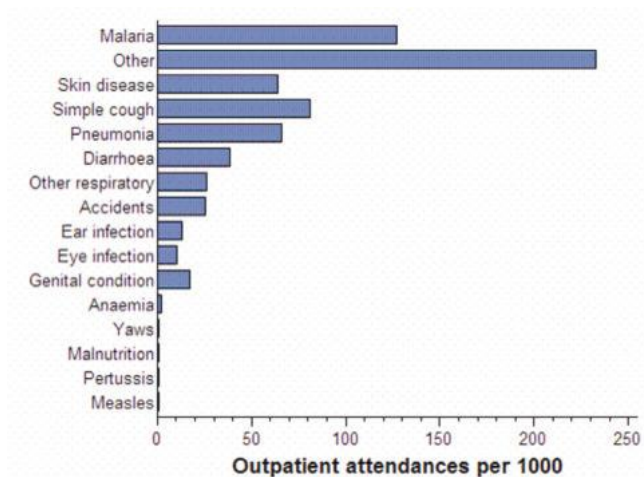
### Total



## Data for Highlands Region

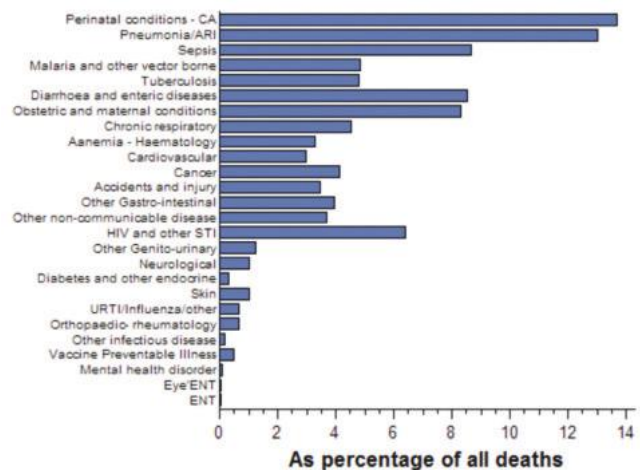
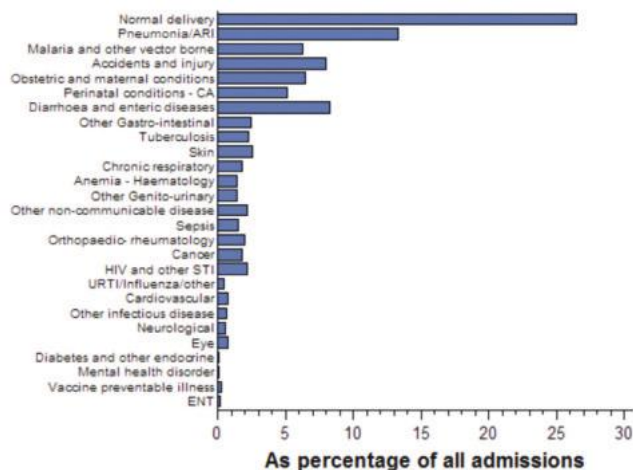
### Leading Causes of Morbidity and Mortality

Outpatients per 1,000 population (2007–2008)		% of total
Malaria	127.0	18.00
Simple cough	80.8	11.45
Pneumonia	65.7	9.31
Skin	63.6	9.02
Diarrhoea	38.5	5.46
Other respiratory	26.2	3.71
Accidents	25.3	3.59
Genital condition	17.1	2.42
Ear infection	13.4	1.90
Eye infection	10.5	1.49
Anaemia	2.3	0.33
Malnutrition	1.0	0.14
Pertussis	0.4	0.06
Yaws	0.4	0.06
Measles	0.2	0.03
Other	233.0	33.03
<b>Total</b>	<b>705.4</b>	<b>100%</b>

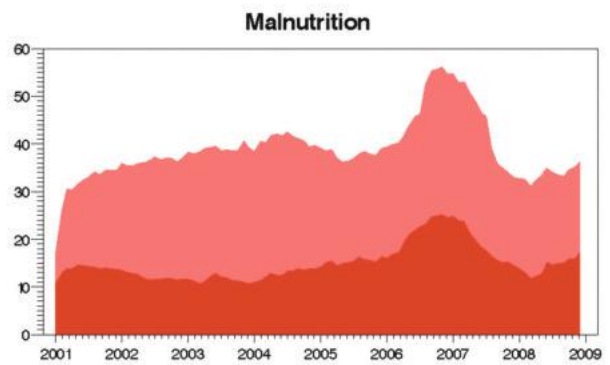
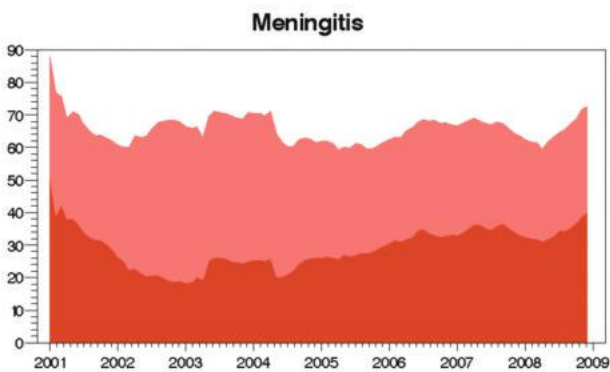
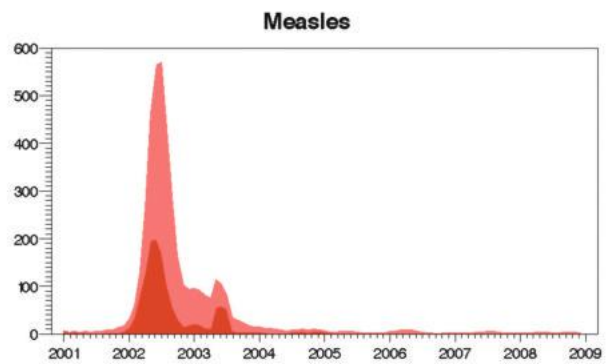
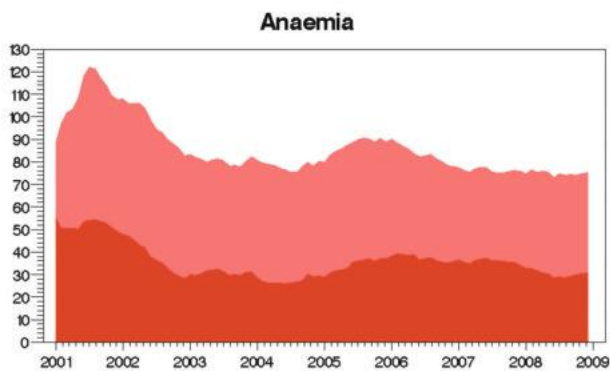
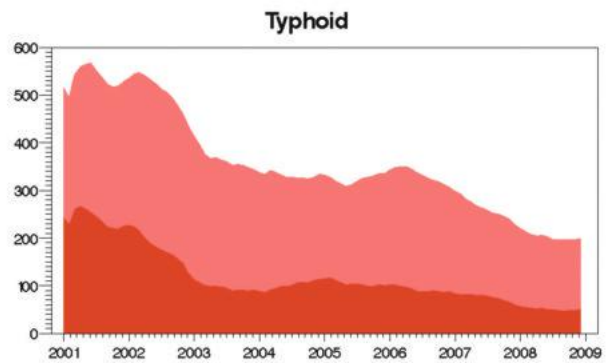
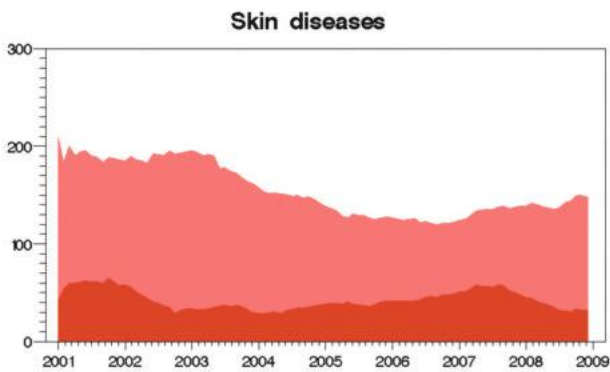
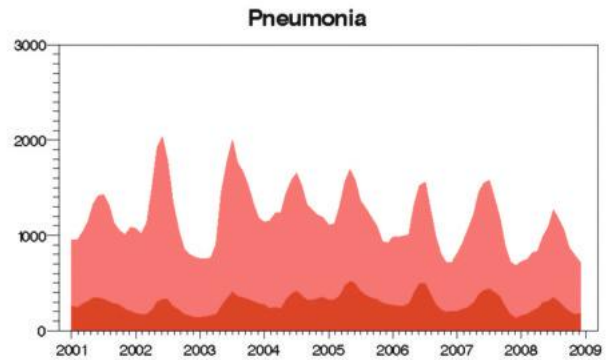
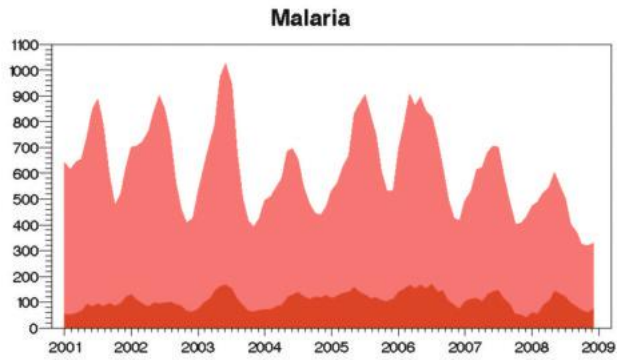


Total bed days (2008)	% of total	
Accidents and injury	53,448	11.59
Pneumonia/ARI	52,525	11.39
Normal delivery	50,143	10.87
Tuberculosis	41,476	8.99
Diarrhoea and enteric	34,094	7.39
Perinatal conditions – CA	25,043	5.43
Obstetric and maternal conditions	24,166	5.19
Malaria and other vector-borne	23,928	5.24
Orthopaedic – Rheumatology	18,434	4.00
HIV and other STIs	16,655	3.61
Skin	15,835	3.43
Cancer	14,474	3.04
Other gastro intestinal	14,004	2.85
Sepsis	13,135	2.50
Chronic respiratory	11,773	2.55
Other genito-urinary	11,544	1.82
Anaemia – Haematology	8,712	1.89
Other non-communicable	8,373	3.14
Cardiovascular	5,810	1.26
Eye	4,496	0.97
Neurological	3,947	0.86
Other infectious	3,305	0.72
URTI/influenza/other	2,017	0.44
Diabetes and other endocrine	1,216	0.26
Vaccine preventable illness	1,198	0.26
ENT	987	0.21
Mental health disorder	571	0.12
<b>Total</b>	<b>461,309</b>	<b>100%</b>

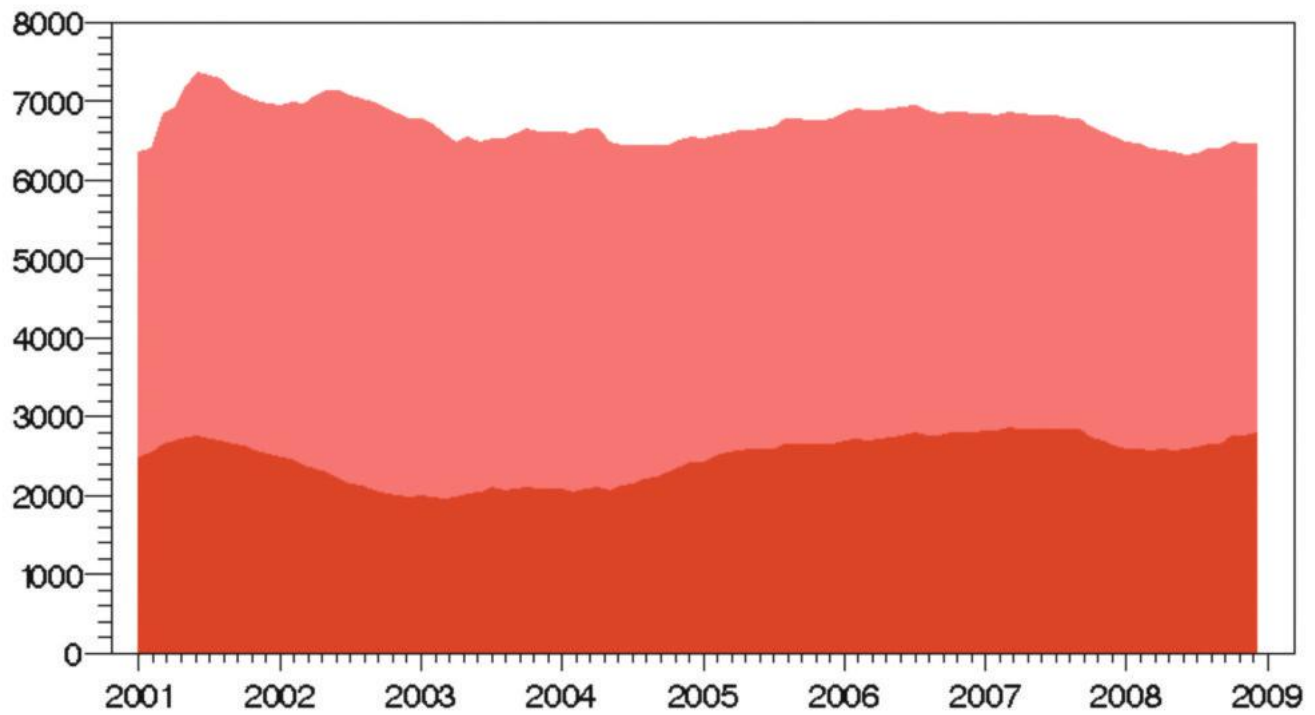
Admissions per 100,000 (2008)			Deaths per 100,000 (2008)		
		% of total			% of total
Normal delivery	804.6	26.54	Perinatal conditions – CA	13.80	13.68
Pneumonia/ARI	404.6	13.35	Pneumonia/ARI	13.18	13.04
Diarrhoea and enteric	252.3	8.32	Sepsis	8.75	8.65
Accidents and injury	241.7	7.97	Diarrhoea and enteric	8.63	8.53
Obstetric and maternal conditions	197.1	6.50	Obstetric and maternal conditions	8.38	8.29
Malaria and other vector-borne	190.7	6.29	HIV and other STIs	6.45	6.38
Perinatal conditions – CA	155.7	5.14	Malaria and other vector-borne	4.92	4.86
Skin	79.5	2.62	Tuberculosis	4.88	4.82
Other gastro-intestinal	75.2	2.48	Chronic respiratory	4.56	4.51
Tuberculosis	69.6	2.30	Cancer	4.19	4.15
Other non-communicable	67.9	2.24	Other gastro-intestinal	3.99	3.95
HIV and other STIs	65.9	2.17	Other non-communicable	3.71	3.67
Orthopaedic – rheumatology	61.6	2.03	Accidents and injury	3.51	3.47
Chronic respiratory	54.3	1.79	Anaemia – Haematology	3.31	3.27
Cancer	53.6	1.77	Cardiovascular	3.02	2.99
Sepsis	46.6	1.54	Other genito-urinary	1.25	1.24
Anaemia – Haematology	43.1	1.42	Neurological	1.05	1.04
Other genito-urinary	43.1	1.42	Skin	1.01	1.00
Cardiovascular	23.5	0.78	Orthopaedic – rheumatology	0.69	0.68
Eye	23.0	0.76	URTI/influenza/other	0.69	0.68
Other infectious	20.8	0.69	Vaccine preventable illness	0.48	0.48
Neurological	18.2	0.60	Diabetes and other endocrine	0.32	0.32
URTI/influenza/other	15.3	0.50	Other infectious	0.16	0.16
Vaccine preventable illness	8.1	0.27	Mental health disorder	0.08	0.08
ENT	7.4	0.24	ENT	0.04	0.04
Diabetes and other endocrine	4.2	0.14	Eye	0.04	0.04
Mental health disorder	3.5	0.12			
<b>Total</b>	<b>3,031.1</b>	<b>100%</b>	<b>Total</b>	<b>101.10</b>	<b>100%</b>



### Monthly Admissions to Health Facilities



# Total

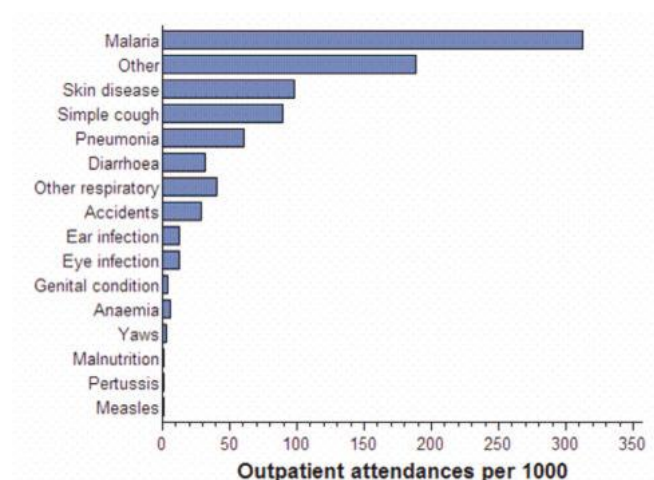




## Data for Momase Region

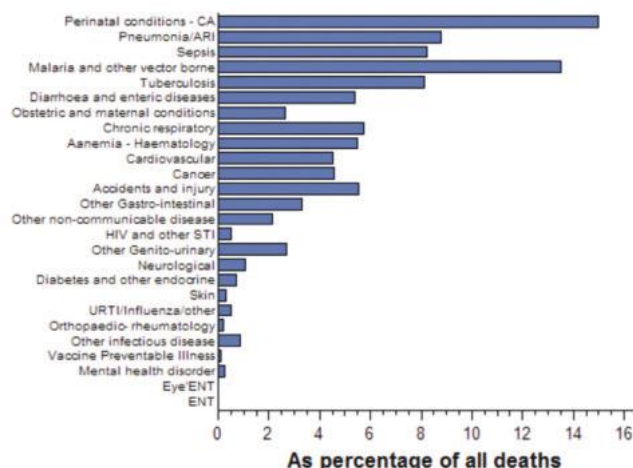
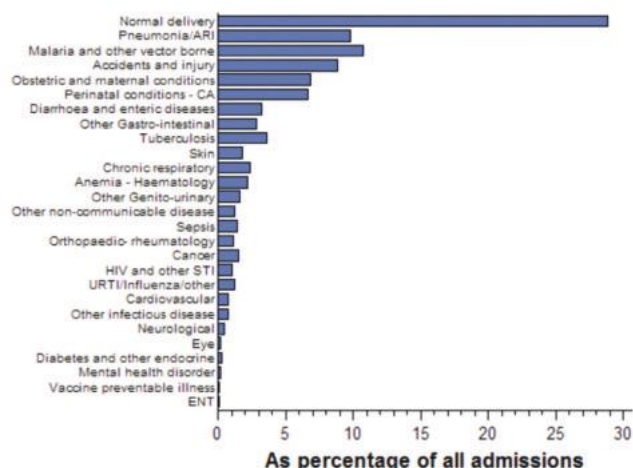
### Leading Causes of Morbidity and Mortality

Outpatients per 1,000 population (2007–2008)		% of total
Malaria	312.7	35.03
Skin	98.2	11.00
Simple cough	89.9	10.07
Pneumonia	61.1	6.84
Other respiratory	40.5	4.54
Diarrhoea	32.3	3.62
Accidents	28.7	3.21
Ear infection	13	1.46
Eye infection	12.5	1.40
Anaemia	5.8	0.65
Genital condition	3.5	0.39
Yaws	3	0.34
Malnutrition	1.5	0.17
Pertussis	1.1	0.12
Measles	0.1	0.01
Other	188.8	21.15
<b>Total</b>	<b>892.7</b>	<b>100%</b>

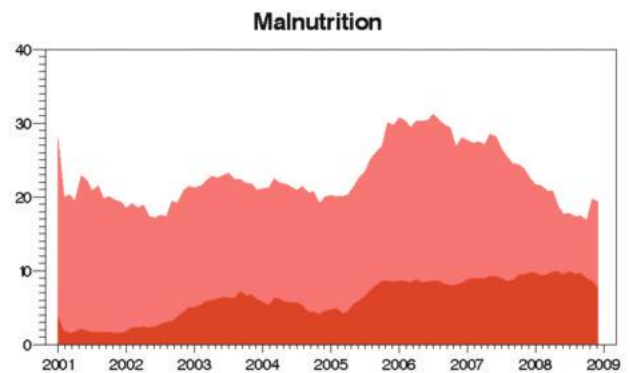
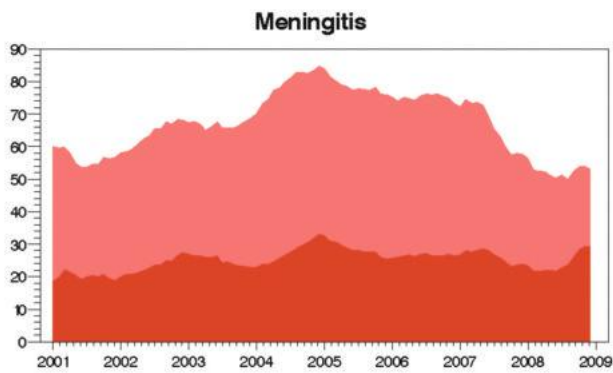
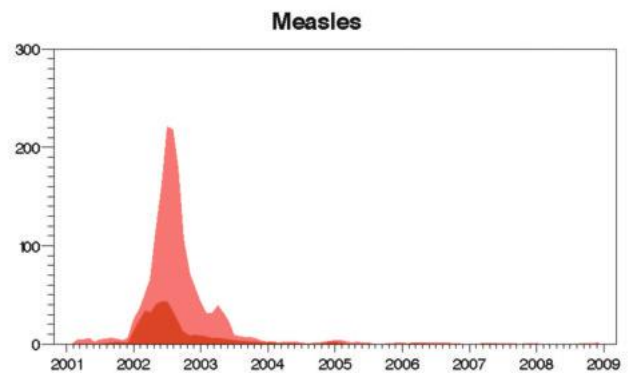
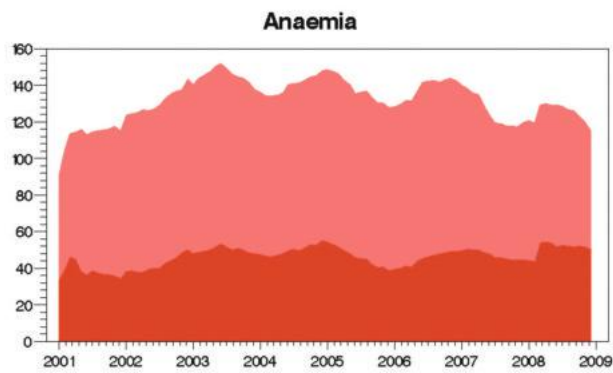
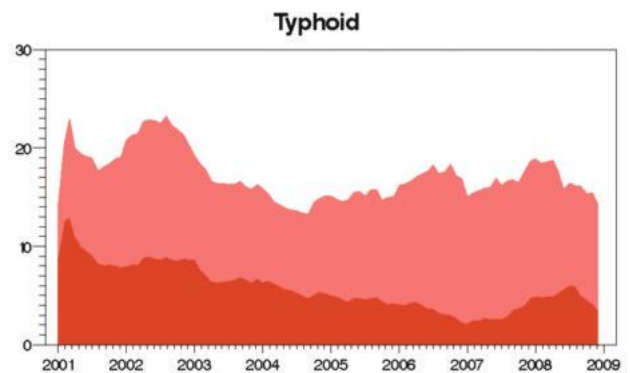
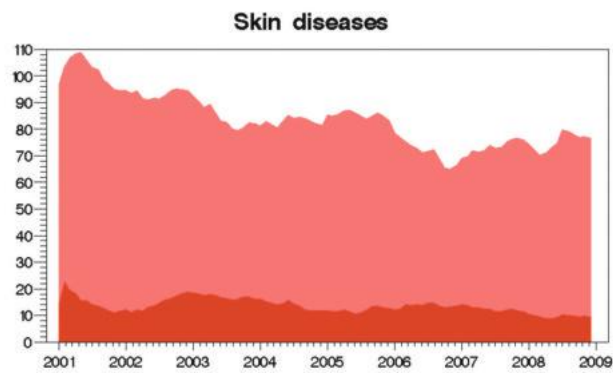
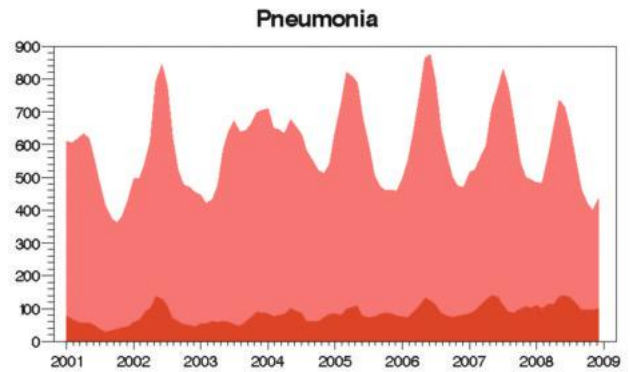
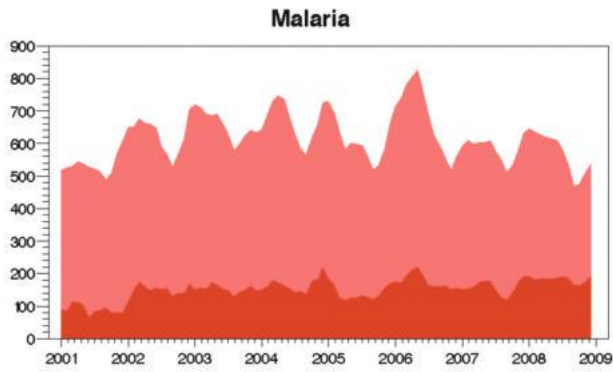


Total bed days (2008)		% of total
Normal delivery	59,603	16.16
Tuberculosis	57,710	15.65
Accidents and injury	35,943	9.74
Pneumonia/ARI	32,069	8.69
Malaria and other vector-borne	28,385	7.70
Perinatal conditions – CA	22,934	6.22
Obstetric and maternal conditions	19,695	5.34
Chronic respiratory	11,672	3.16
Other gastro-intestinal	11,472	3.11
Sepsis	9,901	2.68
Cancer	9,902	2.68
Anaemia – Haematology	9,193	2.49
Diarrhoea and enteric	9,006	2.44
Skin	8,853	2.40
Other genito-urinary	7,436	2.02
Orthopaedic – Rheumatology	5,841	1.58
Other infectious	4,684	1.27
HIV and other STIs	3,840	1.04
Cardiovascular	4,118	1.12
URTI/influenza/other	4,026	1.09
Other non-communicable	6,000	1.63
Neurological	2,379	0.64
Diabetes and other endocrine	1,568	0.43
Eye	934	0.25
Mental health disorder	707	0.19
Vaccine preventable illness	529	0.14
ENT	467	0.13
<b>Total</b>	<b>368,887</b>	<b>100%</b>

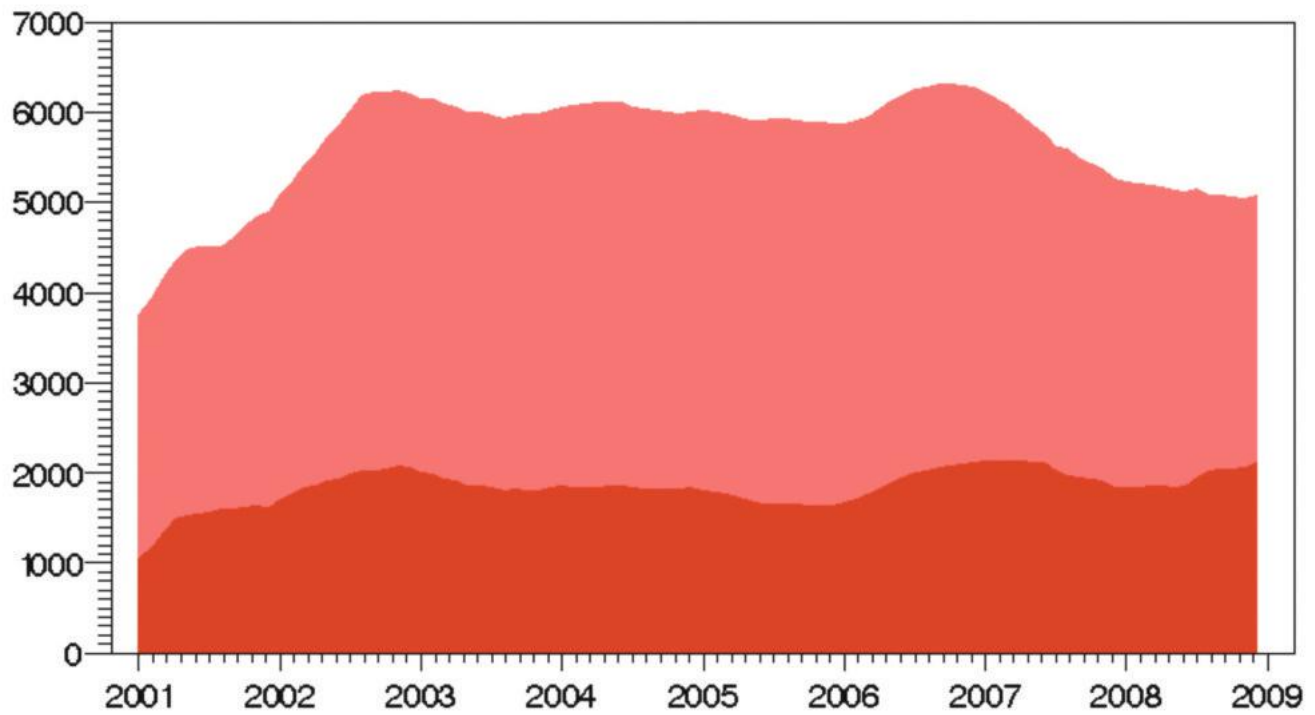
Admissions per 100,000 (2008)	% of total	Deaths per 100,000 (2008)	% of total
Normal delivery	944.2	28.95	14.99
Malaria and other vector-borne	351.0	10.76	13.53
Pneumonia/ARI	320.8	9.84	8.78
Accidents and injury	290.0	8.89	8.23
Obstetric and maternal conditions	226.2	6.94	8.10
Perinatal conditions – CA	217.3	6.66	5.73
Tuberculosis	116.2	3.56	5.55
Diarrhoea and enteric diseases	104.1	3.19	5.48
Other gastro-intestinal	94.2	2.89	5.36
Chronic respiratory	77.2	2.37	4.57
Anaemia – Haematology	71.9	2.20	4.51
Skin	58.8	1.80	3.29
Sepsis	45.7	1.40	2.68
Other genito-urinary	50.8	1.56	2.62
Cancer	48.5	1.49	2.13
URTI/influenza/other	39.0	1.20	1.04
HIV and other STIs	34.2	1.05	0.85
Orthopaedic – Rheumatology	34.6	1.06	0.73
Other infectious disease	26.7	0.82	0.49
Other non-communicable	40.1	1.23	0.49
Cardiovascular	24.9	0.76	0.30
Neurological	16.2	0.50	0.24
Diabetes and other endocrine	9.5	0.29	0.18
Eye	6.3	0.19	0.12
Mental health disorder	4.9	0.15	
Vaccine preventable illness	4.4	0.13	
ENT	3.7	0.11	
<b>Total</b>	<b>3,261.4</b>	<b>100%</b>	<b>93.40</b>
			<b>100%</b>



### Monthly Admissions to Health Facilities



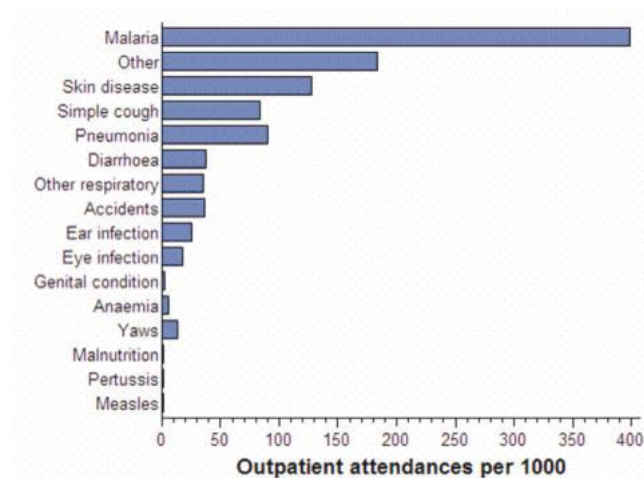
### Total



## Data for Islands Region

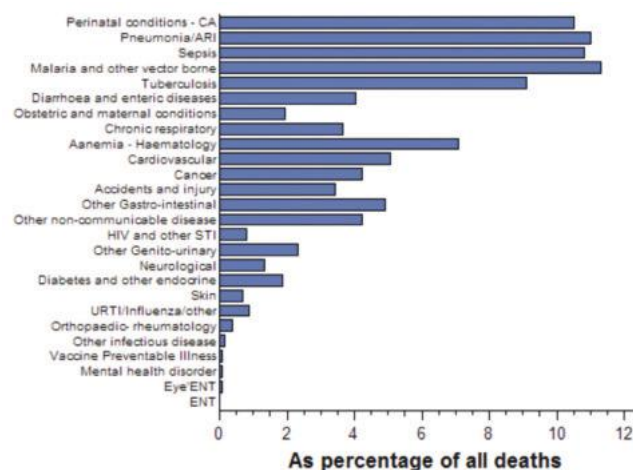
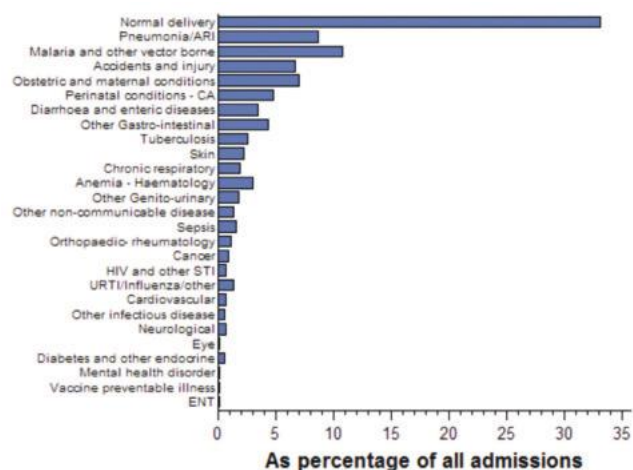
### Leading Causes of Morbidity and Mortality

Outpatients per 1,000 population (2007–2008)		% of total
Malaria	398.9	37.62
Skin	127.9	12.06
Pneumonia	90.7	8.55
Simple cough	83.1	7.84
Diarrhoea	37.8	3.56
Accidents	36.5	3.44
Other respiratory	35.3	3.33
Ear infection	25.8	2.43
Eye infection	18.2	1.72
Yaws	12.8	1.21
Anaemia	5.3	0.50
Genital condition	2.8	0.26
Malnutrition	0.9	0.08
Pertussis	0.4	0.04
Measles	0.1	0.01
Other	183.9	17.34
<b>Total</b>	<b>1,060.4</b>	<b>100%</b>

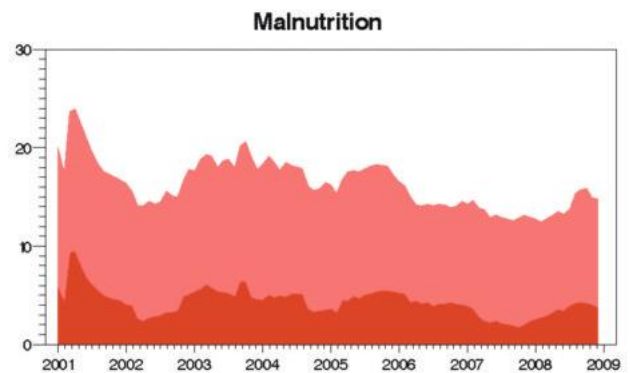
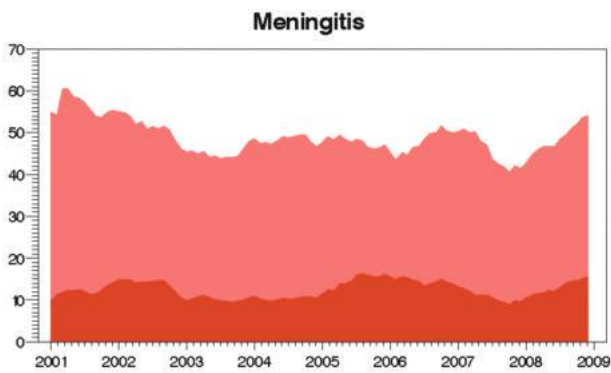
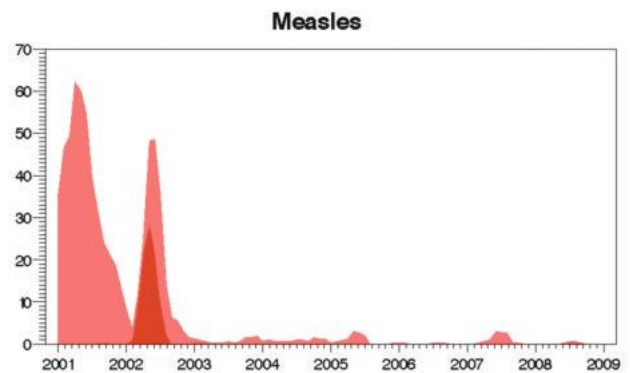
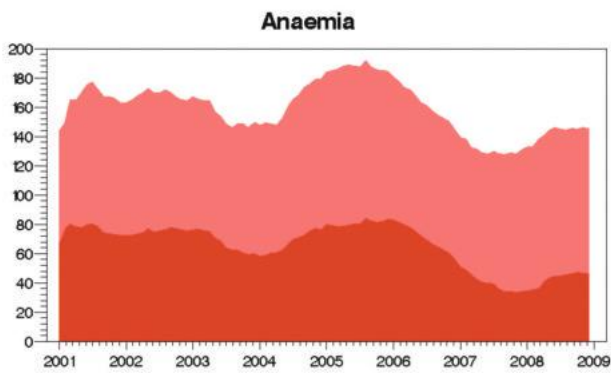
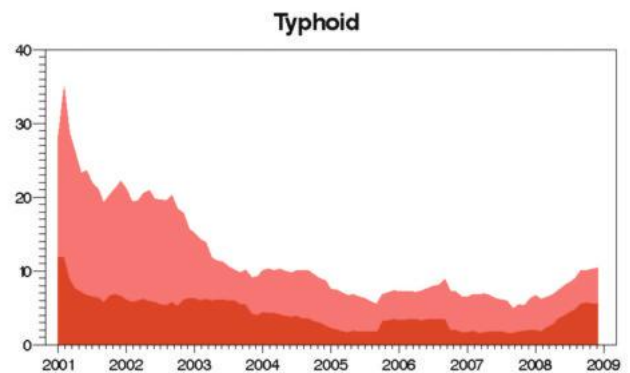
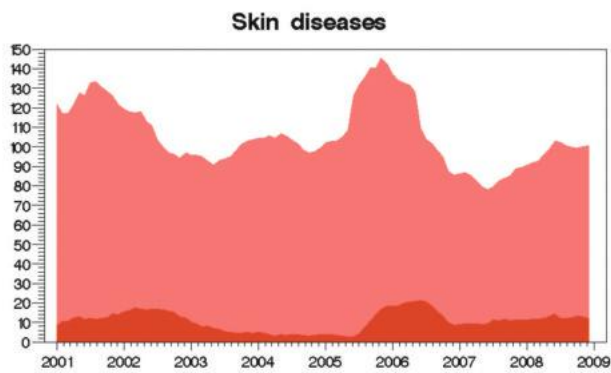
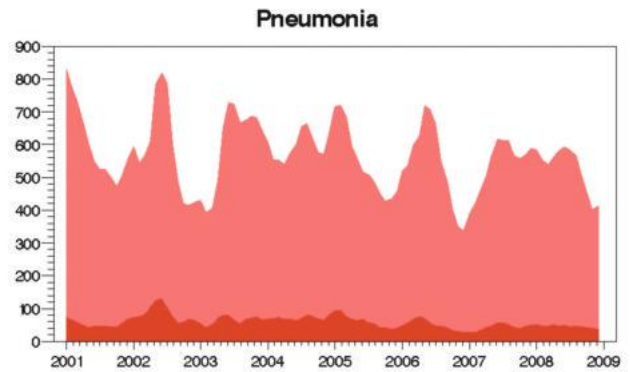
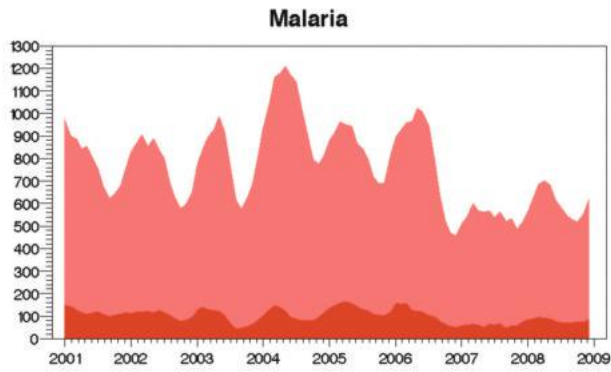


Total bed days (2008)		% of total
Normal delivery	58,705	17.91
Tuberculosis	34,123	10.41
Pneumonia/ARI	31,085	9.49
Malaria and other vector-borne	29,691	9.06
Accidents and injury	29,493	9.00
Obstetric and maternal conditions	19,007	5.80
Perinatal conditions – CA	15,755	4.81
Other gastro-intestinal	13,915	4.25
Anaemia – Haematology	12,094	3.69
Skin	11,592	3.54
Diarrhoea and enteric	10,130	3.09
Chronic respiratory	8,454	2.58
Sepsis	7,927	2.42
Other genito-urinary	7,077	2.16
Orthopaedic – Rheumatology	5,504	1.68
Cancer	5,377	1.64
Other non-communicable	5,003	1.53
Diabetes and other endocrine	4,856	1.48
URTI/influenza/other	4,422	1.35
Cardiovascular	3,652	1.11
Neurological	3,108	0.95
HIV and other STIs	2,666	0.81
Other infectious disease	2,319	0.71
Vaccine preventable illness	557	0.17
Mental health disorder	492	0.15
ENT	410	0.13
Eye	294	0.09
<b>Total</b>	<b>327,708</b>	<b>100%</b>

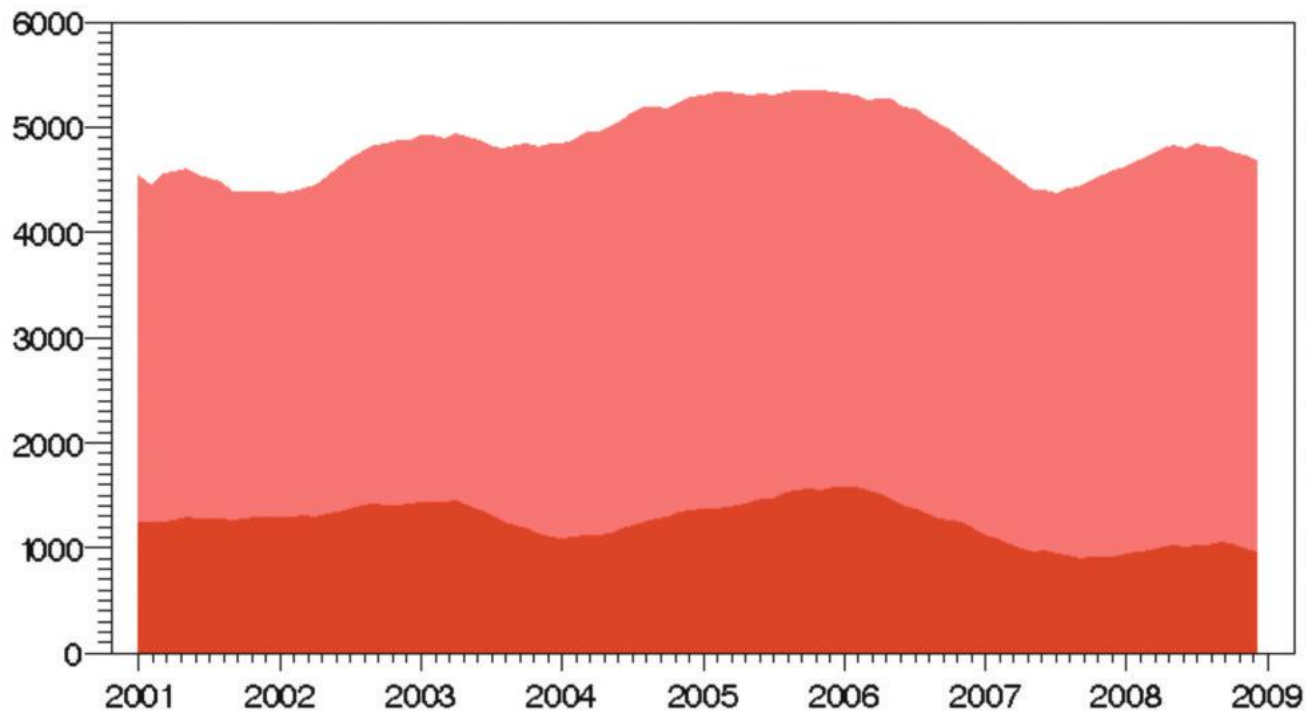
Admissions per 100,000 (2008)			Deaths per 100,000 (2008)		
		% of total			% of total
Normal delivery	2,082.8	33.11	Malaria and other vector-borne	15.9	11.30
Malaria and other vector-borne	677.7	10.77	Pneumonia/ARI	15.4	10.99
Pneumonia/ARI	544.6	8.66	Sepsis	15.2	10.83
Obstetric and maternal conditions	439.1	6.98	Perinatal conditions – CA	14.8	10.52
Accidents and injury	420.9	6.69	Tuberculosis	12.8	9.12
Perinatal conditions – CA	301.6	4.80	Anaemia – Haematology	10.0	7.09
Other gastro-intestinal	272.3	4.33	Cardiovascular	7.12	5.07
Diarrhoea and enteric	215.0	3.42	Other gastro-intestinal	6.90	4.91
Anaemia – Haematology	189.8	3.02	Cancer	5.91	4.21
Tuberculosis	157.5	2.50	Other non-communicable	5.91	4.21
Skin	138.5	2.20	Diarrhoea and enteric	5.69	4.05
Chronic respiratory	118.0	1.88	Chronic respiratory	5.15	3.66
Other genito-urinary	110.5	1.76	Accidents and injury	4.82	3.43
Sepsis	93.6	1.49	Other genito-urinary	3.28	2.34
URTI/influenza/other	81.7	1.30	Obstetric and maternal conditions	2.74	1.95
Other non-communicable	80.7	1.28	Diabetes and other endocrine	2.63	1.87
Orthopaedic – rheumatology	69.4	1.10	Neurological	1.86	1.33
Cancer	59.1	0.94	URTI/influenza/other	1.21	0.86
Cardiovascular	45.8	0.73	HIV and other STIs	1.10	0.78
HIV and other STIs	44.4	0.71	Skin	0.99	0.70
Neurological	43.2	0.69	Orthopaedic – rheumatology	0.55	0.39
Other infectious	38.0	0.60	Other infectious	0.22	0.16
Diabetes and other endocrine	36.0	0.57	Eye	0.11	0.08
Mental health disorder	9.0	0.14	Mental health disorder	0.11	0.08
Vaccine preventable illness	7.9	0.13	Vaccine preventable illness	0.11	0.08
ENT	6.5	0.10			
Eye	6.2	0.10			
<b>Total</b>	<b>6,289.8</b>	<b>100%</b>	<b>Total</b>	<b>140.50</b>	<b>100%</b>



Monthly Admissions to Health Facilities



### Total





## Time Trends

### Leading Causes of Admission, Percentage Breakdown by Cause (1998–2008)

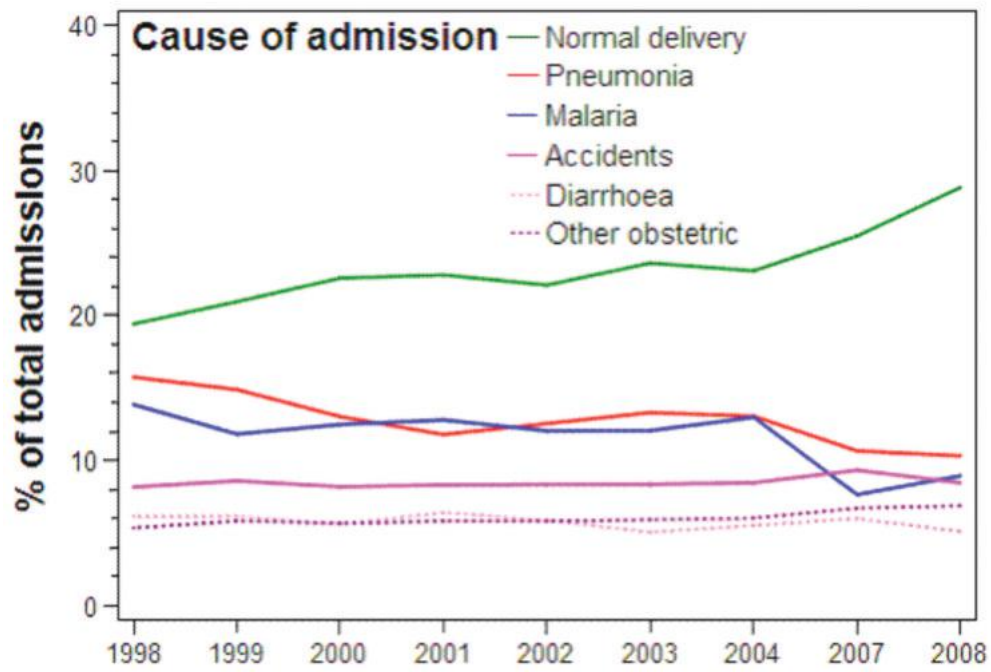
Cause of admission (1998)		Cause of admission (2003)		Cause of admission (2008)	
Normal delivery	19.42	Normal delivery	23.62	Normal delivery	28.83
Pneumonia/ARI	15.74	Pneumonia/ARI	13.30	Pneumonia/ARI	10.30
Malaria and other vector-borne	13.85	Malaria and other vector-borne	12.05	Malaria and other vector-borne	8.93
Accidents and injury	8.16	Accidents and injury	8.34	Accidents and injury	8.45
Diarrhoea and enteric	6.14	Obstetric and maternal conditions	5.90	Obstetric and maternal conditions	6.86
Obstetric and maternal conditions	5.33	Diarrhoea and enteric	5.04	Perinatal conditions – CA	5.31
Perinatal conditions – CA	3.46	Perinatal conditions – CA	4.88	Diarrhoea and enteric	5.09
Skin	3.42	Other gastro-intestinal	3.32	Other gastro-intestinal	3.34
Other gastro-intestinal	3.02	Tuberculosis	2.81	Tuberculosis	3.07
Chronic respiratory	2.58	Chronic respiratory	2.77	Skin	2.29
Tuberculosis	2.54	Other genito-urinary	2.11	Chronic respiratory	2.07
Other non-communicable	1.96	Other non-communicable	2.04	Anaemia – Haematology	2.03
Orthopaedic – Rheumatology	1.95	Anaemia – Haematology	1.80	Other genito-urinary	1.68
Other genito-urinary	1.82	Skin	1.77	Sepsis	1.55
Anaemia – Haematology	1.73	Orthopaedic – Rheumatology	1.50	Orthopaedic – Rheumatology	1.42
HIV and other STIs	1.37	HIV and other STIs	1.45	HIV and other STIs	1.32
URTI/influenza/other	1.19	Cancer	1.22	Cancer	1.36
Sepsis	1.18	Sepsis	1.20	Other non-communicable	1.11
Other infectious	1.18	URTI/influenza/other	1.10	URTI/influenza/other	1.04
Cancer	1.04	Other infectious	0.92	Cardiovascular	0.83
Cardiovascular	0.87	Cardiovascular	0.83	Other infectious	0.77
Vaccine preventable illness	0.61	Vaccine preventable illness	0.51	Neurological	0.63
Neurological	0.40	Neurological	0.44	Eye	0.36
Eye	0.35	Eye	0.43	Diabetes and other endocrine	0.36
ENT	0.31	Mental health disorder	0.26	Mental health disorder	0.21
Mental health disorder	0.25	ENT	0.22	ENT	0.17
Diabetes and other endocrine	0.14	Diabetes and other endocrine	0.18	Vaccine preventable Illness	0.17

**Total Length of Stay (bed days), Percentage Breakdown by Cause (1998–2008)**

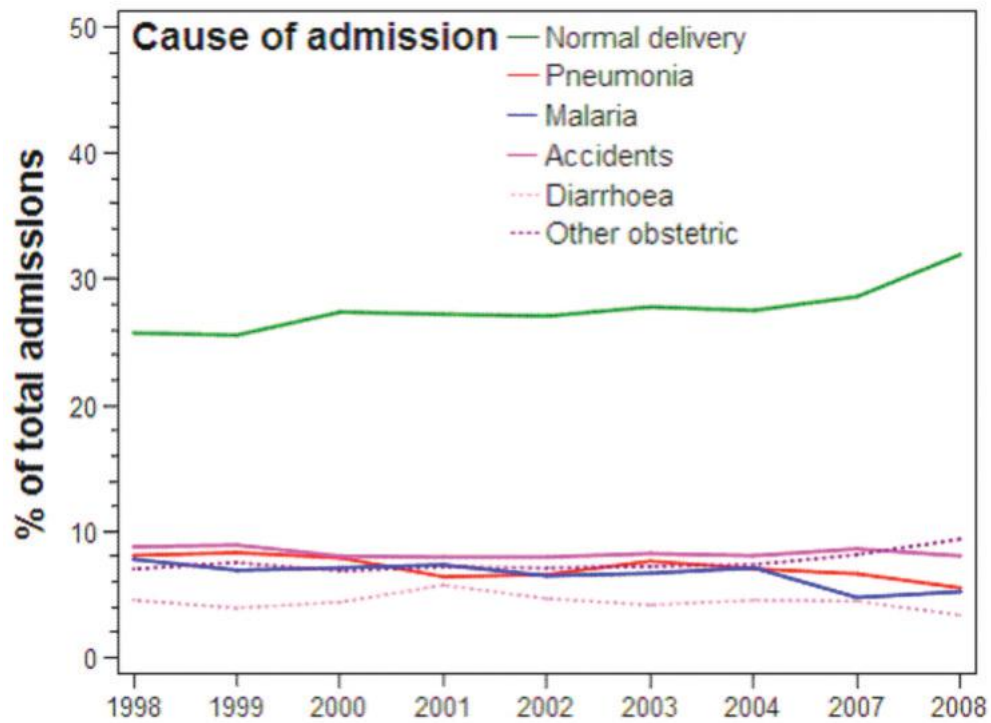
Cause of admission (1998)		Cause of admission (2003)		Cause of admission (2008)	
Pneumonia/ARI	14.31	Tuberculosis	12.89	Normal delivery	14.49
Tuberculosis	10.94	Normal delivery	12.15	Tuberculosis	12.54
Malaria and other vector-borne	10.50	Pneumonia/ARI	11.86	Accidents and injury	10.48
Normal delivery	9.97	Accidents and injury	9.77	Pneumonia/ARI	9.02
Accidents and injury	9.18	Malaria and other vector-borne	8.95	Malaria and other vector-borne	6.65
Diarrhoea and enteric	6.06	Obstetric and maternal conditions	4.98	Perinatal conditions – CA	5.00
Obstetric and maternal conditions	4.41	Perinatal conditions – CA	4.98	Obstetric and maternal conditions	5.13
Skin	4.26	Diarrhoea and enteric	4.52	Diarrhoea and enteric	4.22
Perinatal conditions – CA	3.67	Other gastro-intestinal	3.60	Other gastro-intestinal	3.27
Chronic respiratory	3.17	Chronic respiratory	3.29	Skin	3.09
Other gastro-intestinal	3.02	Other genito-urinary	2.57	Sepsis	2.61
Orthopaedic – Rheumatology	2.89	Cancer	2.25	Chronic respiratory	2.69
Other genito-urinary	2.22	Skin	2.18	Orthopaedic – Rheumatology	2.45
Cancer	1.97	Anaemia – Haematology	2.08	Cancer	2.51
Other non-communicable	1.90	Orthopaedic – Rheumatology	2.03	Anaemia – Haematology	2.40
Anaemia – Haematology	1.86	Other non-communicable	1.80	Other genito-urinary	2.18
Sepsis	1.55	HIV and other STIs	1.69	HIV and other STIs	1.89
HIV and other STIs	1.51	Sepsis	1.51	Mental health disorder	1.54
Other infectious	1.26	Cardiovascular	1.21	Cardiovascular	1.27
Cardiovascular	1.12	Mental health disorder	1.17	Other non-communicable	2.11
URTI/influenza/other	1.01	URTI/influenza/other	1.01	Neurological	1.03
Mental health disorder	0.97	Other infectious	0.99	URTI/influenza/other	0.98
Neurological	0.72	Neurological	0.87	Other infectious	0.89
Vaccine preventable illness	0.57	Vaccine preventable illness	0.54	Diabetes and other endocrine	0.76
Diabetes and other endocrine	0.33	Eye	0.50	Eye	0.44
Eye	0.32	Diabetes and other endocrine	0.40	Vaccine preventable illness	0.19
ENT	0.29	ENT	0.20	ENT	0.16

### Leading Causes of Admission

#### All Health Facilities



#### Hospitals Only



## Age–Sex Breakdown

### Admissions by Age and Sex

	Female					Male				
	<1 year	1–4 years	5–14 years	15–44 years	45+ years	<1 year	1–4 years	5–14 years	15–44 years	45+ years
Anaemia – Haematology	102	405	382	1,378	466	142	474	412	533	438
Accidents and injury	142	552	1,216	4,771	939	186	796	2,286	7,346	1,449
Cancer	11	16	43	1,158	875	9	24	41	425	568
Cardiovascular	43	46	84	381	359	54	59	81	325	493
Chronic respiratory	45	80	74	927	1,269	80	164	139	638	1,410
Diabetes and other endocrine	7	16	19	214	189	9	10	14	126	247
Diarrhoea and enteric	981	1,210	629	2,030	671	1,490	1,623	848	1,698	684
ENT	10	18	25	82	34	12	29	42	114	34
Eye	7	37	31	138	160	17	46	63	98	235
HIV and other STIs	31	32	32	1,927	311	31	41	38	454	128
Malaria and other vector-borne	965	2,540	1,748	3,889	1,124	1,398	3,145	1,975	3,049	1,013
Mental health disorder		3	5	141	27	2	6	20	254	40
Neurological	58	170	64	190	151	61	219	105	196	256
Normal delivery			94	66,736	434					
Obstetric and maternal conditions			38	15,635	341					
Orthopaedic – Rheumatology	36	97	271	695	338	54	131	450	756	483
Other gastro-intestinal	48	95	298	2,992	658	79	197	319	1,985	1,112
Other genito-urinary	9	47	101	1,599	512	39	128	160	561	771
Other infectious	83	111	135	386	111	109	133	189	427	111
Other non-communicable	386	398	178	728	199	484	514	236	464	260
Perinatal conditions – CA	5,890					6,507				
Pneumonia/ARI	4,817	2,432	644	1,648	1,134	6,967	3,024	749	1,469	1,151
Sepsis	542	312	215	334	105	728	419	259	346	133
Skin	285	328	466	1,114	342	311	418	516	1,088	465
Tuberculosis	181	352	388	1,869	706	279	433	421	1,547	976
URTI/influenza/other	554	189	42	156	82	813	294	71	144	87
Vaccine preventable illness	78	54	51	18	3	60	66	59	7	3
<b>Total</b>	<b>15,302</b>	<b>9,540</b>	<b>7,275</b>	<b>111,241</b>	<b>11,545</b>	<b>19,921</b>	<b>12,393</b>	<b>9,493</b>	<b>24,050</b>	<b>12,547</b>

## Inpatient Deaths by Age and Sex

	Female					Male				
	<1 year	1-4 years	5-14 years	15-44 years	45+ years	<1 year	1-4 years	5-14 years	15-44 years	45 years+
Anaemia – Haematology	9	21	17	81	41	19	15	15	45	52
Accidents and injury	4	11	11	43	17	3	12	25	128	33
Cancer			1	75	77	2	2	7	48	97
Cardiovascular	7	6	10	62	59	14	4	7	64	82
Chronic respiratory	3	1	5	40	109	1	6	3	26	134
Diabetes and other endocrine		1	2	8	26		3		12	17
Diarrhoea and enteric	26	44	12	49	27	32	53	31	64	62
ENT				1						
Eye	1			2				1		
HIV and other STIs	10	7	2	90	11	4	5	1	72	14
Malaria and other vector-borne	25	45	43	100	66	34	50	43	116	67
Mental health disorder				2				2	4	1
Neurological	2	3	3	11	20	2	2	4	19	49
Obstetric and maternal conditions			1	322	10					
Orthopaedic – Rheumatology	1	1	4	6	5		2	1	5	4
Other gastro-intestinal	5	3	5	48	39	6	9	11	86	69
Other genito-urinary			6	32	24	3	1	1	40	46
Other infectious	3		1	6	1	1	1	1	2	5
Other non-communicable	30	24	9	25	23	28	27	13	32	28
Perinatal conditions – CA	367					472				
Pneumonia/ARI	189	45	10	30	49	189	48	13	54	86
Sepsis	74	49	34	88	43	85	70	30	104	55
Skin		3	1	9	11	5	3	3	7	7
Tuberculosis	5	18	11	141	76	6	18	20	120	126
URTI/influenza/ other	9	4	1	3	3	14	2	1	5	1
Vaccine preventable illness	2	1	1			2	4	5	1	1
<b>Total</b>	<b>772</b>	<b>287</b>	<b>191</b>	<b>1,276</b>	<b>737</b>	<b>922</b>	<b>337</b>	<b>238</b>	<b>1,054</b>	<b>1,036</b>

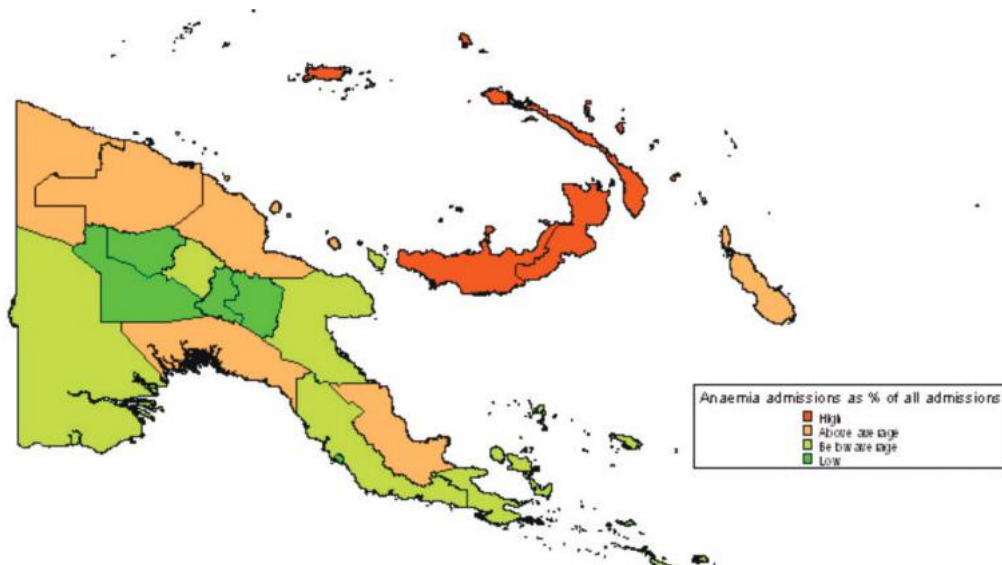
## Key Diseases and Conditions

### Anaemia

#### Anaemia Admissions

		Total Admissions from Anaemia								Average	Rate
		2001	2002	2003	2004	2005	2006	2007	2008	2006–2008	per 100,000
1	Western	113	94	62	57	81	69	97	95	87.0	45.2
2	Gulf	94	80	64	35	83	110	137	95	114.0	89.1
3	Central	57	55	55	68	60	55	107	38	66.7	30.9
4	NCD	133	263	85	276	131	288	167	175	210.0	64.5
5	MBP	194	207	255	248	232	164	201	168	177.7	71.0
6	Oro	170	213	254	254	210	169	163	127	153.0	95.4
7	SHP	274	175	186	142	182	177	172	255	201.3	27.6
8	Enga	68	64	89	84	75	34	47	67	49.3	13.7
9	WHP	328	334	379	324	350	319	323	275	305.7	58.4
10	Simbu	299	162	124	116	177	163	118	141	140.7	47.8
11	EHP	99	186	134	193	206	153	176	146	158.3	31.4
12	Morobe	346	288	325	398	324	389	329	433	383.7	58.6
13	Madang	430	522	500	535	537	497	309	459	421.7	95.8
14	ESP	264	450	252	470	199	372	362	272	335.3	83.9
15	WSP	188	220	141	141	131	184	151	187	174.0	79.3
16	Manus	125	184	128	114	128	140	50	38	76.0	146
17	NIP	634	486	389	315	461	352	417	510	426.3	295
18	ENB	393	540	627	664	555	504	591	550	548.3	210
19	WNB	496	436	300	612	641	322	227	437	328.7	140
20	ARB	279	296	326	379	411	400	208	205	271.0	137
<b>Southern</b>		761	912	775	938	797	855	872	698	808.3	63.5
<b>Highlands</b>		1,068	921	912	859	990	846	836	884	855.3	35.5
<b>Momase</b>		1,228	1,480	1,218	1,544	1,191	1,442	1,151	1,351	1,314.7	76.7
<b>Islands</b>		1,927	1,942	1,770	2,084	2,196	1,718	1,493	1,740	1,650.3	185
<b>PNG TOTAL</b>		<b>4,984</b>	<b>5,255</b>	<b>4,675</b>	<b>5,425</b>	<b>5,174</b>	<b>4,861</b>	<b>4,352</b>	<b>4,673</b>	<b>4,628.7</b>	<b>73.6</b>

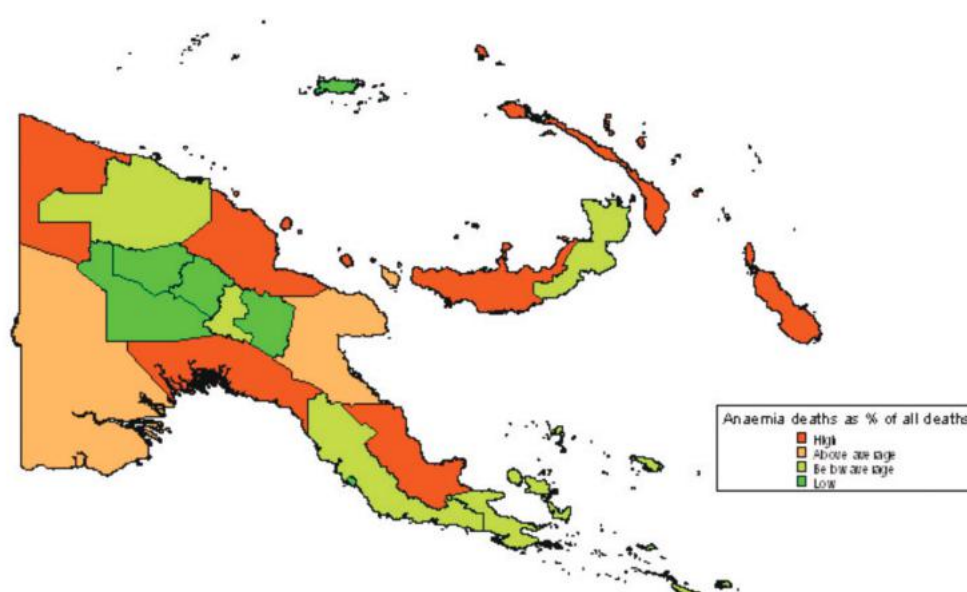
#### Anaemia Admissions as a Percentage of All Admissions



### Anaemia Deaths

		Total Deaths from Anaemia								Average 2006–2008	Rate per 100,000
		2001	2002	2003	2004	2005	2006	2007	2008		
1	Western	12	10	10	2	6	11	10	9	10.0	5.2
2	Gulf	4	3	8	3	5	10	5	4	6.3	4.9
3	Central	2	2	4	1	4	2	5	2	3.0	1.4
4	NCD	0	16	0	18	10	20	10	12	14.0	4.3
5	MBP	14	13	10	7	12	12	7	12	10.3	4.1
6	Oro	8	13	7	11	19	8	18	3	9.7	6.0
7	SHP	20	15	13	6	8	10	11	19	13.3	1.8
8	Enga	3	5	9	6	7	6	3	7	5.3	1.5
9	WHP	10	15	11	20	23	24	26	18	22.7	4.3
10	Simbu	7	14	4	6	9	10	10	12	10.7	3.6
11	EHP	4	16	7	14	5	13	14	14	13.7	2.7
12	Morobe	22	19	23	41	39	33	33	39	35.0	5.3
13	Madang	26	29	22	25	21	19	20	15	18.0	4.1
14	ESP	15	25	13	16	13	17	11	8	12.0	3.0
15	WSP	17	19	9	15	12	15	9	9	11.0	5.0
16	Manus	1	2	2	1	2	3	2	2	2.3	4.5
17	NIP	19	12	7	5	9	15	15	19	16.3	11.3
18	ENB	13	10	31	34	25	12	15	22	16.3	6.2
19	WNB	20	21	13	26	30	22	1	24	15.7	6.7
20	ARB	16	12	21	14	21	14	12	18	14.7	7.4
<b>Southern Highlands</b>		761	40	57	39	42	56	63	55	42	53.3
<b>Momase</b>		1,068	44	65	44	52	52	63	64	70	65.7
<b>Islands</b>		1,228	80	92	67	97	85	84	73	71	76.0
<b>Islands</b>		1,927	69	57	74	80	87	66	45	85	65.3
<b>PNG TOTAL</b>		<b>233</b>	<b>271</b>	<b>224</b>	<b>271</b>	<b>280</b>	<b>276</b>	<b>237</b>	<b>268</b>	<b>260.3</b>	<b>4.1</b>

### Anaemia Deaths as a Percentage of All Reported Deaths

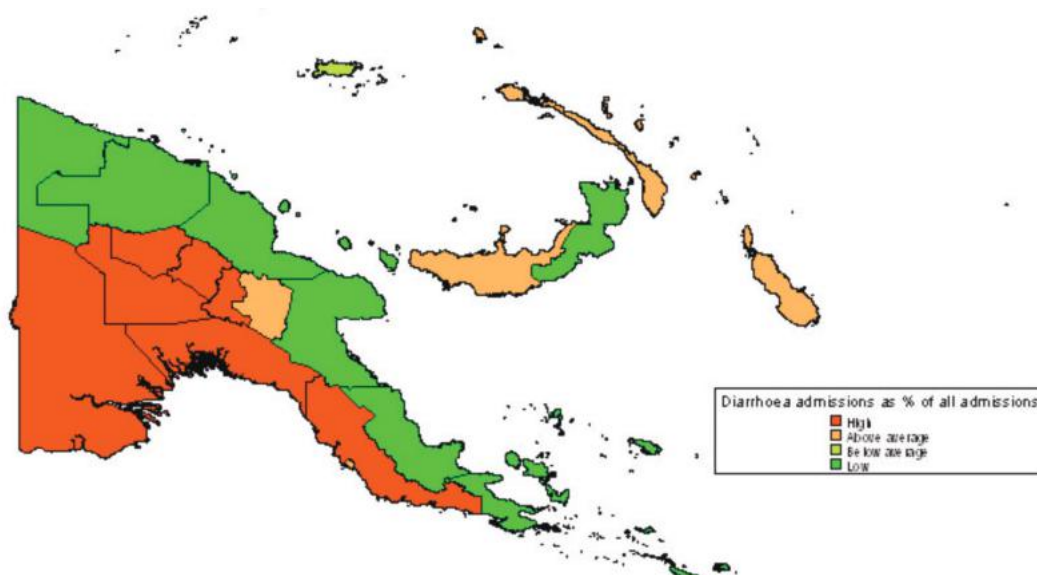


## Diarrhoea

### Diarrhoea Admissions

		Total Admissions from Diarrhoea								Average	Rate
		2001	2002	2003	2004	2005	2006	2007	2008	2006–2008	per 100,000
1	Western	307	219	194	136	220	245	291	363	299.7	156
2	Gulf	202	203	231	193	214	291	355	339	328.3	257
3	Central	141	167	182	246	194	292	201	209	234.0	108
4	NCD	168	420	74	174	73	771	1,026	838	878.3	270
5	MBP	178	321	187	158	174	214	341	302	285.7	114
6	Oro	124	156	123	329	201	108	176	223	169.0	105
7	SHP	887	613	417	523	705	1,156	1,245	1,105	1,168.7	160
8	Enga	498	538	481	493	503	791	712	550	684.3	190
9	WHP	943	933	811	882	859	1,403	1,299	1,078	1,260.0	241
10	Simbu	286	296	260	322	393	636	503	527	555.3	189
11	EHP	312	383	433	381	543	572	521	567	553.3	110
12	Morobe	381	317	277	250	272	331	424	439	398.0	60.8
13	Madang	467	522	398	476	496	424	385	586	465.0	106
14	ESP	307	196	294	313	234	344	347	285	325.3	81.4
15	WSP	257	239	210	307	194	154	175	212	180.3	82.2
16	Manus	55	59	113	94	49	94	49	80	74.3	143
17	NIP	392	255	304	239	308	282	312	332	308.7	213
18	ENB	396	501	348	401	421	457	558	482	499.0	191
19	WNB	384	375	304	421	454	408	386	505	433.0	184
20	ARB	276	248	402	277	369	434	350	358	380.7	193
<b>Southern</b>		761	1,120	1,486	991	1,236	1,076	1,921	2,390	2,274	2,195.0
<b>Highlands</b>		1,068	2,926	2,763	2,402	2,601	3,003	4,558	4,280	3,827	4,221.7
<b>Momase</b>		1,228	1,412	1,274	1,179	1,346	1,196	1,253	1,331	1,522	1,368.7
<b>Islands</b>		1,927	1,503	1,438	1,471	1,432	1,601	1,675	1,655	1,757	1,695.7
<b>PNG TOTAL</b>		<b>6,961</b>	<b>6,961</b>	<b>6,043</b>	<b>6,615</b>	<b>6,876</b>	<b>9,407</b>	<b>9,656</b>	<b>9,380</b>	<b>9,481.0</b>	<b>151</b>

### Diarrhoea Admissions as a Percentage of All Admissions

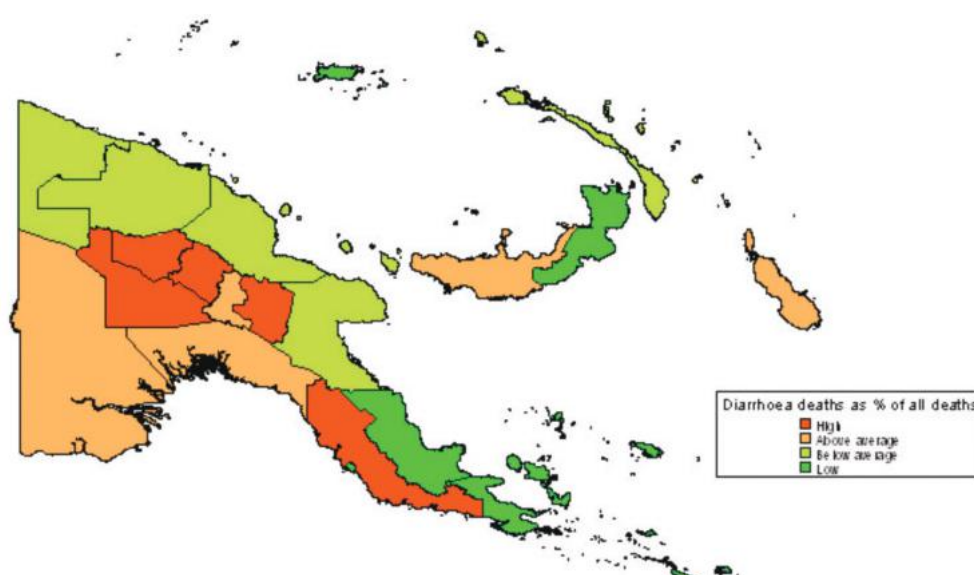




### Diarrhoea Deaths

		Total Deaths from Diarrhoea								Average 2006– 2008	Rate per 100,000
		2001	2002	2003	2004	2005	2006	2007	2008		
1	Western	11	10	15	7	8	7	18	10	11.7	6.1
2	Gulf	5	12	6	7	4	5	6	9	6.7	5.2
3	Central	7	6	5	10	4	6	6	5	5.7	2.6
4	NCD	0	8	2	2	0	0	9	9	6.0	1.8
5	MBP	6	12	4	1	8	5	10	4	6.3	2.5
6	Oro	3	10	13	22	14	5	5	4	4.7	2.9
7	SHP	27	19	13	9	23	35	42	51	42.7	5.9
8	Enga	17	21	18	12	12	25	28	15	22.7	6.3
9	WHP	29	50	31	20	28	52	87	34	57.7	11.0
10	Simbu	7	12	2	9	5	14	16	12	14.0	4.8
11	EHP	3	10	25	12	45	27	34	35	32.0	6.3
12	Morobe	29	15	23	18	29	26	36	42	34.7	5.3
13	Madang	12	19	25	16	21	10	10	22	14.0	3.2
14	ESP	23	10	18	17	10	18	8	10	12.0	3.0
15	WSP	16	11	18	19	11	7	7	8	7.3	3.3
16	Manus	3	3	5	5	2	4	0	1	1.7	3.2
17	NIP	7	6	6	5	9	8	6	11	8.3	5.8
18	ENB	11	15	13	9	4	9	13	11	11.0	4.2
19	WNB	7	12	5	5	10	24	11	11	15.3	6.5
20	ARB	8	5	11	8	15	15	8	5	9.3	4.7
<b>Southern</b>		<b>761</b>	<b>32</b>	<b>58</b>	<b>45</b>	<b>49</b>	<b>38</b>	<b>28</b>	<b>54</b>	<b>41</b>	<b>41.0</b>
<b>Highlands</b>		<b>1,068</b>	<b>83</b>	<b>112</b>	<b>89</b>	<b>62</b>	<b>113</b>	<b>153</b>	<b>207</b>	<b>147</b>	<b>169.0</b>
<b>Momase</b>		<b>1,228</b>	<b>80</b>	<b>55</b>	<b>84</b>	<b>70</b>	<b>71</b>	<b>61</b>	<b>61</b>	<b>82</b>	<b>68.0</b>
<b>Islands</b>		<b>1,927</b>	<b>36</b>	<b>41</b>	<b>40</b>	<b>32</b>	<b>40</b>	<b>60</b>	<b>38</b>	<b>39</b>	<b>45.7</b>
<b>PNG TOTAL</b>		<b>231</b>	<b>266</b>	<b>258</b>	<b>213</b>	<b>262</b>	<b>302</b>	<b>360</b>	<b>309</b>	<b>323.7</b>	<b>5.1</b>

### Diarrhoea Deaths as a Percentage of All Reported Deaths

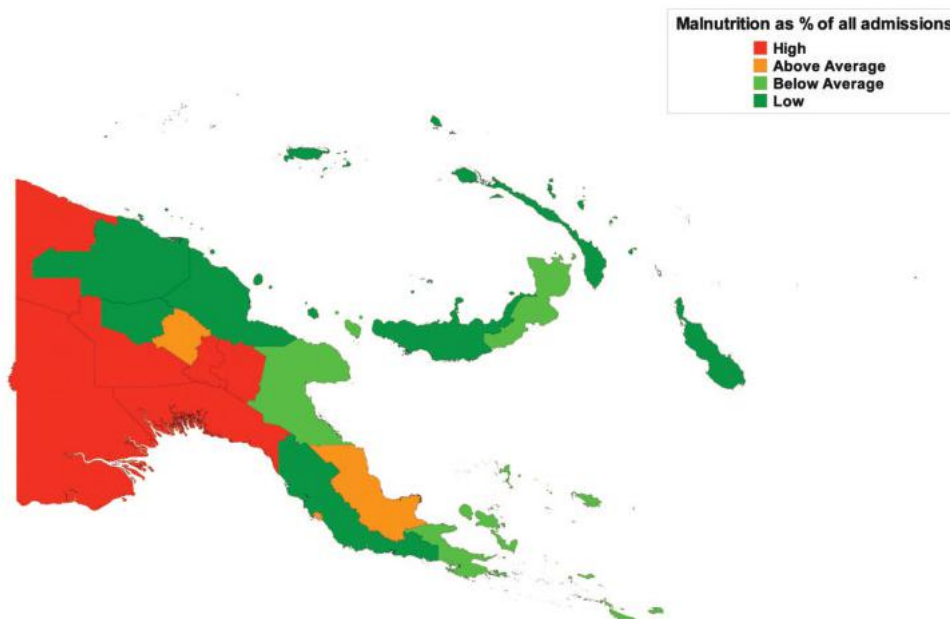


## Malnutrition

### Malnutrition Admissions

		Total Admissions from Malnutrition								Average 2006– 2008	Rate per 100,000
		2001	2002	2003	2004	2005	2006	2007	2008		
1	Western	30	22	25	17	26	21	44	43	36.0	18.7
2	Gulf	23	24	37	15	68	55	61	44	53.3	41.7
3	Central	17	17	23	6	9	7	23	10	13.3	6.2
4	NCD	57	95	88	92	22	86	172	135	131.0	40.2
5	MBP	48	70	40	37	33	50	42	50	47.3	18.9
6	Oro	43	28	34	72	48	41	28	20	29.7	18.5
7	SHP	56	53	48	64	84	180	67	60	102.3	14.0
8	Enga	36	34	50	42	29	20	25	17	20.7	5.7
9	WHP	69	91	85	104	122	140	109	82	110.3	21.1
10	Simbu	113	100	99	84	75	102	69	124	98.3	33.4
11	EHP	61	133	170	148	144	167	85	149	133.7	26.5
12	Morobe	45	51	36	48	83	93	78	92	87.7	13.4
13	Madang	59	60	56	70	92	58	30	88	58.7	13.3
14	ESP	34	55	30	31	54	43	37	29	36.3	9.1
15	WSP	84	68	72	56	74	59	45	20	41.3	18.8
16	Manus	9	4	12	6	5	8	1	5	4.7	9.0
17	NIP	57	36	38	28	50	25	21	29	25.0	17.3
18	ENB	68	74	90	64	58	65	82	61	69.3	26.5
19	WNB	39	46	31	45	63	44	22	44	36.7	15.6
20	ARB	21	49	38	48	28	30	24	38	30.7	15.5
<b>Southern</b>		761	218	256	247	239	206	260	370	302	310.7
<b>Highlands</b>		1,068	335	411	452	442	454	609	355	432	465.3
<b>Momase</b>		1,228	222	234	194	205	303	253	190	229	224.0
<b>Islands</b>		1,927	194	209	209	191	204	172	150	177	166.3
<b>PNG TOTAL</b>		<b>969</b>	<b>1,110</b>	<b>1,102</b>	<b>1,077</b>	<b>1,167</b>	<b>1,294</b>	<b>1,065</b>	<b>1,140</b>	<b>1,166.3</b>	<b>18.5</b>

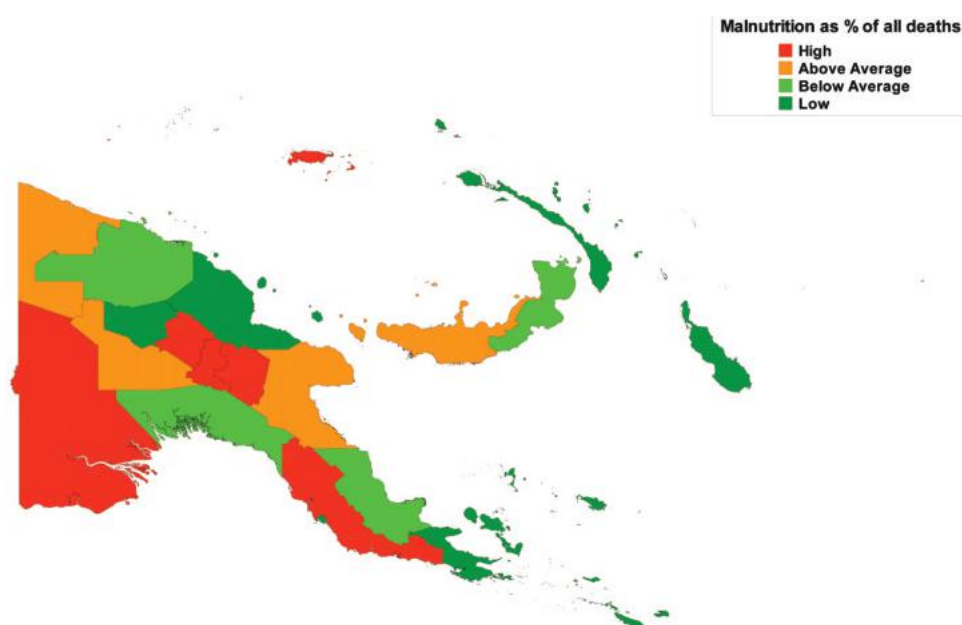
### Malnutrition Admissions as a Percentage of All Admissions



### Malnutrition Deaths

		Total Deaths from Malnutrition								Average 2006– 2008	Rate per 100,000
		2001	2002	2003	2004	2005	2006	2007	2008		
1	Western	5	1	5	2	3	2	8	7	5.7	2.9
2	Gulf	2	1	7	0	3	1	2	1	1.3	1.0
3	Central	3	4	5	2	0	1	0	3	1.3	0.6
4	NCD	0	0	0	3	2	1	6	9	5.3	1.6
5	MBP	4	4	2	3	1	3	3	1	2.3	0.9
6	Oro	1	0	4	7	4	3	2	3	2.7	1.7
7	SHP	6	3	5	2	3	9	5	5	6.3	0.9
8	Enga	4	0	2	3	2	4	2	2	2.7	0.7
9	WHP	2	15	11	7	16	13	13	13	13.0	2.5
10	Simbu	7	12	6	7	10	14	12	4	10.0	3.4
11	EHP	6	11	16	9	16	14	4	9	9.0	1.8
12	Morobe	2	3	3	6	7	12	11	14	12.3	1.9
13	Madang	5	7	4	4	6	5	4	0	3.0	0.7
14	ESP	1	5	3	0	3	5	2	3	3.3	0.8
15	WSP	8	4	8	5	2	4	4	2	3.3	1.5
16	Manus	0	0	1	0	0	3	1	0	1.3	2.6
17	NIP	2	1	3	1	1	2	1	0	1.0	0.7
18	ENB	1	5	6	3	3	5	2	8	5.0	1.9
19	WNB	6	4	3	5	12	3	1	6	3.3	1.4
20	ARB	2	2	2	3	2	0	0	4	1.3	0.7
<b>Southern</b>		761	15	10	23	17	13	11	21	24	18.7
<b>Highlands</b>		1,068	25	41	40	28	47	54	36	33	41.0
<b>Momase</b>		1,228	16	19	18	15	18	26	21	19	22.0
<b>Islands</b>		1,927	11	12	15	12	18	13	5	18	12.0
<b>PNG TOTAL</b>		<b>67</b>	<b>82</b>	<b>96</b>	<b>72</b>	<b>96</b>	<b>104</b>	<b>83</b>	<b>94</b>	<b>93.7</b>	<b>1.5</b>

### Malnutrition Deaths as a Percentage of All Reported Deaths



**Measles****Measles Admissions**

		Total Admissions from Measles								Average	Rate
		2001	2002	2003	2004	2005	2006	2007	2008	2006–2008	per 100,000
1	Western	12	11	2	1	0	0	0	2	0.7	0.3
2	Gulf	46	104	156	4	0	0	1	0	0.3	0.3
3	Central	79	102	5	0	0	0	0	0	0.0	0.0
4	NCD	405	323	40	0	0	0	0	0	0.0	0.0
5	MBP	817	636	38	3	1	3	0	0	1.0	0.4
6	Oro	16	5	3	1	1	0	0	14	4.7	2.9
7	SHP	29	281	103	52	22	21	34	22	25.7	3.5
8	Enga	5	676	22	6	1	5	0	0	1.7	0.5
9	WHP	26	1,528	90	9	3	9	0	8	5.7	1.1
10	Simbu	7	297	4	6	0	6	0	3	3.0	1.0
11	EHP	16	225	436	40	5	11	6	8	8.3	1.7
12	Morobe	11	186	8	3	3	1	1	1	1.0	0.2
13	Madang	34	680	8	5	5	1	1	3	1.7	0.4
14	ESP	0	335	67	15	0	3	3	0	2.0	0.5
15	WSP	6	48	30	1	4	6	0	0	2.0	0.9
16	Manus	0	180	1	0	0	0	0	0	0.0	0.0
17	NIP	8	1	0	0	1	0	0	0	0.0	0.0
18	ENB	37	5	2	1	2	0	0	1	0.3	0.1
19	WNB	3	10	8	3	0	0	2	0	0.7	0.3
20	ARB	374	2	0	6	9	1	9	1	3.7	1.9
<b>Southern</b>		761	1,375	1,181	244	9	2	3	1	16	6.7
<b>Highlands</b>		1,068	83	3,007	655	113	31	52	40	41	44.3
<b>Momase</b>		1,228	51	1,249	113	24	12	11	5	4	6.7
<b>Islands</b>		1,927	422	198	11	10	12	1	11	2	4.7
<b>PNG TOTAL</b>		<b>1,931</b>	<b>5,635</b>	<b>1,023</b>	<b>156</b>	<b>57</b>	<b>67</b>	<b>57</b>	<b>63</b>	<b>62.3</b>	<b>1.0</b>



## Measles Deaths

		Total Deaths from Measles								Average 2006– 2008	Rate per 100,000
		2001	2002	2003	2004	2005	2006	2007	2008		
1	Western	1	1	0	0	0	0	0	0	0.0	0.0
2	Gulf	2	0	7	0	0	0	0	0	0.0	0.0
3	Central	3	1	0	0	0	0	0	0	0.0	0.0
4	NCD	4	14	2	0	0	0	36	0	12.0	3.7
5	MBP	5	14	0	0	0	0	0	0	0.0	0.0
6	Oro	0	1	0	0	0	0	0	0	0.0	0.0
7	SHP	1	18	3	2	1	0	2	1	1.0	0.1
8	Enga	0	54	0	0	0	0	0	0	0.0	0.0
9	WHP	1	135	3	1	0	0	0	0	0.0	0.0
10	Simbu	0	17	0	1	0	0	0	0	0.0	0.0
11	EHP	0	7	16	4	0	0	0	0	0.0	0.0
12	Morobe	0	6	0	0	0	0	0	0	0.0	0.0
13	Madang	0	15	0	0	0	0	0	0	0.0	0.0
14	ESP	0	8	3	0	0	0	0	0	0.0	0.0
15	WSP	0	1	0	0	0	0	0	0	0.0	0.0
16	Manus	0	4	0	0	0	0	0	0	0.0	0.0
17	NIP	0	0	0	0	0	0	0	0	0.0	0.0
18	ENB	1	0	0	0	0	0	0	0	0.0	0.0
19	WNB	0	1	1	0	0	0	0	0	0.0	0.0
20	ARB	2	0	0	0	0	0	0	0	0.0	0.0
<b>Southern</b>		761	15	31	9	0	0	0	36	0	12.0
<b>Highlands</b>		1,068	2	231	22	8	1	0	2	1	1.0
<b>Momase</b>		1,228	0	30	3	0	0	0	0	0	0.0
<b>Islands</b>		1,927	3	5	1	0	0	0	0	0	0.0
<b>PNG TOTAL</b>		20	297	35	8	1	0	38	1	13.0	0.2

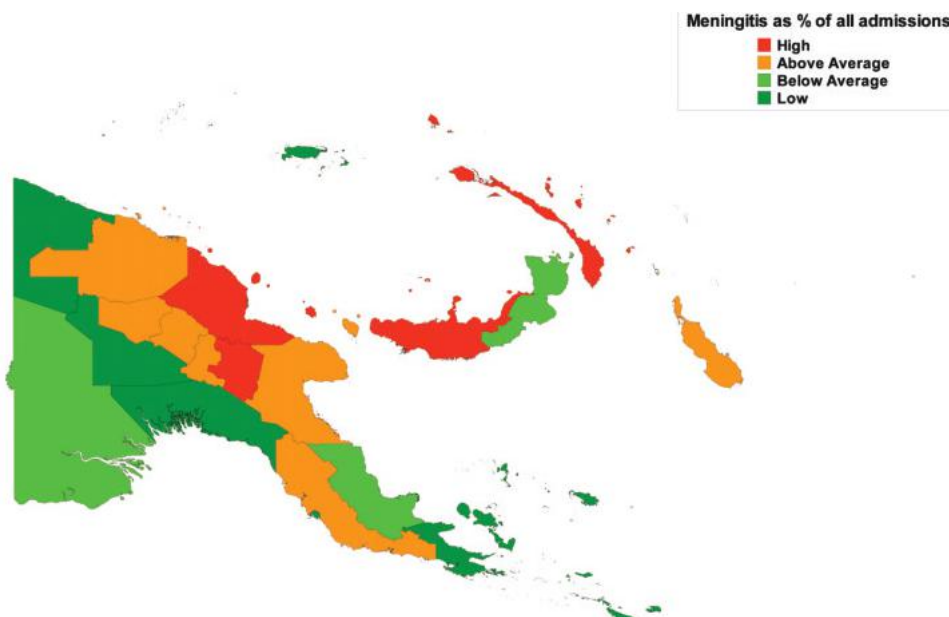


## Meningitis

### Meningitis Admissions

		Total Admissions from Meningitis								Average 2006– 2008	Rate per 100,000
		2001	2002	2003	2004	2005	2006	2007	2008		
1	Western	111	79	83	38	66	37	45	54	45.3	23.6
2	Gulf	30	55	36	39	42	47	41	32	40.0	31.3
3	Central	74	45	47	54	61	55	39	39	44.3	20.5
4	NCD	490	293	70	306	125	100	172	175	149.0	45.7
5	MBP	95	111	95	78	107	78	114	94	95.3	38.1
6	Oro	99	63	78	54	56	57	39	58	51.3	32.0
7	SHP	173	184	119	108	134	139	107	147	131.0	18.0
8	Enga	140	104	101	113	95	128	110	106	114.7	31.8
9	WHP	206	200	194	196	155	197	244	267	236.0	45.1
10	Simbu	94	95	103	107	137	129	88	106	107.7	36.6
11	EHP	71	120	249	156	205	172	186	236	198.0	39.3
12	Morobe	201	222	192	248	219	266	209	198	224.3	34.3
13	Madang	220	297	236	248	283	211	159	270	213.3	48.5
14	ESP	133	148	137	223	100	158	143	115	138.7	34.7
15	WSP	57	57	63	73	48	45	41	34	40.0	18.2
16	Manus	21	13	20	21	15	14	12	16	14.0	27.0
17	NIP	143	131	127	92	105	108	126	157	130.3	90.1
18	ENB	179	186	161	174	154	185	136	162	161.0	61.5
19	WNB	231	132	132	151	198	160	122	195	159.0	67.7
20	ARB	81	80	122	105	94	123	82	118	107.7	54.6
<b>Southern</b>		761	899	646	409	569	457	374	450	452	425.3
<b>Highlands</b>		1,068	684	703	766	680	726	765	735	862	787.3
<b>Momase</b>		1,228	611	724	628	792	650	680	552	617	616.3
<b>Islands</b>		1,927	655	542	562	543	566	590	478	648	572.0
<b>PNG TOTAL</b>		<b>2,849</b>	<b>2,615</b>	<b>2,365</b>	<b>2,584</b>	<b>2,399</b>	<b>2,409</b>	<b>2,215</b>	<b>2,579</b>	<b>2,401.0</b>	<b>38.2</b>

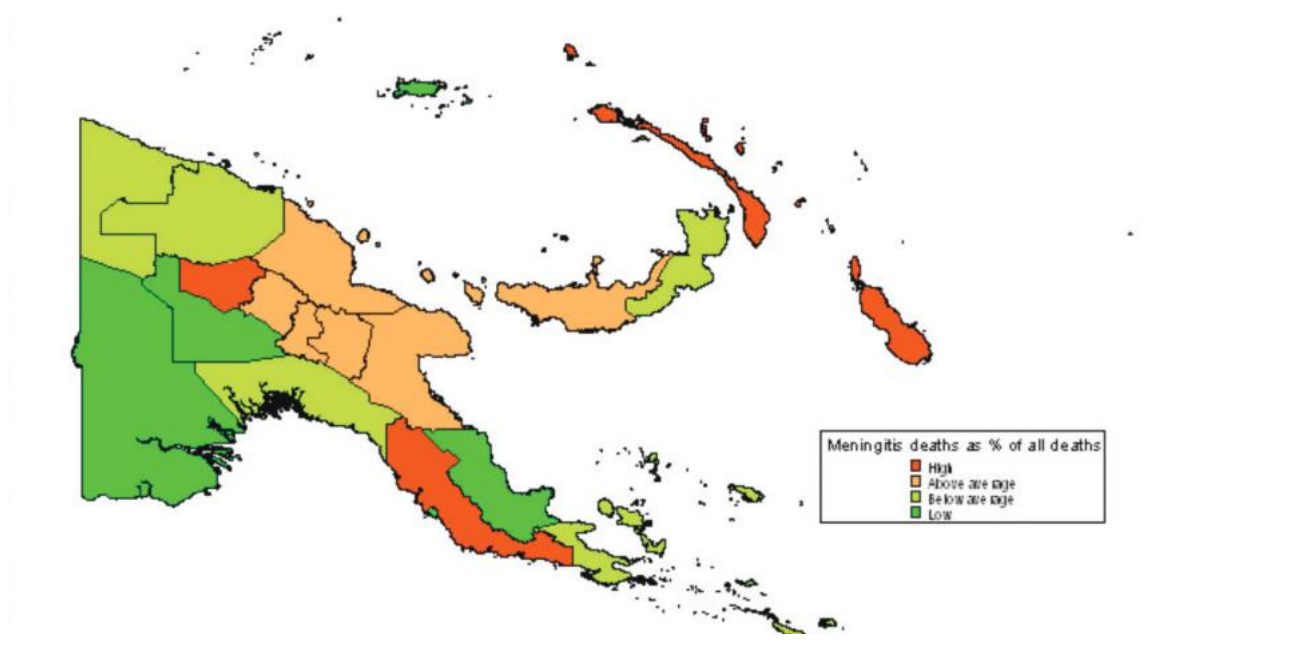
### Meningitis Admissions as a Percentage of All Admissions



**Meningitis Deaths**

		Total Deaths from Meningitis								Average 2006– 2008	Rate per 100,000
		2001	2002	2003	2004	2005	2006	2007	2008		
1	Western	11	16	10	7	12	13	18	9	13.3	6.9
2	Gulf	2	15	11	8	3	7	6	12	8.3	6.5
3	Central	14	9	9	9	5	5	3	13	7.0	3.2
4	NCD	2	38	5	32	9	13	41	29	27.7	8.5
5	MBP	12	34	20	18	24	11	24	19	18.0	7.2
6	Oro	9	10	6	7	9	15	10	9	11.3	7.1
7	SHP	17	32	18	18	25	21	13	22	18.7	2.6
8	Enga	21	31	19	22	21	27	27	25	26.3	7.3
9	WHP	15	39	37	31	35	46	43	62	50.3	9.6
10	Simbu	16	13	21	14	22	26	20	20	22.0	7.5
11	EHP	10	15	45	26	22	19	37	55	37.0	7.3
12	Morobe	41	49	55	78	64	76	63	48	62.3	9.5
13	Madang	39	43	30	51	40	33	21	39	31.0	7.0
14	ESP	21	24	37	38	28	29	14	20	21.0	5.3
15	WSP	19	13	11	18	19	11	18	7	12.0	5.5
16	Manus	4	1	1	3	5	4	3	4	3.7	7.1
17	NIP	21	19	19	16	16	23	15	27	21.7	15.0
18	ENB	19	25	25	34	24	34	20	28	27.3	10.4
19	WNB	48	31	24	32	37	15	19	18	17.3	7.4
20	ARB	16	17	16	16	10	22	24	20	22.0	11.1
<b>Southern</b>		761	50	122	61	81	62	64	102	91	85.7
<b>Highlands</b>		1,068	79	130	140	111	125	139	140	184	154.3
<b>Momase</b>		1,228	120	129	133	185	151	149	116	114	126.3
<b>Islands</b>		1,927	108	93	85	101	92	98	81	97	92.0
<b>PNG TOTAL</b>		<b>357</b>	<b>474</b>	<b>419</b>	<b>478</b>	<b>430</b>	<b>450</b>	<b>439</b>	<b>486</b>	<b>458.3</b>	<b>7.3</b>

**Meningitis Deaths as a Percentage of All Reported Deaths**



**Pertussis****Pertussis Admissions**

		Total Admissions from Pertussis								Average 2006– 2008	Rate per 100,000
		2001	2002	2003	2004	2005	2006	2007	2008		
1	Western	9	22	1	0	0	6	17	15	12.7	6.6
2	Gulf	0	25	35	3	2	3	5	32	13.3	10.4
3	Central	18	4	1	3	3	9	7	1	5.7	2.6
4	NCD	5	0	2	0	0	0	0	0	0.0	0.0
5	MBP	0	1	1	0	1	0	0	12	4.0	1.6
6	Oro	10	4	25	17	4	24	1	9	11.3	7.1
7	SHP	14	130	109	110	118	39	117	76	77.3	10.6
8	Enga	25	15	2	1	6	1	10	3	4.7	1.3
9	WHP	10	23	19	0	28	8	3	14	8.3	1.6
10	Simbu	9	15	6	4	20	5	2	7	4.7	1.6
11	EHP	1	9	7	1	6	2	3	5	3.3	0.7
12	Morobe	6	10	5	7	1	11	4	5	6.7	1.0
13	Madang	20	25	21	100	24	73	16	52	47.0	10.7
14	ESP	39	75	53	25	11	17	12	23	17.3	4.3
15	WSP	6	7	10	1	12	20	23	8	17.0	7.8
16	Manus	1	0	1	0	12	1	0	0	0.3	0.6
17	NIP	6	1	2	4	1	5	3	7	5.0	3.5
18	ENB	8	15	7	1	10	9	10	20	13.0	5.0
19	WNB	37	16	23	2	18	8	42	20	23.3	9.9
20	ARB	54	156	43	6	32	20	37	24	27.0	13.7
<b>Southern</b>		42	56	65	23	10	42	30	69	47.0	3.7
<b>Highlands</b>		59	192	143	116	178	55	135	105	98.3	4.1
<b>Momase</b>		71	117	89	133	48	121	55	88	88.0	5.1
<b>Islands</b>		106	188	76	13	73	43	92	71	68.7	7.7
<b>PNG TOTAL</b>		<b>278</b>	<b>553</b>	<b>373</b>	<b>285</b>	<b>309</b>	<b>261</b>	<b>312</b>	<b>333</b>	<b>302.0</b>	<b>4.8</b>





## Pertussis Deaths

		Total Deaths from Pertussis								Average	Rate
		2001	2002	2003	2004	2005	2006	2007	2008	2006–2008	per 100,000
1	Western	0	0	0	0	0	0	1	2	1.0	0.5
2	Gulf	0	0	1	0	0	0	0	0	0.0	0.0
3	Central	2	0	0	0	0	0	1	0	0.3	0.2
4	NCD	0	0	0	0	0	0	24	0	8.0	2.5
5	MBP	0	0	0	0	0	0	0	2	0.7	0.3
6	Oro	0	0	0	4	0	1	0	0	0.3	0.2
7	SHP	1	8	2	5	1	1	4	11	5.3	0.7
8	Enga	0	1	0	0	1	0	0	0	0.0	0.0
9	WHP	0	0	0	0	4	1	0	1	0.7	0.1
10	Simbu	0	2	0	0	0	0	0	0	0.0	0.0
11	EHP	0	0	0	0	0	0	0	2	0.7	0.1
12	Morobe	1	0	0	0	0	0	0	1	0.3	0.1
13	Madang	1	0	1	2	2	0	0	12	4.0	0.9
14	ESP	1	4	1	1	0	0	0	0	0.0	0.0
15	WSP	2	0	0	0	0	0	2	1	1.0	0.5
16	Manus	0	0	0	0	0	0	0	0	0.0	0.0
17	NIP	0	0	0	0	0	0	0	0	0.0	0.0
18	ENB	0	0	1	0	0	0	0	0	0.0	0.0
19	WNB	0	1	0	0	2	0	0	1	0.3	0.1
20	ARB	0	2	0	0	0	0	0	0	0.0	0.0
<b>Southern</b>		<b>2</b>	<b>0</b>	<b>1</b>	<b>4</b>	<b>0</b>	<b>1</b>	<b>26</b>	<b>4</b>	<b>10.3</b>	<b>0.8</b>
<b>Highlands</b>		<b>1</b>	<b>11</b>	<b>2</b>	<b>5</b>	<b>6</b>	<b>2</b>	<b>4</b>	<b>14</b>	<b>6.7</b>	<b>0.3</b>
<b>Momase</b>		<b>5</b>	<b>4</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>14</b>	<b>5.3</b>	<b>0.3</b>
<b>Islands</b>		<b>0</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0.3</b>	<b>0.0</b>
<b>PNG TOTAL</b>		<b>8</b>	<b>18</b>	<b>6</b>	<b>12</b>	<b>10</b>	<b>3</b>	<b>32</b>	<b>33</b>	<b>22.7</b>	<b>0.4</b>

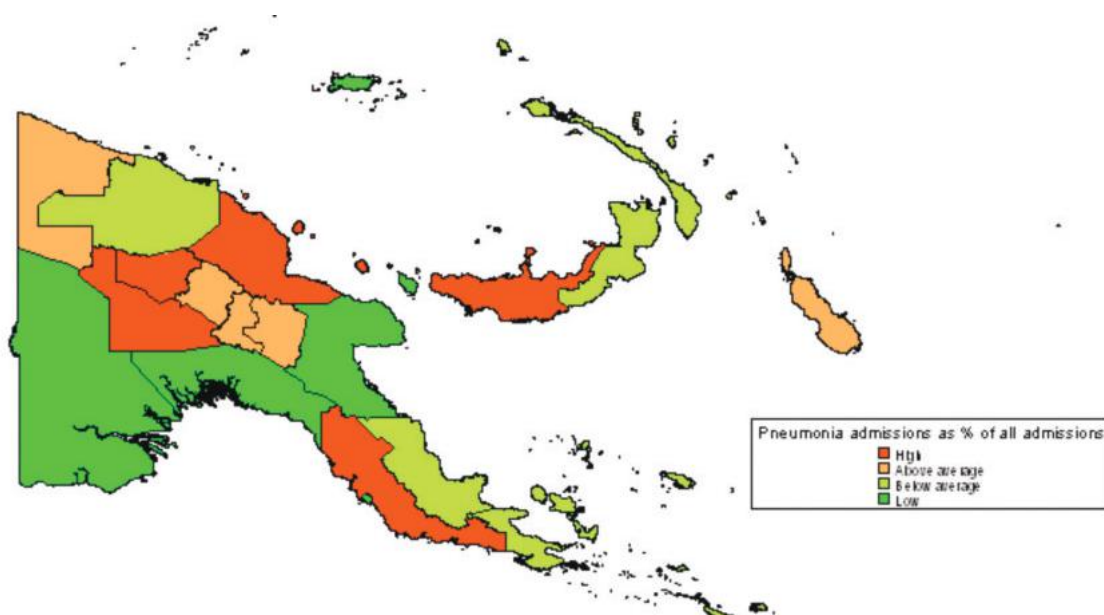


## Pneumonia

### Pneumonia Admissions

		Total Admissions from Pneumonia								Average	Rate
		2001	2002	2003	2004	2005	2006	2007	2008	2006–2008	per 100,000
1	Western	526	449	426	429	489	500	527	527	518.0	269
2	Gulf	519	468	410	346	379	371	463	413	415.7	325
3	Central	541	640	760	812	806	885	595	553	677.7	314
4	NCD	1,756	1,689	627	1,333	570	402	1,818	1,532	1,250.7	384
5	MBP	1,362	1,494	1,127	1,120	1,099	1,008	1,575	1,711	1,431.3	572
6	Oro	897	785	649	627	732	628	693	627	649.3	405
7	SHP	3,889	3,381	4,031	4,534	3,666	3,625	4,288	3,524	3,812.3	523
8	Enga	2,002	2,540	2,210	1,966	1,805	1,618	1,671	1,436	1,575.0	437
9	WHP	2,682	3,137	3,347	3,306	3,566	2,779	2,972	2,226	2,659.0	508
10	Simbu	2,312	2,364	2,302	2,301	2,520	2,036	1,721	1,585	1,780.7	605
11	EHP	1,615	2,213	2,949	2,888	2,751	1,945	1,877	2,050	1,957.3	388
12	Morobe	1,266	1,423	1,318	1,453	1,428	1,577	1,964	1,729	1,756.7	268
13	Madang	2,207	2,715	2,842	2,516	2,854	2,656	2,544	2,534	2,578.0	586
14	ESP	1,285	1,540	1,442	1,483	1,340	1,543	1,412	1,423	1,459.3	365
15	WSP	786	895	934	791	860	830	769	670	756.3	345
16	Manus	241	254	184	154	124	160	211	119	163.3	314
17	NIP	1,603	1,334	1,201	993	985	865	1,129	1,053	1,015.7	702
18	ENB	1,772	2,053	2,407	2,316	1,801	2,290	2,117	1,894	2,100.3	803
19	WNB	1,872	1,723	1,905	2,066	2,028	1,702	2,035	1,900	1,879.0	800
20	ARB	1,415	1,419	1,496	1,479	1,099	1,244	1,059	1,121	1,141.3	578
<b>Southern</b>		5,601	5,525	3,999	4,667	4,075	3,794	5,671	5,363	4,942.7	388
<b>Highlands</b>		12,500	13,635	14,839	14,995	14,308	12,003	12,529	10,821	11,784	489
<b>Momase</b>		5,544	6,573	6,536	6,243	6,482	6,606	6,689	6,356	6,550.3	382
<b>Islands</b>		6,903	6,783	7,193	7,008	6,037	6,261	6,551	6,087	6,299.7	707
<b>PNG TOTAL</b>		<b>30,548</b>	<b>32,516</b>	<b>32,567</b>	<b>32,913</b>	<b>30,902</b>	<b>28,664</b>	<b>31,440</b>	<b>28,627</b>	<b>29,577</b>	<b>470</b>

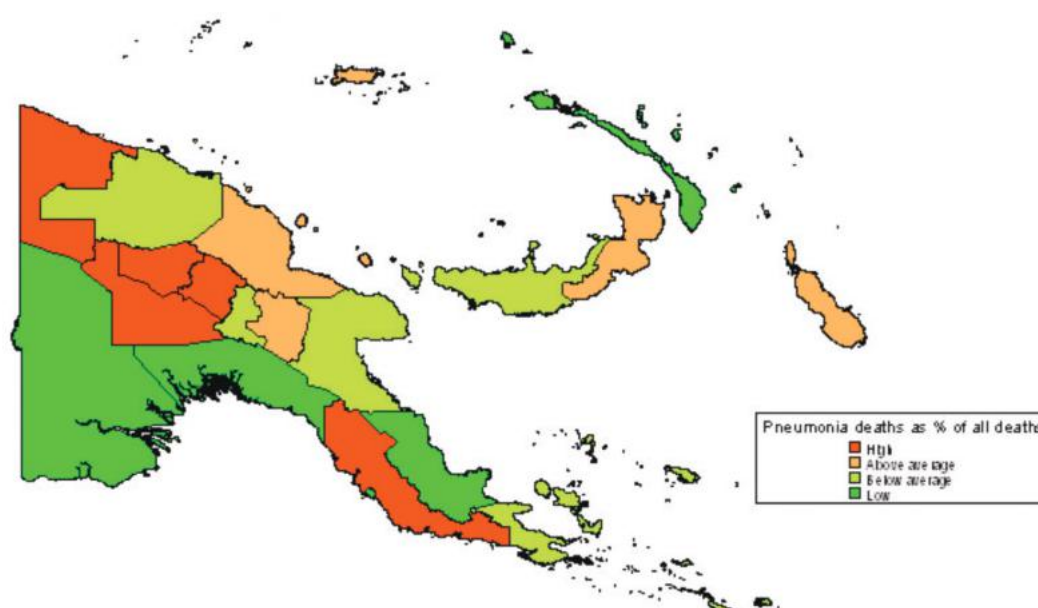
### Pneumonia Admissions as a Percentage of All Admissions



### Pneumonia Deaths

		Total Deaths from Pneumonia								Average 2006–2008	Rate per 100,000
		2001	2002	2003	2004	2005	2006	2007	2008		
1	Western	30	24	16	13	13	18	8	32	19.3	10.0
2	Gulf	22	14	21	22	4	11	7	13	10.3	8.1
3	Central	15	18	23	24	25	13	10	16	13.0	6.0
4	NCD	3	69	9	41	26	7	29	18	18.0	5.5
5	MBP	56	44	33	25	42	39	35	40	38.0	15.2
6	Oro	15	24	15	23	29	17	23	12	17.3	10.8
7	SHP	90	90	111	75	97	71	80	98	83.0	11.4
8	Enga	81	156	102	91	79	80	93	89	87.3	24.2
9	WHP	74	159	109	132	133	135	123	94	117.3	22.4
10	Simbu	49	68	38	64	66	47	46	21	38.0	12.9
11	EHP	46	55	97	117	113	64	59	64	62.3	12.4
12	Morobe	72	66	77	127	102	150	97	82	109.7	16.8
13	Madang	60	69	64	65	66	63	36	57	52.0	11.8
14	ESP	52	42	42	47	41	48	36	28	37.3	9.3
15	WSP	42	35	30	26	35	32	28	34	31.3	14.3
16	Manus	7	7	10	14	6	14	11	5	10.0	19.3
17	NIP	27	24	13	17	14	12	12	21	15.0	10.4
18	ENB	54	50	53	65	58	52	56	77	61.7	23.6
19	WNB	35	38	34	31	39	36	19	27	27.3	11.6
20	ARB	28	43	34	29	20	38	28	24	30.0	15.2
<b>Southern</b>		141	193	117	148	139	105	112	131	116.0	9.1
<b>Highlands</b>		340	528	457	479	488	397	401	366	388.0	16.1
<b>Momase</b>		226	212	213	265	244	293	197	201	230.3	13.4
<b>Islands</b>		151	162	144	156	137	152	126	154	144.0	16.2
<b>PNG TOTAL</b>		<b>858</b>	<b>1,095</b>	<b>931</b>	<b>1,048</b>	<b>1,008</b>	<b>947</b>	<b>836</b>	<b>852</b>	<b>878.3</b>	<b>14.0</b>

### Pneumonia Deaths as a Percentage of All Reported Deaths

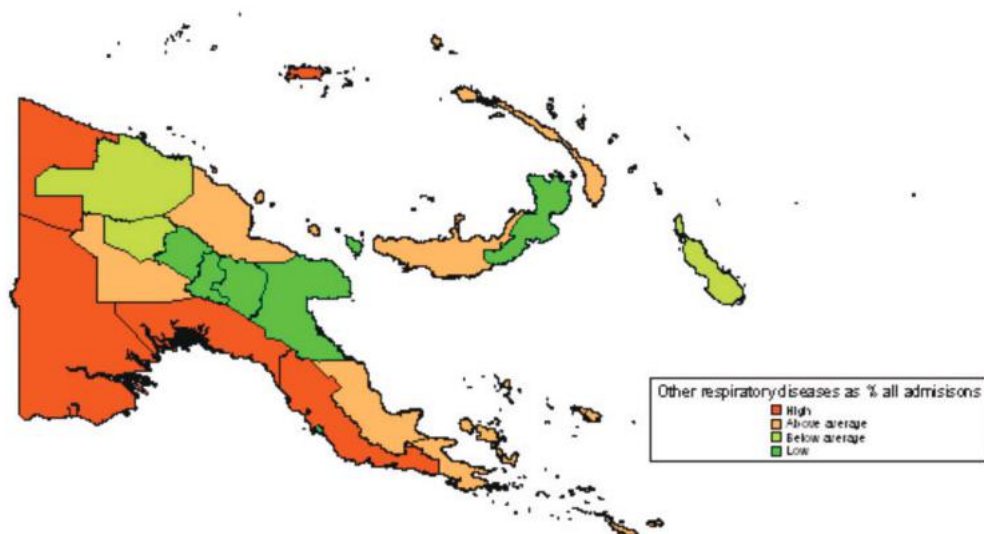


### Other Respiratory

#### Other Respiratory Admissions

		Total Admissions from Other Respiratory								Average 2006–2008	Rate per 100,000
		2001	2002	2003	2004	2005	2006	2007	2008		
1	Western	236	150	140	132	178	145	201	263	203.0	105
2	Gulf	250	269	207	121	154	199	290	208	232.3	182
3	Central	143	153	157	153	176	152	170	185	169.0	78.3
4	NCD	298	301	295	448	226	188	281	21	163.3	50.1
5	MBP	689	608	640	494	350	342	481	413	412.0	165
6	Oro	182	248	358	298	209	212	204	185	200.3	125
7	SHP	869	628	596	517	578	586	482	401	489.7	67.2
8	Enga	505	459	384	348	303	270	309	230	269.7	74.8
9	WHP	1,014	815	534	513	512	481	536	468	495.0	94.6
10	Simbu	385	376	378	324	284	266	240	194	233.3	79.3
11	EHP	184	232	327	435	365	365	256	323	314.7	62.4
12	Morobe	374	399	508	399	319	339	546	412	432.3	66.0
13	Madang	556	660	761	542	518	494	412	557	487.7	111
14	ESP	141	329	224	273	152	415	307	367	363.0	90.8
15	WSP	275	274	301	223	252	289	237	247	257.7	117
16	Manus	100	97	59	68	64	92	87	80	86.3	166
17	NIP	344	309	360	319	311	216	348	286	283.3	196
18	ENB	418	484	586	527	450	385	364	369	372.7	142
19	WNB	387	406	398	436	536	351	358	472	393.7	168
20	ARB	359	356	320	236	258	231	279	250	253.3	128
<b>Southern</b>		1,798	1,729	1,797	1,646	1,293	1,238	1,627	1,275	1,380.0	108
<b>Highlands</b>		2,957	2,510	2,219	2,137	2,042	1,968	1,823	1,616	1,802.3	74.7
<b>Momase</b>		1,346	1,662	1,794	1,437	1,241	1,537	1,502	1,583	1,540.7	89.9
<b>Islands</b>		1,608	1,652	1,723	1,586	1,619	1,275	1,436	1,457	1,389.3	156
<b>PNG TOTAL</b>		<b>7,709</b>	<b>7,553</b>	<b>7,533</b>	<b>6,806</b>	<b>6,195</b>	<b>6,018</b>	<b>6,388</b>	<b>5,931</b>	<b>6,112.3</b>	<b>97.2</b>

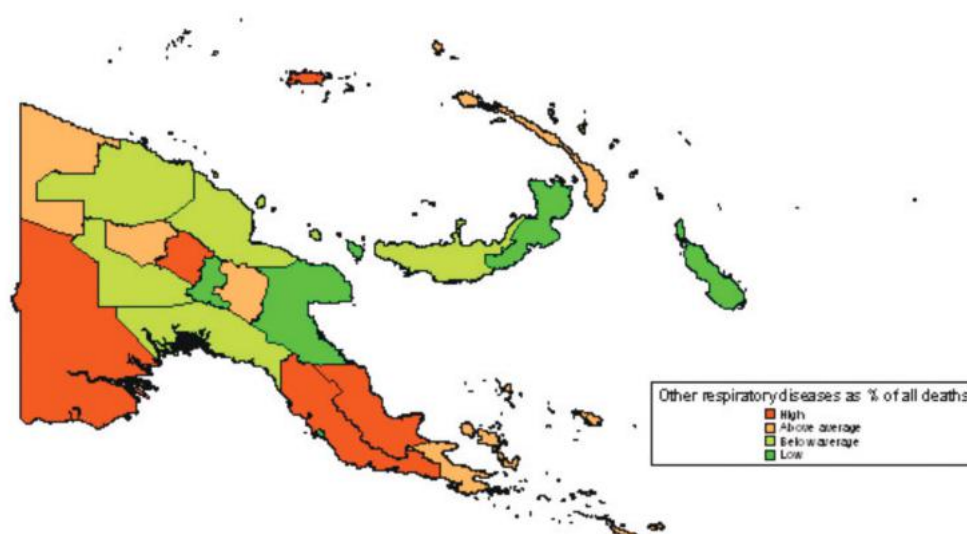
#### Other Respiratory Admissions as a Percentage of All Admissions



## Other Respiratory Deaths

		Total Deaths from Other Respiratory								Average 2006– 2008	Rate per 100,000
		2001	2002	2003	2004	2005	2006	2007	2008		
1	Western	13	12	16	11	39	17	23	22	20.7	10.7
2	Gulf	3	6	5	1	5	6	6	11	7.7	6.0
3	Central	10	12	7	11	10	6	8	7	7.0	3.2
4	NCD	0	12	13	60	17	18	21	4	14.3	4.4
5	MBP	38	18	23	19	18	25	22	12	19.7	7.9
6	Oro	7	10	14	15	11	16	43	24	27.7	17.3
7	SHP	42	7	38	18	22	34	15	19	22.7	3.1
8	Enga	20	27	11	13	23	29	28	15	24.0	6.7
9	WHP	19	13	36	47	57	66	50	52	56.0	10.7
10	Simbu	17	14	14	17	11	20	11	9	13.3	4.5
11	EHP	5	17	23	21	22	30	29	46	35.0	6.9
12	Morobe	13	12	7	14	10	17	26	20	21.0	3.2
13	Madang	28	24	31	53	30	33	17	21	23.7	5.4
14	ESP	4	14	14	20	14	24	15	17	18.7	4.7
15	WSP	13	12	12	12	8	19	13	9	13.7	6.2
16	Manus	9	3	6	19	8	16	16	9	13.7	26.3
17	NIP	22	17	14	14	19	17	16	9	14.0	9.7
18	ENB	8	9	15	9	11	23	17	15	18.3	7.0
19	WNB	22	20	12	17	13	19	4	13	12.0	5.1
20	ARB	3	12	11	4	6	4	15	10	9.7	4.9
<b>Southern</b>		71	70	78	117	100	88	123	80	97.0	7.6
<b>Highlands</b>		103	78	122	116	135	179	133	141	151.0	6.3
<b>Momase</b>		58	62	64	99	62	93	71	67	77.0	4.5
<b>Islands</b>		64	61	58	63	57	79	68	56	67.7	7.6
<b>PNG TOTAL</b>		296	271	322	395	354	439	395	344	392.7	6.2

## Other Respiratory Deaths as a Percentage of All Reported Deaths

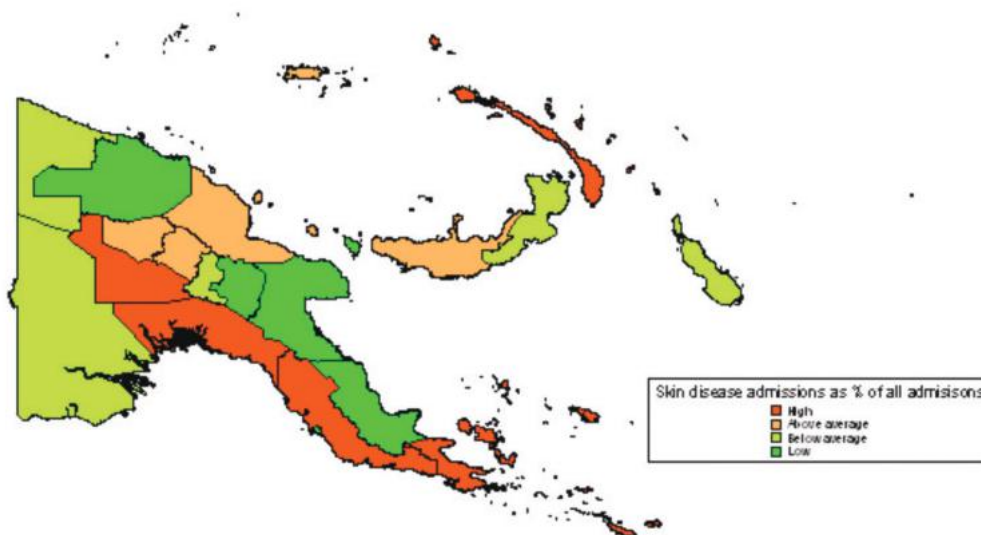


### Skin Disease

#### Skin Disease Admissions

		Total Admissions from Skin Disease								Average	Rate
		2001	2002	2003	2004	2005	2006	2007	2008	2006–2008	per 100,000
1	Western	164	62	22	79	118	56	128	139	107.7	55.9
2	Gulf	132	137	86	102	122	124	394	175	231.0	181
3	Central	104	98	78	104	96	110	131	109	116.7	54.1
4	NCD	155	18	39	0	0	0	31	0	10.3	3.2
5	MBP	460	275	292	244	287	264	340	425	343.0	137
6	Oro	87	116	149	188	101	111	79	52	80.7	50.3
7	SHP	942	840	613	578	409	505	439	461	468.3	64.2
8	Enga	238	176	178	173	126	110	264	425	266.3	73.9
9	WHP	238	392	342	361	503	475	493	424	464.0	88.7
10	Simbu	371	377	264	203	248	182	186	276	214.7	72.9
11	EHP	221	165	246	171	139	118	150	161	143.0	28.4
12	Morobe	310	372	261	222	142	198	251	196	215.0	32.8
13	Madang	341	396	307	414	515	285	339	417	347.0	78.9
14	ESP	192	145	135	133	152	116	139	151	135.3	33.9
15	WSP	203	179	196	157	114	125	108	137	123.3	56.2
16	Manus	38	38	13	11	24	70	50	48	56.0	108
17	NIP	461	309	337	283	412	224	261	378	287.7	199
18	ENB	323	311	337	346	402	242	363	391	332.0	127
19	WNB	375	272	335	301	376	288	222	248	252.7	108
20	ARB	230	216	191	215	448	180	155	136	157.0	79.6
<b>Southern</b>		1,102	706	666	717	724	665	1,103	900	889.3	69.9
<b>Highlands</b>		2,010	1,950	1,643	1,486	1,425	1,390	1,532	1,747	1,556.3	64.5
<b>Momase</b>		1,046	1,092	899	926	923	724	837	901	820.7	47.9
<b>Islands</b>		1,427	1,146	1,213	1,156	1,662	1,004	1,051	1,201	1,085.3	122
<b>PNG TOTAL</b>		<b>5,585</b>	<b>4,894</b>	<b>4,421</b>	<b>4,285</b>	<b>4,734</b>	<b>3,783</b>	<b>4,523</b>	<b>4,749</b>	<b>4,351.7</b>	<b>69.2</b>

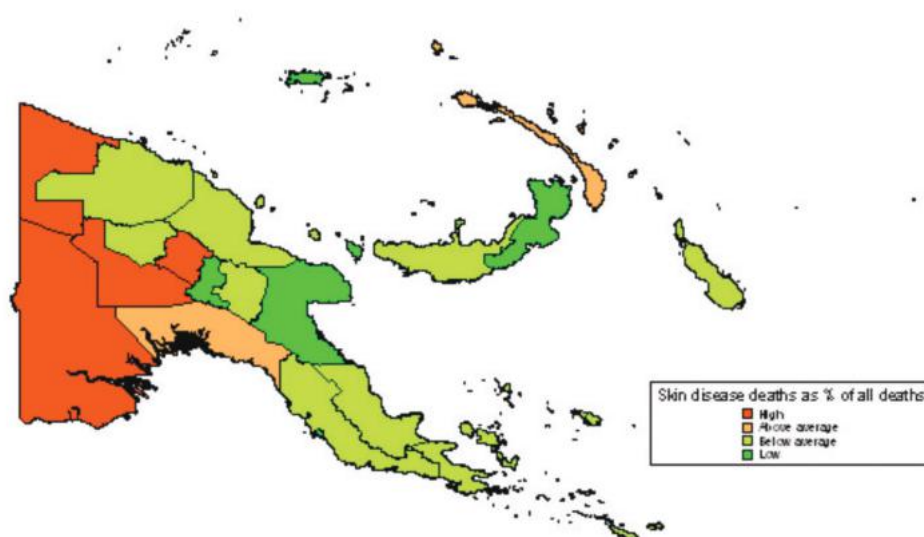
#### Skin Disease Admissions as a Percentage of All Admissions



### Skin Disease Deaths

		Total Deaths from Skin Disease								Average 2006– 2008	Rate per 100,000
		2001	2002	2003	2004	2005	2006	2007	2008		
1	Western	2	3	1	0	0	2	2	1	1.7	0.9
2	Gulf	0	2	1	0	0	1	0	1	0.7	0.5
3	Central	1	1	0	2	1	1	0	0	0.3	0.2
4	NCD	0	0	18	0	0	0	0	0	0.0	0.0
5	MBP	4	0	3	0	2	1	0	1	0.7	0.3
6	Oro	1	2	0	3	3	2	0	0	0.7	0.4
7	SHP	8	3	0	5	3	5	3	3	3.7	0.5
8	Enga	1	1	1	0	0	0	0	3	1.0	0.3
9	WHP	0	2	4	3	31	5	5	2	4.0	0.8
10	Simbu	0	2	4	3	2	1	0	0	0.3	0.1
11	EHP	2	0	1	2	0	0	1	2	1.0	0.2
12	Morobe	2	0	0	1	0	2	2	0	1.3	0.2
13	Madang	0	4	1	1	0	0	1	1	0.7	0.2
14	ESP	1	5	0	5	0	0	0	2	0.7	0.2
15	WSP	6	0	1	2	2	4	0	0	1.3	0.6
16	Manus	0	0	0	0	1	0	0	0	0.0	0.0
17	NIP	14	3	0	0	5	0	2	1	1.0	0.7
18	ENB	1	0	2	0	1	1	0	1	0.7	0.3
19	WNB	3	3	3	2	0	0	0	3	1.0	0.4
20	ARB	0	0	2	1	3	1	0	1	0.7	0.3
<b>Southern</b>		8	8	23	5	6	7	2	3	4.0	0.3
<b>Highlands</b>		11	8	10	13	36	11	9	10	10.0	0.4
<b>Momase</b>		9	9	2	9	2	6	3	3	4.0	0.2
<b>Islands</b>		18	6	7	3	10	2	2	6	3.3	0.4
<b>PNG TOTAL</b>		<b>46</b>	<b>31</b>	<b>42</b>	<b>30</b>	<b>54</b>	<b>26</b>	<b>16</b>	<b>22</b>	<b>21.3</b>	<b>0.3</b>

### Skin Disease Deaths as a Percentage of All Reported Deaths

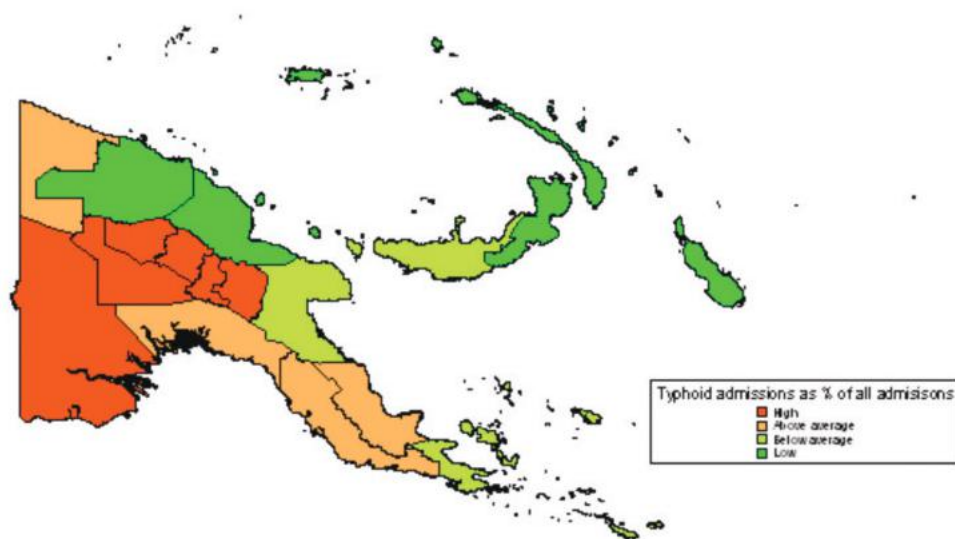


## Typhoid

### Typhoid Admissions

		Total Admissions from Typhoid								Average	Rate
		2001	2002	2003	2004	2005	2006	2007	2008	2006–2008	per 100,000
1	Western	107	59	74	48	81	101	75	82	86.0	44.7
2	Gulf	66	46	49	34	71	94	73	51	72.7	56.8
3	Central	28	22	19	24	16	18	28	20	22.0	10.2
4	NCD	183	172	37	96	49	208	130	108	148.7	45.6
5	MBP	10	55	16	2	7	9	8	115	44.0	17.6
6	Oro	96	105	66	110	70	53	90	84	75.7	47.2
7	SHP	626	335	257	192	268	497	332	239	356.0	48.8
8	Enga	1,120	826	761	741	651	547	556	439	514.0	143
9	WHP	1,640	1,000	972	918	1,033	872	606	463	647.0	124
10	Simbu	1,489	1,719	1,223	1,376	1,430	1,096	599	620	771.7	262
11	EHP	772	911	663	610	540	539	471	598	536.0	106
12	Morobe	95	77	79	70	47	62	92	124	92.7	14.2
13	Madang	74	77	42	31	69	55	31	25	37.0	8.4
14	ESP	15	20	9	30	12	23	46	17	28.7	7.2
15	WSP	17	16	25	38	34	50	46	5	33.7	15.4
16	Manus	17	11	6	7	1	3	7	3	4.3	8.3
17	NIP	39	34	20	15	7	21	12	46	26.3	18.2
18	ENB	77	45	27	11	16	16	23	25	21.3	8.2
19	WNB	128	74	50	63	59	37	24	51	37.3	15.9
20	ARB	1	22	2	9	5	0	3	0	1.0	0.5
<b>Southern</b>		490	459	261	314	294	483	404	460	449.0	35.3
<b>Highlands</b>		5,647	4,791	3,876	3,837	3,922	3,551	2,564	2,359	2,824.7	117
<b>Momase</b>		201	190	155	169	162	190	215	171	192.0	11.2
<b>Islands</b>		262	186	105	105	88	77	69	125	90.3	10.1
<b>PNG TOTAL</b>		<b>6,600</b>	<b>5,626</b>	<b>4,397</b>	<b>4,425</b>	<b>4,466</b>	<b>4,301</b>	<b>3,252</b>	<b>3,115</b>	<b>3,556.0</b>	<b>56.6</b>

### Typhoid Admissions as a Percentage of All Admissions

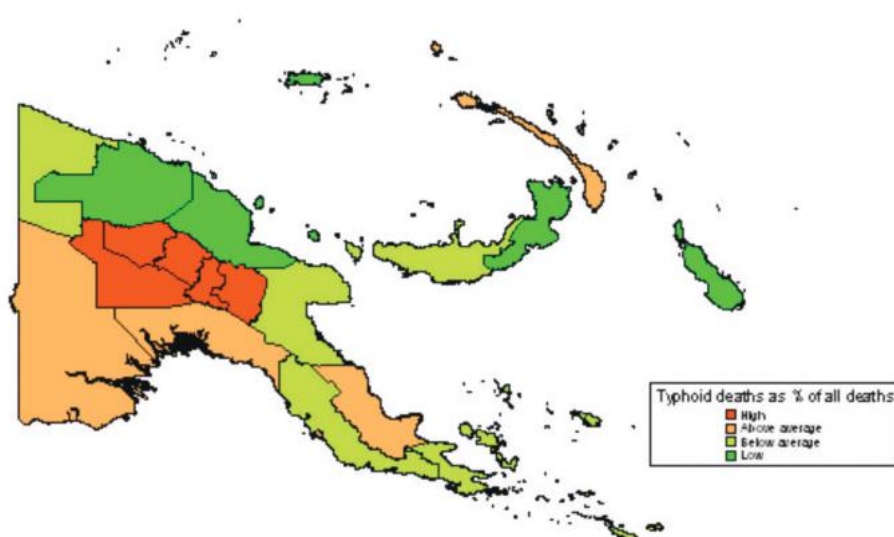




### Typhoid Deaths

		Total Deaths from Typhoid								Average 2006– 2008	Rate per 100,000
		2001	2002	2003	2004	2005	2006	2007	2008		
1	Western	5	4	4	2	5	7	13	2	7.3	3.8
2	Gulf	3	0	5	2	0	2	3	3	2.7	2.1
3	Central	1	0	0	0	0	1	1	0	0.7	0.3
4	NCD	1	16	5	8	7	21	5	0	8.7	2.7
5	MBP	1	3	1	0	0	1	0	7	2.7	1.1
6	Oro	0	2	0	2	3	2	7	7	5.3	3.3
7	SHP	29	16	11	9	16	17	26	21	21.3	2.9
8	Enga	14	17	21	12	15	8	16	11	11.7	3.2
9	WHP	24	29	26	28	25	35	19	18	24.0	4.6
10	Simbu	19	37	29	26	15	24	15	13	17.3	5.9
11	EHP	18	34	21	42	34	17	15	30	20.7	4.1
12	Morobe	13	10	19	16	4	4	10	7	7.0	1.1
13	Madang	5	3	3	6	4	4	1	0	1.7	0.4
14	ESP	2	3	2	0	0	0	3	0	1.0	0.3
15	WSP	1	1	4	6	3	2	2	1	1.7	0.8
16	Manus	0	0	0	0	0	0	1	0	0.3	0.6
17	NIP	4	1	0	0	1	2	1	4	2.3	1.6
18	ENB	2	2	3	4	1	3	0	1	1.3	0.5
19	WNB	4	2	0	5	9	2	2	4	2.7	1.1
20	ARB	0	0	0	0	1	0	0	0	0.0	0.0
<b>Southern</b>		11	25	15	14	15	34	29	19	27.3	2.1
<b>Highlands</b>		104	133	108	117	105	101	91	93	95.0	3.9
<b>Momase</b>		21	17	28	28	11	10	16	8	11.3	0.7
<b>Islands</b>		10	5	3	9	12	7	4	9	6.7	0.7
<b>PNG TOTAL</b>		<b>146</b>	<b>180</b>	<b>154</b>	<b>168</b>	<b>143</b>	<b>152</b>	<b>140</b>	<b>129</b>	<b>140.3</b>	<b>2.2</b>

### Typhoid Deaths as a Percentage of All Reported Deaths



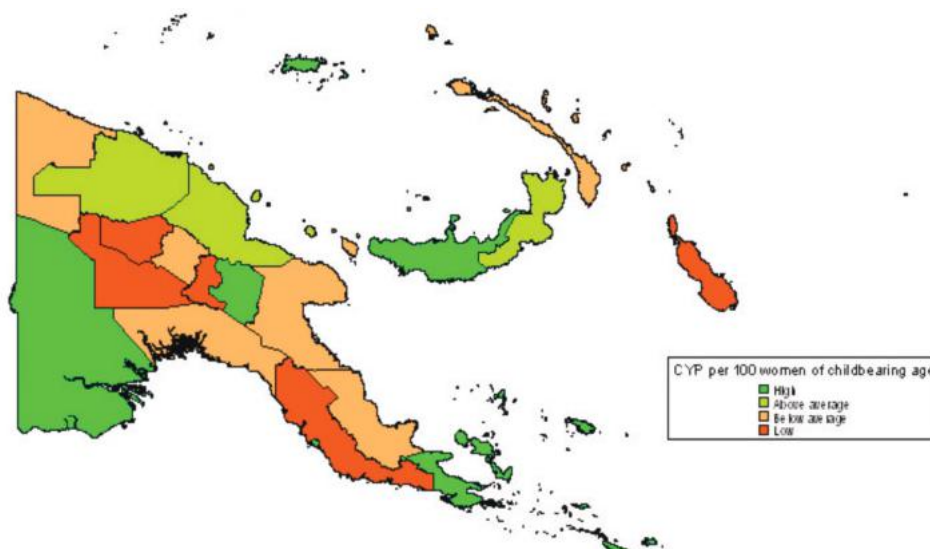
## Health Priorities

### Maternal Health

#### Couple Year Protection per 1,000 Women of Childbearing Age

Provinces	2001	2002	2003	2004	2005	2006	2007	2008	Average 2006–2008
1 Western	156	170	118	158	140	193	200	152	181
2 Gulf	57	66	63	46	56	74	71	62	69
3 Central	42	45	78	44	49	41	40	48	43
4 NCD	243	272	191	288	233	220	270	264	252
5 MBP	187	174	199	176	162	179	197	176	184
6 Oro	103	105	69	70	75	62	63	74	66
7 SHP	39	34	26	27	34	34	34	34	34
8 Enga	26	25	26	29	32	27	31	31	29
9 WHP	67	53	56	67	74	74	62	63	66
10 Simbu	48	42	61	71	77	73	56	51	60
11 EHP	61	94	62	89	105	86	102	167	119
12 Morobe	71	85	88	68	89	71	69	68	69
13 Madang	80	78	77	72	81	87	69	87	81
14 ESP	57	64	54	57	70	102	110	106	106
15 WSP	52	63	66	64	76	64	56	65	62
16 Manus	85	88	52	97	95	130	109	143	128
17 NIP	107	103	104	93	112	49	98	45	64
18 ENB	123	120	142	126	120	118	101	81	99
19 WNB	88	88	52	105	132	118	64	158	114
20 ARB	11	13	11	12	18	16	21	25	21
<b>Southern</b>	151	160	136	158	139	146	165	154	155
<b>Highlands</b>	49	50	44	54	62	57	56	68	61
<b>Momase</b>	67	76	74	66	81	81	77	81	80
<b>Islands</b>	82	82	77	87	96	84	73	86	81
<b>PNG TOTAL</b>	<b>78</b>	<b>83</b>	<b>75</b>	<b>82</b>	<b>87</b>	<b>85</b>	<b>85</b>	<b>91</b>	<b>87</b>

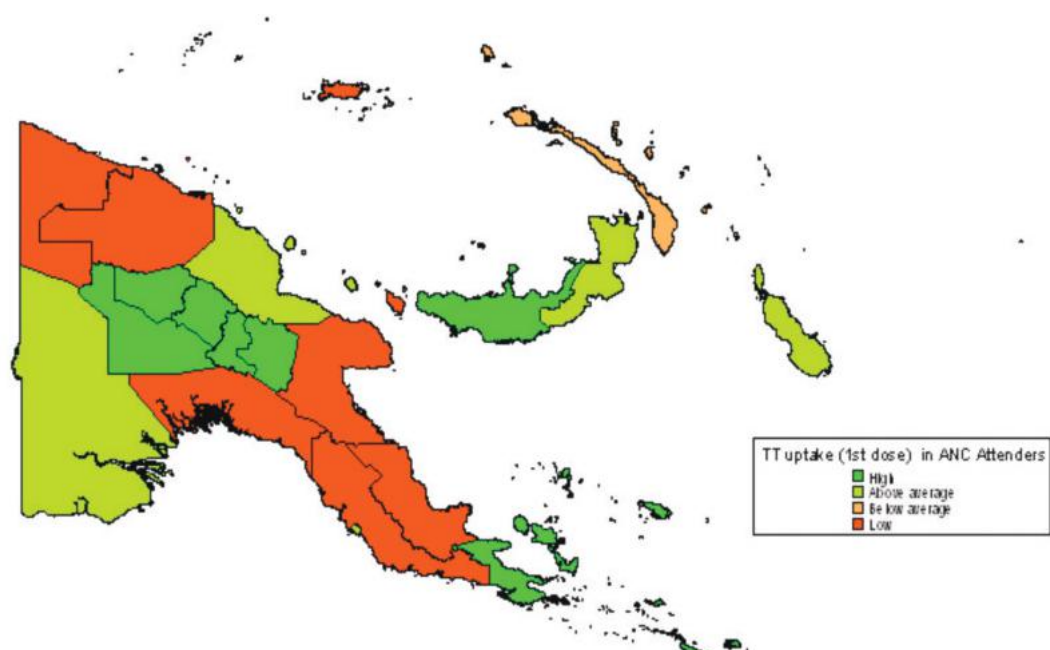
#### Couple Year Protection per 1,000 Women of Childbearing Age



**Tetanus Toxoid (TT) Uptake in Antenatal Clinic (ANC) Attendees**

Provinces		2001	2002	2003	2004	2005	2006	2007	2008	Average 2006–2008
1	Western	79%	81%	96%	90%	90%	88%	83%	89%	87%
2	Gulf	72%	69%	76%	79%	72%	84%	77%	63%	75%
3	Central	70%	79%	79%	74%	77%	63%	66%	69%	66%
4	NCD	86%	84%	79%	84%	89%	85%	88%	87%	86%
5	MBP	85%	87%	88%	91%	86%	90%	90%	90%	90%
6	Oro	66%	52%	71%	69%	70%	81%	66%	75%	74%
7	SHP	84%	79%	96%	86%	80%	107%	93%	94%	98%
8	Enga	87%	96%	95%	95%	96%	94%	103%	85%	93%
9	WHP	91%	92%	94%	93%	91%	90%	92%	89%	90%
10	Simbu	96%	97%	102%	99%	100%	102%	98%	99%	100%
11	EHP	94%	100%	91%	90%	87%	96%	88%	91%	91%
12	Morobe	85%	84%	91%	85%	85%	84%	86%	78%	83%
13	Madang	77%	82%	82%	77%	80%	87%	95%	85%	89%
14	ESP	94%	69%	86%	77%	90%	90%	77%	84%	83%
15	WSP	97%	84%	88%	90%	93%	85%	83%	80%	83%
16	Manus	70%	72%	68%	74%	76%	76%	73%	73%	74%
17	NIP	78%	78%	66%	88%	87%	84%	90%	82%	85%
18	ENB	85%	79%	89%	77%	82%	83%	81%	95%	87%
19	WNB	87%	98%	98%	109%	106%	103%	97%	111%	104%
20	ARB	62%	67%	78%	71%	83%	78%	90%	87%	86%
<b>Southern Highlands</b>		80%	79%	82%	83%	83%	83%	82%	83%	83%
<b>Momase</b>		90%	92%	95%	92%	90%	97%	93%	91%	94%
<b>Islands</b>		86%	80%	87%	82%	86%	86%	85%	82%	84%
<b>PNG TOTAL</b>		<b>84%</b>	<b>83%</b>	<b>88%</b>	<b>86%</b>	<b>87%</b>	<b>89%</b>	<b>87%</b>	<b>88%</b>	<b>88%</b>

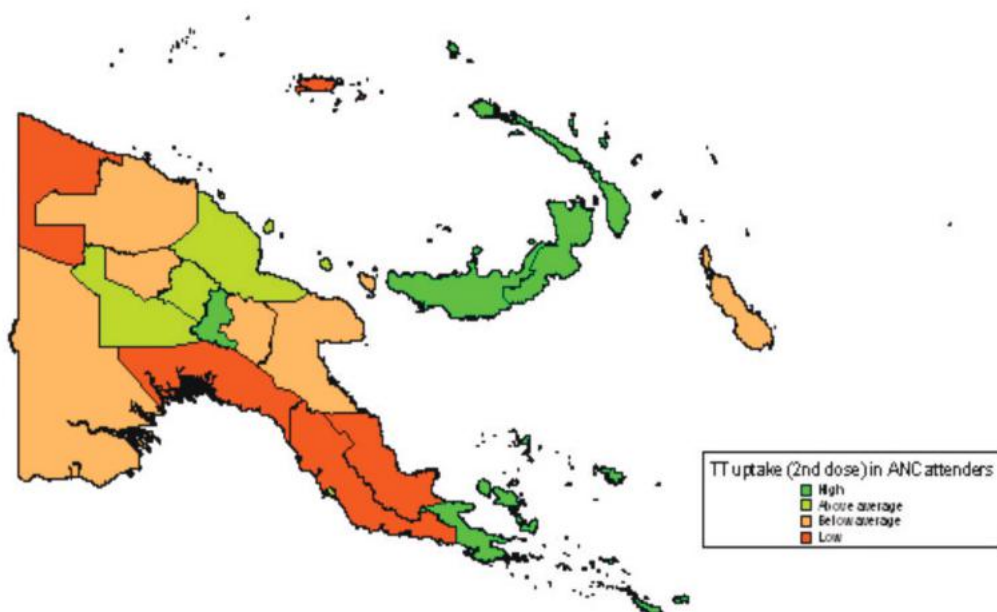
**Tetanus Toxoid (TT) Uptake in Antenatal Clinic (ANC) Attendees**



**TT Second Dose in ANC Attendees**

Provinces		2001	2002	2003	2004	2005	2006	2007	2008	Average 2006–2008
1	Western	55%	59%	65%	67%	67%	67%	58%	64%	63%
2	Gulf	39%	40%	49%	47%	47%	50%	44%	40%	45%
3	Central	49%	58%	58%	52%	55%	46%	46%	49%	47%
4	NCD	69%	68%	61%	66%	69%	65%	70%	67%	68%
5	MBP	66%	68%	68%	69%	68%	74%	74%	81%	77%
6	Oro	48%	36%	42%	43%	43%	58%	48%	44%	50%
7	SHP	56%	55%	67%	62%	59%	74%	67%	65%	69%
8	Enga	67%	70%	68%	68%	70%	67%	78%	57%	67%
9	WHP	65%	64%	71%	67%	68%	68%	70%	67%	68%
10	Simbu	77%	75%	81%	79%	79%	79%	76%	80%	78%
11	EHP	66%	69%	62%	63%	60%	78%	61%	65%	67%
12	Morobe	66%	60%	70%	67%	64%	67%	66%	60%	64%
13	Madang	56%	61%	61%	58%	61%	67%	75%	65%	69%
14	ESP	76%	53%	63%	61%	67%	73%	58%	64%	65%
15	WSP	69%	61%	61%	58%	66%	62%	58%	59%	60%
16	Manus	63%	54%	56%	55%	56%	61%	62%	59%	61%
17	NIP	69%	70%	59%	77%	76%	73%	78%	71%	74%
18	ENB	75%	70%	78%	68%	70%	71%	69%	81%	74%
19	WNB	74%	84%	83%	92%	92%	88%	89%	97%	92%
20	ARB	39%	47%	52%	48%	54%	58%	67%	64%	63%
<b>Southern Highlands</b>		60%	60%	60%	61%	62%	63%	62%	63%	63%
<b>Momase</b>		65%	66%	69%	67%	66%	73%	68%	67%	69%
<b>Islands</b>		66%	59%	65%	62%	64%	68%	65%	63%	65%
<b>Islands</b>		66%	68%	70%	73%	74%	73%	76%	79%	76%
<b>PNG TOTAL</b>		<b>64%</b>	<b>63%</b>	<b>66%</b>	<b>65%</b>	<b>66%</b>	<b>69%</b>	<b>68%</b>	<b>67%</b>	<b>68%</b>

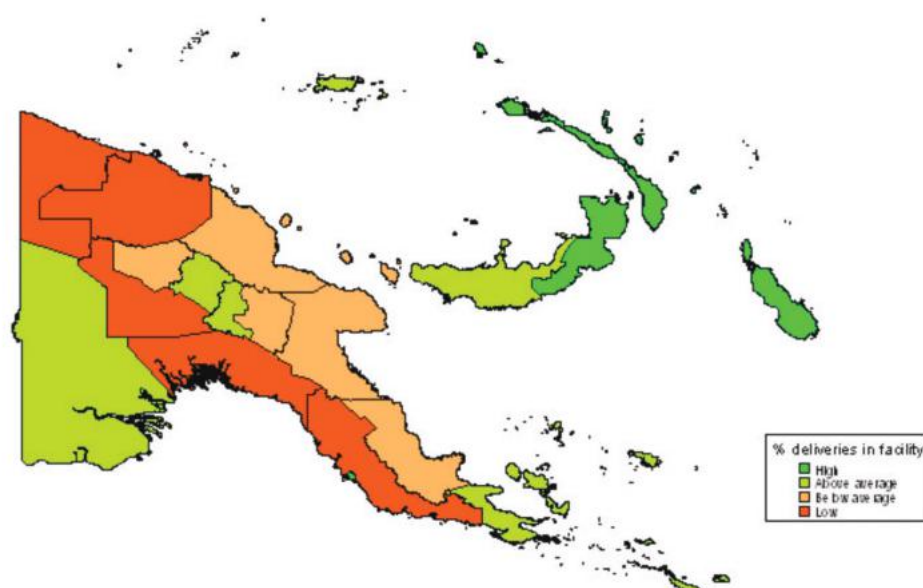
**TT Second Dose in ANC Attendees**



## Percentage of Deliveries in Health Facilities

Provinces	2001	2002	2003	2004	2005	2006	2007	2008	Average 2006–2008
1 Western	45%	40%	35%	32%	39%	33%	43%	40%	39%
2 Gulf	27%	25%	24%	19%	23%	25%	27%	21%	24%
3 Central	18%	20%	21%	21%	22%	20%	21%	21%	21%
4 NCD	112%	93%	36%	106%	101%	101%	102%	98%	100%
5 MBP	37%	36%	40%	36%	38%	42%	41%	42%	41%
6 Oro	25%	26%	27%	28%	7%	24%	32%	33%	29%
7 SHP	19%	13%	13%	16%	17%	18%	17%	17%	17%
8 Enga	28%	30%	28%	31%	31%	32%	30%	34%	32%
9 WHP	50%	47%	42%	49%	42%	44%	42%	37%	41%
10 Simbu	44%	45%	50%	51%	51%	54%	37%	49%	47%
11 EHP	11%	29%	21%	29%	26%	29%	38%	42%	37%
12 Morobe	33%	28%	30%	32%	32%	37%	20%	30%	29%
13 Madang	30%	30%	31%	29%	30%	26%	21%	35%	28%
14 ESP	10%	18%	10%	24%	15%	25%	24%	24%	24%
15 WSP	19%	19%	19%	19%	19%	18%	17%	18%	17%
16 Manus	50%	52%	42%	45%	48%	46%	50%	46%	47%
17 NIP	59%	62%	61%	55%	60%	48%	59%	57%	55%
18 ENB	70%	69%	74%	65%	67%	72%	73%	69%	71%
19 WNB	59%	55%	39%	61%	64%	44%	36%	49%	43%
20 ARB	36%	38%	40%	36%	42%	44%	49%	54%	49%
<b>Southern Highlands</b>	49%	44%	32%	46%	44%	46%	49%	48%	48%
<b>Momase</b>	28%	29%	27%	32%	30%	31%	31%	32%	32%
<b>Momase</b>	24%	25%	24%	28%	25%	29%	21%	28%	26%
<b>Islands</b>	56%	56%	53%	54%	58%	53%	54%	57%	54%
<b>PNG TOTAL excl. ARB</b>	<b>36%</b>	<b>35%</b>	<b>31%</b>	<b>37%</b>	<b>36%</b>	<b>37%</b>	<b>35%</b>	<b>38%</b>	<b>36%</b>

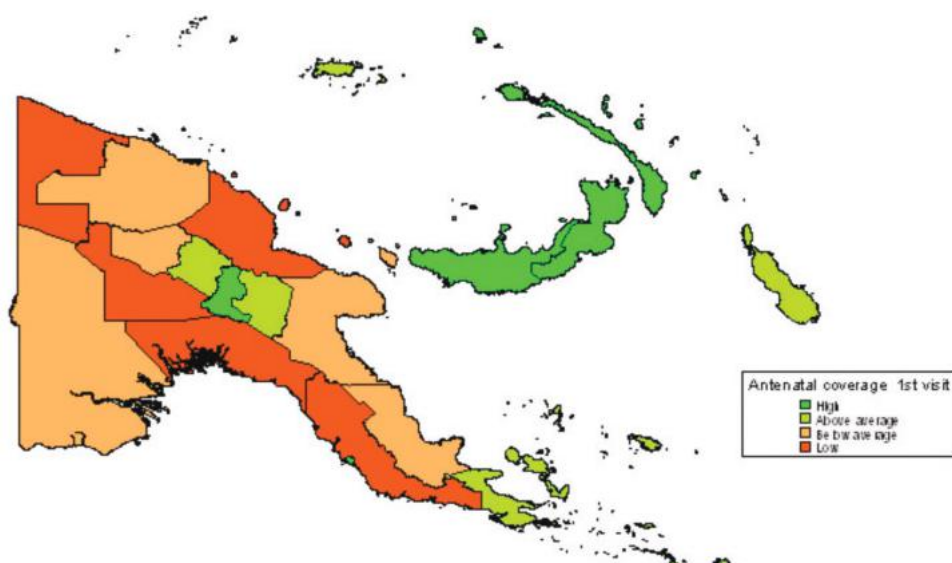
## Percentage of Deliveries in Health Facilities



**Antenatal Clinic Coverage First Visit**

Provinces		2001	2002	2003	2004	2005	2006	2007	2008	Average 2006–2008
1	Western	54%	56%	45%	49%	48%	48%	58%	55%	54%
2	Gulf	46%	40%	37%	38%	43%	47%	47%	40%	44%
3	Central	41%	43%	47%	51%	50%	46%	47%	45%	46%
4	NCD	108%	103%	94%	101%	74%	91%	96%	95%	94%
5	MBP	70%	63%	69%	65%	70%	68%	73%	71%	71%
6	Oro	53%	58%	49%	57%	53%	58%	56%	55%	57%
7	SHP	34%	33%	32%	36%	37%	40%	38%	38%	38%
8	Enga	52%	52%	52%	52%	58%	58%	53%	65%	59%
9	WHP	69%	64%	78%	70%	74%	81%	69%	72%	74%
10	Simbu	76%	75%	84%	79%	82%	88%	64%	80%	77%
11	EHP	37%	49%	48%	52%	60%	51%	65%	65%	60%
12	Morobe	50%	52%	56%	57%	55%	51%	56%	54%	54%
13	Madang	55%	52%	49%	47%	59%	51%	50%	57%	53%
14	ESP	47%	48%	45%	59%	53%	54%	62%	54%	56%
15	WSP	40%	39%	41%	44%	41%	39%	37%	37%	37%
16	Manus	54%	61%	58%	63%	57%	66%	65%	74%	68%
17	NIP	78%	86%	80%	80%	79%	76%	80%	73%	76%
18	ENB	73%	83%	82%	78%	75%	78%	78%	82%	80%
19	WNB	74%	68%	76%	88%	90%	77%	83%	86%	82%
20	ARB	51%	59%	60%	55%	64%	61%	76%	76%	71%
<b>Southern Highlands</b>		66%	64%	61%	64%	59%	63%	66%	64%	64%
<b>Momase</b>		49%	49%	50%	53%	53%	50%	53%	52%	52%
<b>Islands</b>		67%	73%	73%	75%	76%	73%	79%	80%	77%
<b>PNG TOTAL</b>		<b>56%</b>	<b>56%</b>	<b>57%</b>	<b>59%</b>	<b>59%</b>	<b>59%</b>	<b>61%</b>	<b>61%</b>	<b>60%</b>

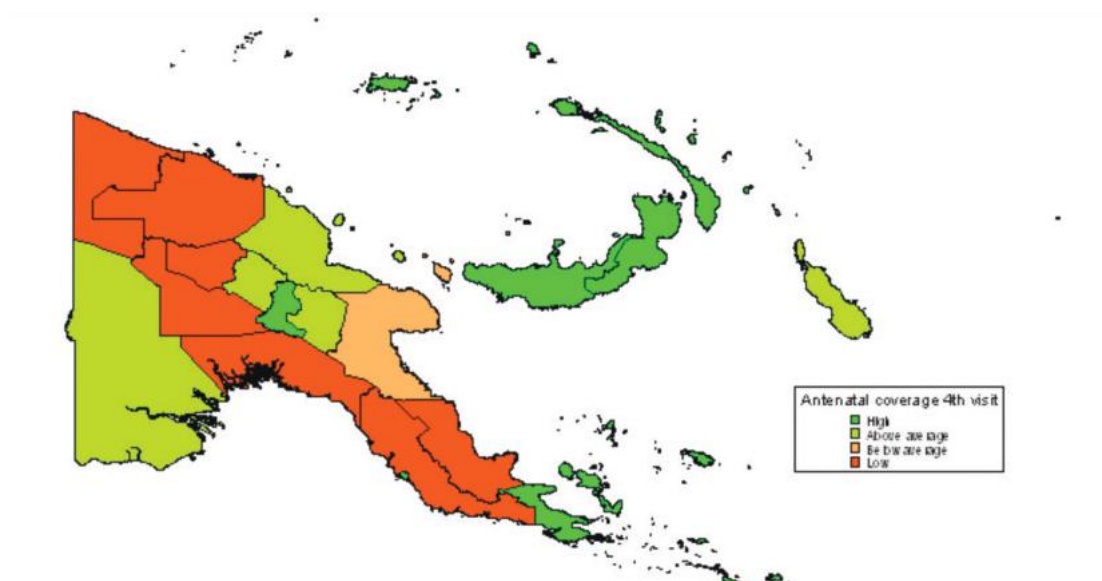
**Antenatal Clinic Coverage First Visit**



### Antenatal Clinic Coverage Fourth Visit

Provinces		2001	2002	2003	2004	2005	2006	2007	2008	Average 2006–2008
1	Western	27%	28%	25%	23%	21%	21%	29%	24%	25%
2	Gulf	17%	22%	20%	19%	21%	24%	21%	18%	21%
3	Central	13%	15%	22%	20%	20%	18%	19%	19%	19%
4	NCD	46%	43%	45%	46%	42%	38%	41%	56%	45%
5	MBP	35%	36%	43%	40%	41%	41%	43%	42%	42%
6	Oro	21%	21%	19%	24%	21%	21%	21%	22%	21%
7	SHP	15%	14%	14%	16%	16%	19%	17%	17%	18%
8	Enga	28%	20%	20%	19%	19%	23%	20%	22%	21%
9	WHP	23%	18%	29%	27%	30%	35%	27%	26%	29%
10	Simbu	35%	29%	39%	39%	40%	39%	31%	39%	36%
11	EHP	16%	26%	21%	22%	25%	22%	27%	34%	28%
12	Morobe	21%	20%	23%	25%	25%	23%	24%	22%	23%
13	Madang	45%	25%	24%	23%	26%	24%	22%	24%	24%
14	ESP	16%	17%	15%	17%	18%	18%	26%	20%	21%
15	WSP	16%	16%	19%	18%	17%	18%	18%	18%	18%
16	Manus	27%	28%	24%	25%	29%	38%	34%	35%	36%
17	NIP	45%	48%	46%	47%	50%	48%	52%	45%	48%
18	ENB	44%	48%	53%	47%	41%	42%	41%	46%	43%
19	WNB	32%	32%	38%	47%	50%	44%	44%	48%	45%
20	ARB	20%	21%	22%	19%	26%	25%	31%	34%	30%
<b>Southern</b>		29%	29%	31%	31%	30%	29%	31%	33%	31%
<b>Highlands</b>		21%	20%	22%	22%	24%	25%	23%	26%	25%
<b>Momase</b>		25%	20%	21%	22%	22%	22%	23%	22%	22%
<b>Islands</b>		34%	36%	39%	39%	41%	39%	41%	43%	41%
<b>PNG TOTAL</b>		<b>26%</b>	<b>25%</b>	<b>26%</b>	<b>27%</b>	<b>27%</b>	<b>27%</b>	<b>28%</b>	<b>29%</b>	<b>28%</b>

### Antenatal Clinic Coverage Fourth Visit

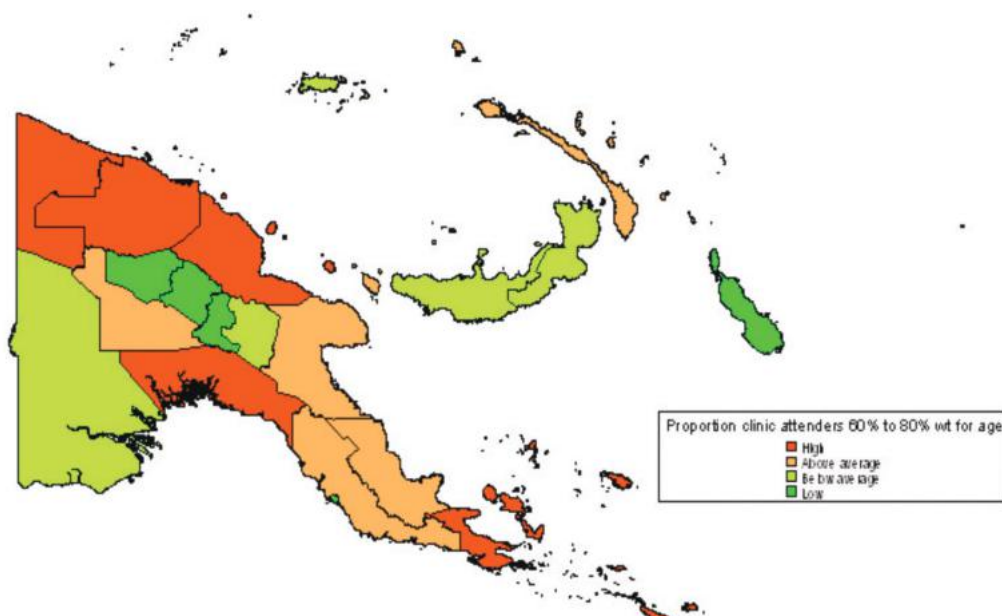


### Child Health

#### Percentage of Clinic Attendees 60–80% Weight for Age

Provinces	2001	2002	2003	2004	2005	2006	2007	2008	Average 2006–2008
1 Western	21.4%	21.5%	25.2%	24.6%	26.5%	23.8%	23.2%	21.0%	22.7%
2 Gulf	35.2%	32.2%	37.1%	33.5%	30.6%	35.2%	35.2%	34.0%	34.9%
3 Central	27.3%	32.8%	32.8%	30.0%	28.3%	27.2%	28.0%	26.3%	27.2%
4 NCD	8.2%	10.0%	13.4%	15.3%	9.9%	10.1%	10.5%	9.0%	9.9%
5 MBP	43.4%	44.3%	42.5%	43.9%	43.7%	41.9%	40.5%	41.1%	41.2%
6 Oro	24.3%	24.9%	25.6%	26.0%	31.3%	26.1%	26.4%	24.5%	25.7%
7 SHP	21.7%	23.7%	24.7%	28.1%	29.7%	26.6%	27.0%	26.8%	26.8%
8 Enga	14.0%	13.7%	13.3%	13.6%	17.6%	14.6%	17.4%	12.2%	14.7%
9 WHP	12.7%	18.5%	17.8%	20.0%	20.5%	17.4%	16.4%	12.4%	15.1%
10 Simbu	12.8%	16.1%	16.2%	16.5%	14.6%	14.8%	13.8%	13.4%	14.1%
11 EHP	26.4%	22.0%	23.1%	19.4%	17.2%	20.5%	18.7%	20.4%	19.8%
12 Morobe	30.3%	31.8%	36.0%	33.1%	36.0%	31.9%	31.4%	27.8%	30.4%
13 Madang	37.1%	35.6%	39.4%	40.5%	41.5%	40.1%	35.4%	31.4%	35.6%
14 ESP	30.6%	33.3%	31.7%	34.7%	38.1%	36.7%	34.1%	29.8%	33.9%
15 WSP	40.5%	38.6%	37.5%	40.7%	39.4%	37.2%	35.2%	32.9%	35.4%
16 Manus	15.8%	20.3%	19.2%	22.9%	23.8%	21.1%	23.0%	21.2%	21.7%
17 NIP	20.2%	21.0%	20.7%	20.5%	23.1%	25.6%	23.2%	25.8%	24.8%
18 ENB	22.5%	20.6%	21.7%	19.0%	19.8%	19.8%	21.1%	22.0%	21.0%
19 WNB	23.4%	22.7%	22.1%	22.1%	22.3%	20.8%	22.4%	22.1%	21.7%
20 ARB	28.0%	29.1%	31.0%	29.3%	26.4%	23.0%	17.1%	15.4%	18.4%
<b>Southern Highlands</b>	31.1%	31.9%	32.7%	32.5%	32.6%	31.0%	30.1%	30.0%	30.3%
<b>Momase</b>	17.8%	19.2%	19.4%	20.6%	20.4%	20.0%	19.7%	17.8%	19.2%
<b>Islands</b>	34.3%	34.4%	36.0%	36.7%	38.6%	36.5%	33.8%	30.1%	33.6%
<b>PNG TOTAL</b>	<b>27.0%</b>	<b>27.8%</b>	<b>28.1%</b>	<b>28.3%</b>	<b>28.8%</b>	<b>27.4%</b>	<b>26.9%</b>	<b>24.8%</b>	<b>26.4%</b>

#### Percentage of Clinic Attendees 60–80% Weight for Age

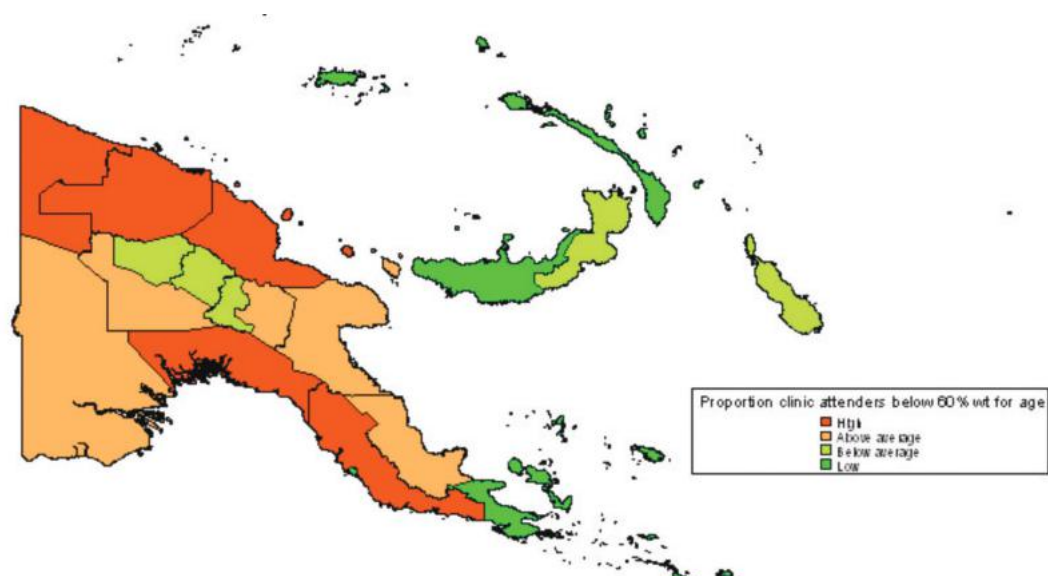




## Percentage of Clinic Attendees &lt;60% Weight for Age

Provinces	2001	2002	2003	2004	2005	2006	2007	2008	Average 2006–2008
1 Western	1.3%	1.3%	1.5%	1.4%	3.9%	1.7%	1.4%	1.7%	1.6%
2 Gulf	4.4%	3.5%	4.3%	4.4%	3.9%	4.6%	3.6%	3.4%	3.9%
3 Central	2.5%	3.5%	1.8%	2.3%	2.6%	1.8%	2.2%	2.4%	2.1%
4 NCD	0.6%	0.7%	0.9%	1.0%	0.7%	0.7%	0.6%	0.5%	0.6%
5 MBP	1.0%	1.2%	0.9%	1.0%	1.0%	0.9%	0.7%	0.5%	0.7%
6 Oro	2.0%	2.0%	2.0%	2.1%	3.1%	1.8%	2.4%	1.0%	1.7%
7 SHP	1.4%	1.9%	1.3%	1.7%	1.4%	1.6%	1.0%	1.3%	1.3%
8 Enga	0.7%	1.4%	0.8%	0.6%	1.3%	1.8%	1.0%	0.7%	1.2%
9 WHP	1.1%	1.3%	1.3%	1.0%	1.4%	1.1%	1.1%	1.0%	1.1%
10 Simbu	0.8%	1.0%	0.9%	1.2%	1.2%	1.4%	0.8%	1.2%	1.2%
11 EHP	2.7%	2.0%	2.4%	1.5%	1.5%	1.3%	1.5%	1.7%	1.5%
12 Morobe	1.9%	1.8%	2.5%	2.2%	2.2%	1.8%	1.7%	1.5%	1.7%
13 Madang	2.8%	2.2%	2.4%	2.4%	2.4%	1.9%	2.1%	2.1%	2.1%
14 ESP	1.8%	2.0%	1.9%	2.1%	3.5%	2.1%	1.6%	1.8%	1.8%
15 WSP	3.1%	2.5%	2.5%	2.4%	3.3%	2.9%	2.9%	2.1%	2.7%
16 Manus	0.3%	0.4%	1.0%	0.9%	0.5%	0.5%	0.4%	0.5%	0.5%
17 NIP	0.7%	0.6%	1.0%	0.7%	0.8%	0.8%	0.6%	1.0%	0.8%
18 ENB	0.9%	0.8%	0.8%	0.8%	0.7%	0.9%	1.1%	1.5%	1.2%
19 WNB	1.7%	1.1%	1.3%	0.9%	0.9%	1.0%	1.1%	0.8%	0.9%
20 ARB	1.7%	1.6%	2.1%	1.7%	1.4%	1.3%	1.1%	1.2%	1.2%
<b>Southern</b>	1.3%	1.5%	1.3%	1.4%	1.8%	1.3%	1.2%	0.9%	1.1%
<b>Highlands</b>	1.4%	1.6%	1.4%	1.3%	1.4%	1.4%	1.2%	1.2%	1.3%
<b>Momase</b>	2.3%	2.0%	2.34%	2.3%	2.9%	2.1%	1.9%	1.8%	2.0%
<b>Islands</b>	1.1%	0.9%	1.1%	0.9%	0.9%	0.9%	0.9%	1.0%	0.9%
<b>PNG TOTAL</b>	<b>1.6%</b>	<b>1.6%</b>	<b>1.6%</b>	<b>1.5%</b>	<b>1.8%</b>	<b>1.5%</b>	<b>1.4%</b>	<b>1.2%</b>	<b>1.4%</b>

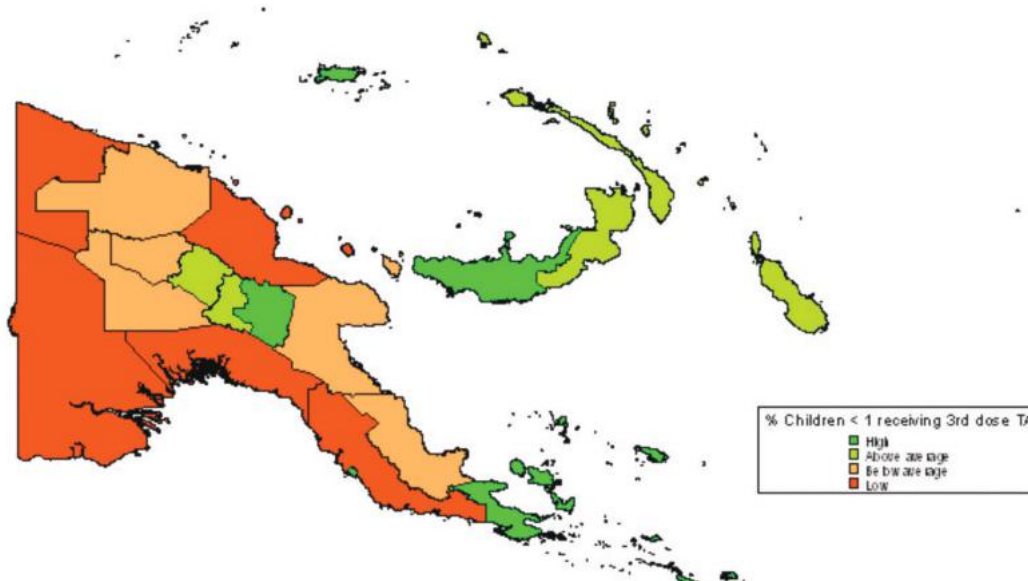
## Percentage of Clinic Attendees &lt;60% Weight for Age



Percentage of Children <1 year Receiving Third Dose of Triple Antigen

Provinces	2001	2002	2003	2004	2005	2006	2007	2008	Average 2006–2008
1 Western	53%	60%	63%	51%	51%	55%	51%	50%	52.2%
2 Gulf	42%	47%	50%	35%	29%	51%	48%	31%	43.3%
3 Central	59%	64%	63%	52%	63%	57%	54%	45%	52.1%
4 NCD	106%	123%	123%	106%	78%	111%	113%	98%	107.1%
5 MBP	97%	83%	100%	76%	90%	108%	95%	94%	98.8%
6 Oro	42%	43%	56%	48%	53%	67%	67%	56%	63.5%
7 SHP	40%	27%	38%	40%	37%	82%	45%	47%	57.6%
8 Enga	56%	54%	81%	52%	61%	69%	62%	67%	65.9%
9 WHP	42%	53%	76%	74%	71%	95%	59%	65%	72.7%
10 Simbu	73%	63%	88%	75%	86%	99%	59%	64%	73.9%
11 EHP	40%	66%	69%	58%	70%	131%	87%	69%	95.2%
12 Morobe	50%	73%	68%	69%	60%	55%	62%	51%	55.9%
13 Madang	42%	55%	52%	42%	55%	62%	55%	49%	55.1%
14 ESP	45%	50%	55%	56%	64%	84%	67%	48%	66.3%
15 WSP	63%	49%	58%	64%	53%	37%	38%	37%	37.3%
16 Manus	69%	82%	76%	98%	84%	100%	88%	94%	94.0%
17 NIP	76%	75%	65%	82%	88%	87%	86%	86%	85.9%
18 ENB	71%	85%	91%	73%	75%	74%	82%	67%	74.5%
19 WNB	60%	59%	84%	89%	113%	81%	82%	96%	86.2%
20 ARB	45%	32%	48%	46%	79%	71%	84%	59%	71.4%
<b>Southern Highlands</b>	71%	75%	81%	66%	65%	79%	76%	67%	74.0%
<b>Momase</b>	48%	60%	59%	58%	59%	62%	58%	48%	55.8%
<b>Islands</b>	63%	64%	74%	74%	89%	79%	83%	78%	80.0%
<b>PNG TOTAL</b>	<b>55%</b>	<b>62%</b>	<b>69%</b>	<b>63%</b>	<b>65%</b>	<b>80%</b>	<b>67%</b>	<b>61%</b>	<b>69.0%</b>

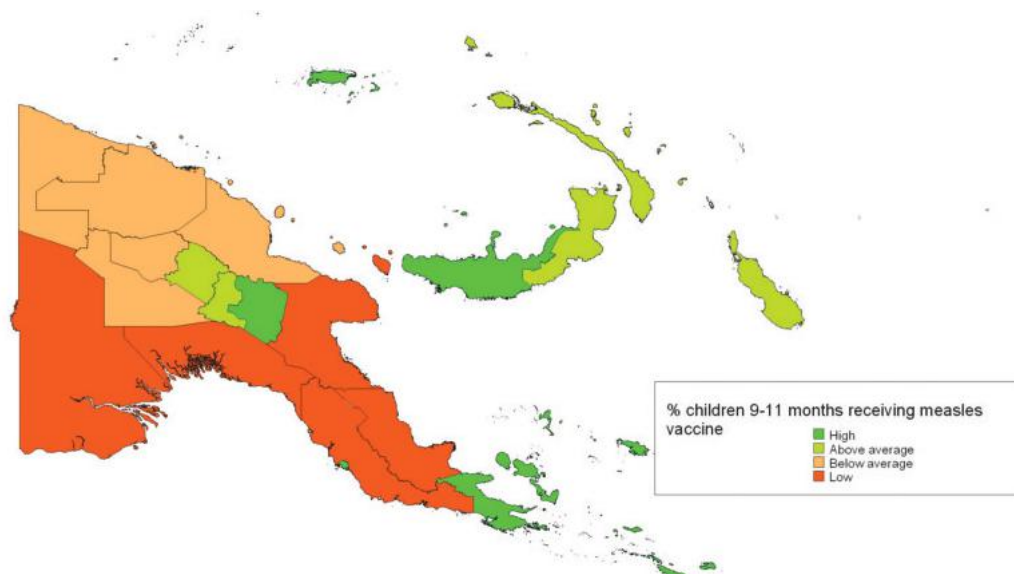
Percentage of Children <1 year Receiving Third Dose of Triple Antigen



Percentage of Children 9–11 months Receiving Measles Vaccine

Provinces	2001	2002	2003	2004	2005	2006	2007	2008	Average 2006–2008
1 Western	42%	40%	41%	41%	41%	43%	42%	42%	42.3%
2 Gulf	36%	38%	46%	41%	32%	45%	44%	27%	38.2%
3 Central	54%	50%	44%	42%	53%	45%	44%	39%	42.5%
4 NCD	77%	90%	90%	80%	54%	72%	76%	82%	76.6%
5 MBP	80%	74%	78%	67%	73%	86%	83%	84%	84.1%
6 Oro	37%	30%	37%	30%	39%	42%	45%	52%	46.3%
7 SHP	37%	27%	32%	38%	34%	70%	37%	46%	50.8%
8 Enga	50%	51%	67%	40%	45%	55%	49%	50%	51.1%
9 WHP	30%	62%	60%	58%	62%	65%	48%	71%	61.3%
10 Simbu	64%	71%	73%	60%	68%	80%	50%	50%	59.9%
11 EHP	42%	56%	53%	50%	47%	62%	68%	94%	74.8%
12 Morobe	46%	60%	52%	54%	47%	44%	46%	49%	46.7%
13 Madang	36%	53%	42%	38%	43%	51%	44%	52%	48.9%
14 ESP	41%	42%	43%	42%	51%	61%	51%	47%	53.1%
15 WSP	50%	35%	54%	50%	50%	37%	37%	85%	53.6%
16 Manus	67%	69%	59%	69%	66%	79%	72%	87%	79.4%
17 NIP	64%	71%	50%	57%	68%	72%	71%	64%	69.0%
18 ENB	67%	70%	78%	61%	62%	57%	61%	72%	63.7%
19 WNB	52%	52%	60%	66%	88%	70%	67%	102%	80.0%
20 ARB	37%	31%	38%	34%	52%	50%	54%	59%	54.5%
<b>Southern</b>	<b>58%</b>	<b>58%</b>	<b>59%</b>	<b>53%</b>	<b>51%</b>	<b>58%</b>	<b>58%</b>	<b>58%</b>	<b>58.3%</b>
<b>Highlands</b>	<b>42%</b>	<b>51%</b>	<b>53%</b>	<b>48%</b>	<b>49%</b>	<b>66%</b>	<b>50%</b>	<b>64%</b>	<b>60.1%</b>
<b>Momase</b>	<b>43%</b>	<b>51%</b>	<b>47%</b>	<b>46%</b>	<b>47%</b>	<b>49%</b>	<b>46%</b>	<b>54%</b>	<b>49.8%</b>
<b>Islands</b>	<b>56%</b>	<b>57%</b>	<b>58%</b>	<b>56%</b>	<b>68%</b>	<b>63%</b>	<b>64%</b>	<b>77%</b>	<b>68.0%</b>
<b>PNG TOTAL</b>	<b>48%</b>	<b>54%</b>	<b>54%</b>	<b>51%</b>	<b>52%</b>	<b>59%</b>	<b>53%</b>	<b>62%</b>	<b>57.9%</b>

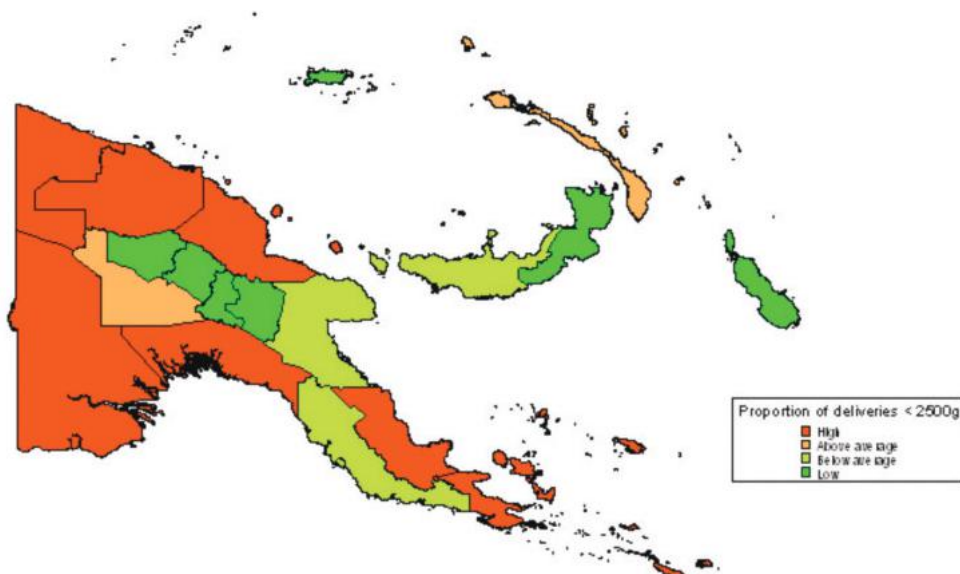
Percentage of Children 9–11 months Receiving Measles Vaccine



Percentage of Deliveries <2500g

Provinces	2001	2002	2003	2004	2005	2006	2007	2008	Average 2006–2008
1 Western	11%	12%	12%	13%	10%	14%	11%	15%	13%
2 Gulf	10%	11%	9%	9%	9%	10%	11%	10%	10%
3 Central	11%	12%	8%	9%	7%	8%	6%	6%	7%
4 NCD	6%	12%	18%	13%	8%	0%	9%	13%	7%
5 MBP	17%	18%	18%	14%	18%	17%	16%	13%	15%
6 Oro	15%	13%	11%	13%	6%	9%	14%	11%	12%
7 SHP	15%	9%	12%	6%	6%	8%	7%	10%	8%
8 Enga	6%	4%	2%	6%	5%	5%	6%	4%	5%
9 WHP	8%	6%	8%	8%	9%	8%	6%	5%	6%
10 Simbu	5%	5%	5%	4%	5%	7%	5%	5%	6%
11 EHP	6%	7%	7%	7%	7%	6%	5%	7%	6%
12 Morobe	5%	6%	7%	6%	5%	6%	8%	7%	7%
13 Madang	16%	17%	16%	16%	15%	14%	13%	14%	13%
14 ESP	15%	21%	12%	28%	14%	16%	17%	25%	19%
15 WSP	17%	22%	20%	19%	19%	22%	17%	17%	18%
16 Manus	7%	3%	14%	4%	4%	5%	4%	5%	5%
17 NIP	6%	9%	9%	8%	11%	7%	9%	9%	8%
18 ENB	6%	6%	6%	6%	7%	6%	5%	6%	6%
19 WNB	10%	9%	10%	9%	10%	8%	6%	8%	7%
20 ARB	5%	5%	6%	6%	6%	7%	5%	6%	6%
<b>Southern Highlands</b>	9%	13%	14%	13%	10%	7%	11%	12%	10%
<b>Momase</b>	9%	6%	7%	6%	7%	7%	6%	6%	6%
<b>Islands</b>	11%	14%	12%	15%	11%	11%	13%	14%	13%
<b>Islands</b>	7%	7%	7%	7%	8%	7%	6%	7%	6%
<b>PNG TOTAL</b>	<b>9%</b>	<b>10%</b>	<b>10%</b>	<b>10%</b>	<b>9%</b>	<b>8%</b>	<b>9%</b>	<b>10%</b>	<b>9%</b>

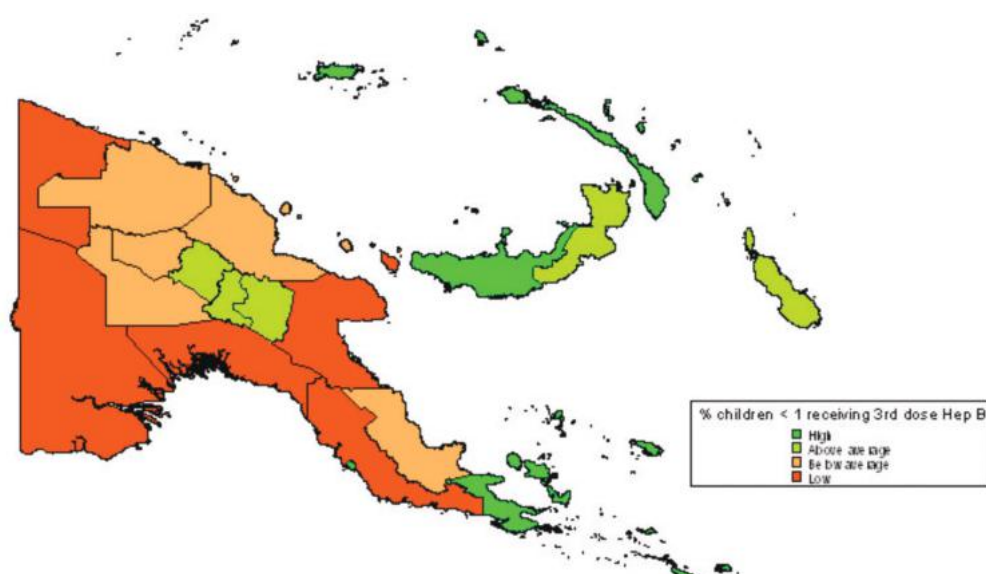
Percentage of Deliveries <2500g



**Percentage of Children <1 year Receiving Third Hepatitis Immunisation**

Provinces		2001	2002	2003	2004	2005	2006	2007	2008	Average 2006–2008
1	Western	31%	41%	56%	57%	59%	53%	50%	51%	51.3%
2	Gulf	33%	51%	49%	35%	27%	52%	47%	32%	43.2%
3	Central	55%	64%	62%	57%	67%	59%	54%	48%	53.6%
4	NCD	87%	116%	122%	103%	78%	103%	106%	117%	108.6%
5	MBP	69%	92%	101%	68%	91%	107%	90%	86%	94.2%
6	Oro	43%	45%	54%	41%	59%	61%	66%	62%	63.1%
7	SHP	27%	28%	37%	39%	37%	82%	43%	49%	57.3%
8	Enga	38%	59%	79%	53%	60%	69%	65%	65%	66.4%
9	WHP	30%	52%	70%	75%	70%	91%	63%	72%	75.1%
10	Simbu	48%	66%	87%	67%	88%	98%	58%	64%	73.2%
11	EHP	43%	66%	72%	61%	71%	77%	86%	81%	81.5%
12	Morobe	51%	66%	69%	66%	60%	57%	63%	50%	56.5%
13	Madang	12%	64%	54%	44%	56%	59%	54%	57%	56.6%
14	ESP	25%	49%	49%	61%	66%	83%	64%	61%	69.3%
15	WSP	21%	39%	58%	53%	58%	43%	40%	34%	38.8%
16	Manus	79%	85%	51%	98%	87%	95%	90%	89%	91.0%
17	NIP	69%	77%	62%	63%	93%	87%	84%	79%	83.5%
18	ENB	74%	79%	87%	60%	80%	75%	84%	70%	76.4%
19	WNB	46%	59%	89%	86%	113%	82%	80%	107%	89.7%
20	ARB	23%	30%	47%	42%	73%	71%	79%	78%	76.2%
<b>Southern</b>		56%	73%	79%	64%	67%	77%	73%	71%	73.4%
<b>Highlands</b>		36%	52%	65%	58%	62%	83%	62%	66%	70.3%
<b>Momase</b>		30%	58%	59%	57%	60%	62%	58%	52%	57.3%
<b>Islands</b>		54%	63%	72%	65%	90%	79%	82%	85%	82.0%
<b>PNG TOTAL</b>		<b>42%</b>	<b>61%</b>	<b>68%</b>	<b>61%</b>	<b>67%</b>	<b>75%</b>	<b>66%</b>	<b>65%</b>	<b>68.6%</b>

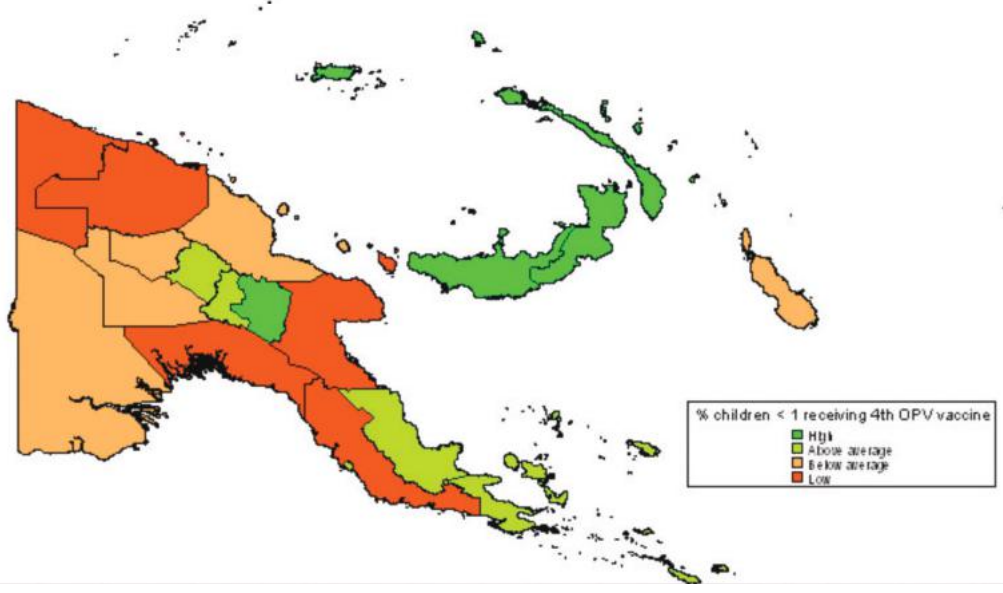
**Percentage of Children <1 year Receiving Third Hepatitis Immunisation**



Percentage of Children <1 year Receiving Fourth Dose of Oral Polio Vaccine (OPV)

Provinces	2001	2002	2003	2004	2005	2006	2007	2008	Average 2006–2008
1 Western	43%	50%	44%	41%	42%	50%	39%	24%	37.4%
2 Gulf	26%	35%	30%	18%	25%	28%	20%	13%	20.5%
3 Central	42%	39%	38%	38%	47%	40%	35%	23%	32.4%
4 NCD	73%	102%	103%	85%	70%	91%	44%	2%	44.9%
5 MBP	71%	73%	90%	66%	81%	96%	31%	2%	42.4%
6 Oro	31%	30%	36%	33%	37%	42%	46%	43%	43.7%
7 SHP	28%	21%	28%	30%	24%	56%	33%	31%	39.5%
8 Enga	42%	43%	63%	36%	47%	55%	34%	22%	36.4%
9 WHP	26%	38%	70%	64%	59%	71%	32%	27%	43.1%
10 Simbu	32%	45%	70%	58%	64%	80%	35%	15%	43.0%
11 EHP	22%	61%	52%	52%	50%	55%	60%	38%	50.7%
12 Morobe	29%	52%	53%	54%	48%	46%	40%	14%	32.9%
13 Madang	20%	43%	35%	31%	44%	47%	37%	26%	36.7%
14 ESP	15%	34%	42%	41%	45%	61%	33%	7%	33.1%
15 WSP	32%	27%	38%	45%	42%	28%	27%	19%	24.8%
16 Manus	50%	30%	60%	73%	73%	88%	53%	16%	51.5%
17 NIP	53%	63%	56%	75%	80%	80%	59%	24%	53.9%
18 ENB	29%	73%	68%	58%	66%	58%	47%	32%	45.4%
19 WNB	29%	44%	65%	67%	93%	66%	62%	95%	74.7%
20 ARB	26%	25%	32%	33%	58%	49%	41%	18%	36.0%
<b>Southern</b>	51%	59%	62%	51%	54%	63%	37%	16%	38.2%
<b>Highlands</b>	28%	41%	54%	48%	46%	62%	39%	29%	43.0%
<b>Momase</b>	23%	42%	44%	43%	45%	48%	36%	16%	32.9%
<b>Islands</b>	33%	51%	57%	58%	74%	64%	52%	44%	53.2%
<b>PNG TOTAL</b>	<b>33%</b>	<b>47%</b>	<b>54%</b>	<b>49%</b>	<b>52%</b>	<b>58%</b>	<b>40%</b>	<b>25%</b>	<b>40.7%</b>

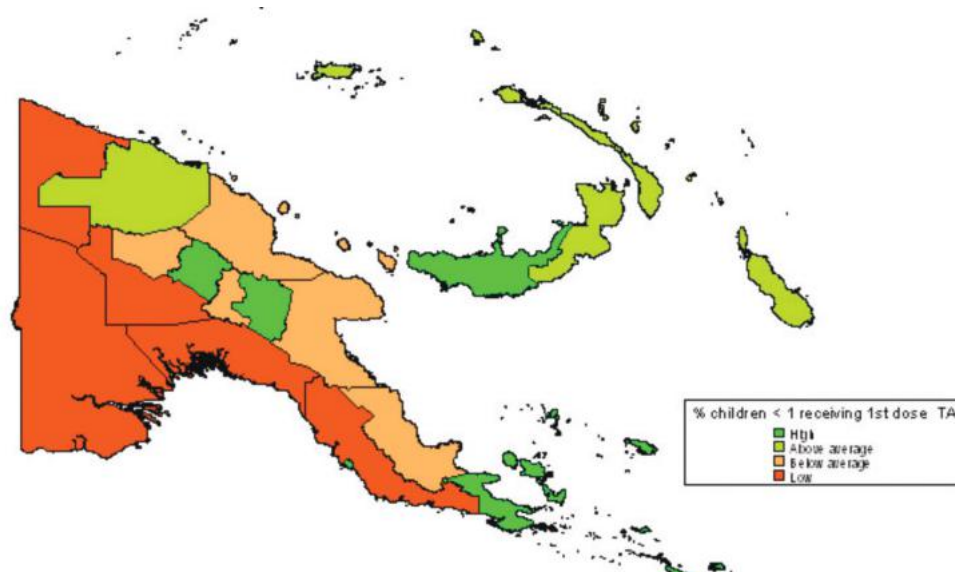
Percentage of Children <1 year Receiving Fourth Dose of Oral Polio Vaccine (OPV)



Percentage of Children <1 year Receiving First Dose of TA

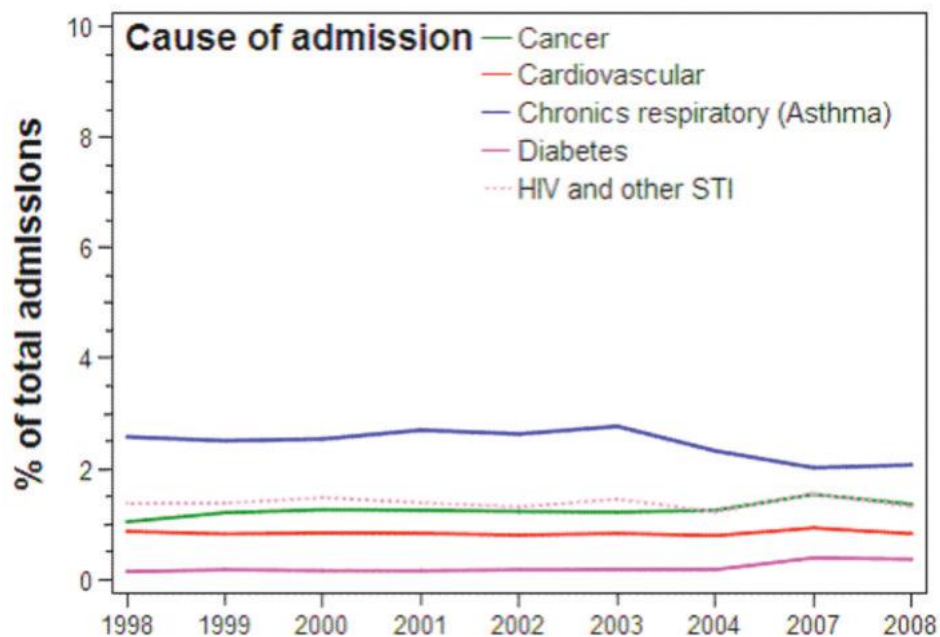
Provinces		2001	2002	2003	2004	2005	2006	2007	2008	Average 2006–2008
1	Western	81%	80%	79%	82%	71%	70%	74%	83%	75.7%
2	Gulf	73%	64%	62%	49%	44%	74%	69%	49%	63.9%
3	Central	75%	73%	107%	62%	77%	64%	62%	56%	60.7%
4	NCD	135%	144%	130%	118%	97%	116%	126%	116%	119.4%
5	MBP	101%	94%	108%	89%	100%	111%	98%	100%	102.8%
6	Oro	66%	70%	79%	72%	76%	88%	93%	74%	84.9%
7	SHP	57%	39%	56%	63%	54%	93%	55%	68%	71.5%
8	Enga	76%	81%	95%	64%	75%	81%	78%	87%	81.9%
9	WHP	70%	82%	108%	94%	92%	109%	90%	89%	96.0%
10	Simbu	87%	81%	94%	82%	90%	103%	65%	82%	83.4%
11	EHP	58%	89%	92%	80%	102%	93%	104%	101%	99.6%
12	Morobe	73%	85%	87%	88%	82%	74%	83%	75%	77.3%
13	Madang	73%	76%	73%	59%	82%	88%	78%	75%	79.9%
14	ESP	66%	86%	77%	84%	97%	98%	84%	77%	86.5%
15	WSP	88%	70%	81%	78%	76%	59%	62%	64%	61.8%
16	Manus	82%	92%	91%	100%	89%	92%	96%	86%	91.3%
17	NIP	84%	92%	79%	91%	97%	95%	97%	94%	95.2%
18	ENB	85%	93%	104%	92%	85%	88%	95%	80%	87.9%
19	WNB	93%	82%	105%	109%	126%	100%	106%	116%	107.8%
20	ARB	73%	66%	80%	65%	94%	93%	106%	82%	93.3%
<b>Southern</b>		92%	92%	99%	83%	81%	90%	90%	84%	88.0%
<b>Highlands</b>		67%	72%	87%	77%	81%	96%	79%	85%	86.7%
<b>Momase</b>		73%	81%	80%	78%	85%	82%	79%	74%	78.2%
<b>Islands</b>		84%	84%	94%	91%	100%	94%	101%	93%	96.0%
<b>PNG TOTAL</b>		<b>77%</b>	<b>81%</b>	<b>89%</b>	<b>81%</b>	<b>85%</b>	<b>90%</b>	<b>84%</b>	<b>83%</b>	<b>85.6%</b>

Percentage of Children <1 year Receiving First Dose of TA

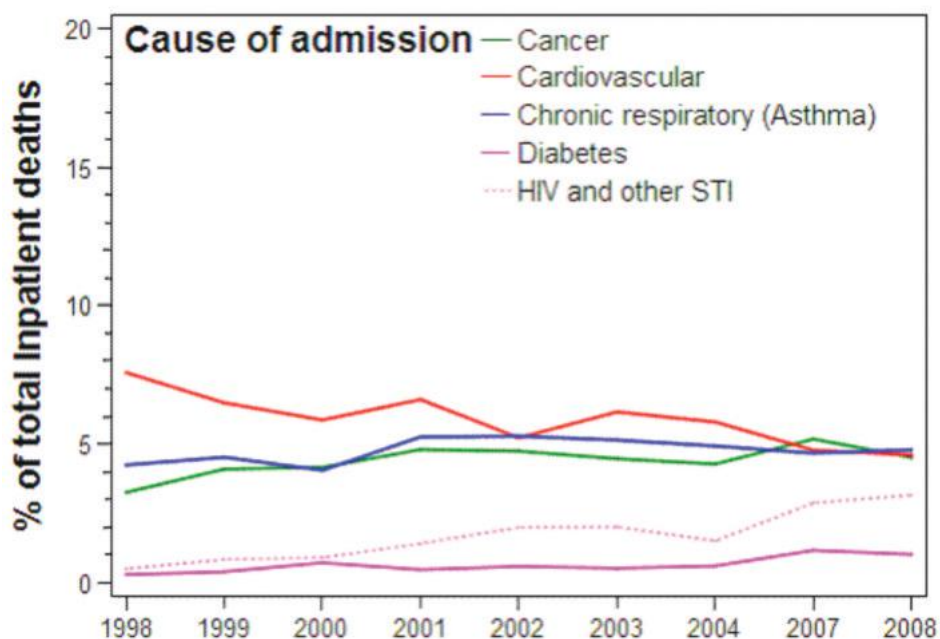


### Lifestyle Diseases

#### Admission Trend



#### Inpatient Mortality



#### Cancer Admissions (2008 all PNG) by Type of Cancer

Type of Cancer	% of Cancer Admissions
Cervical cancer	22.2%
Benign neoplasm	22.1%
Oral cancer	12.4%
Breast cancer	7.3%
Liver cancer	7.0%
All other cancers	29.2%

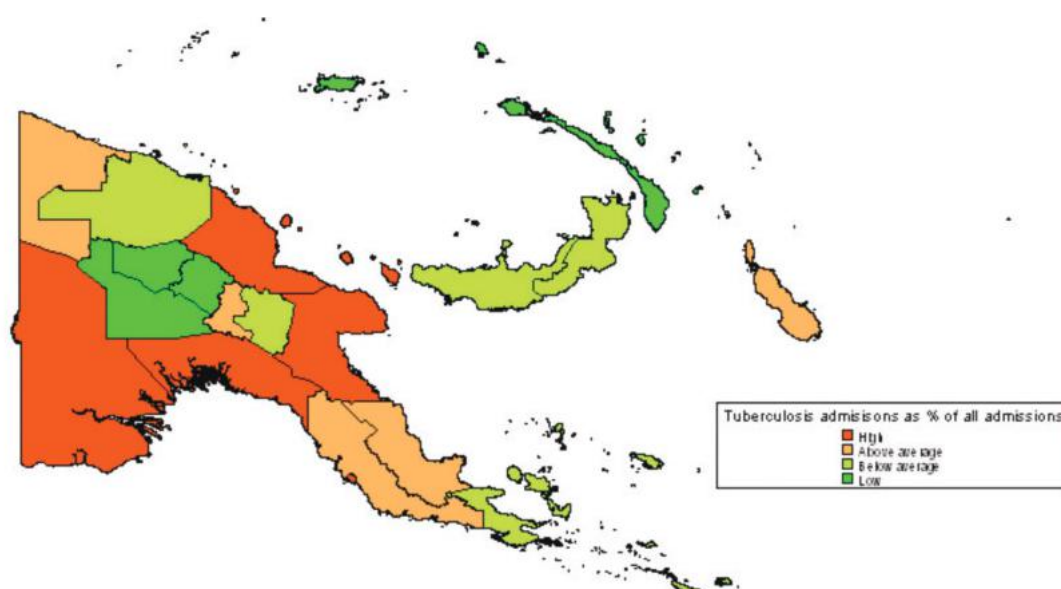


## Tuberculosis

### Tuberculosis Admissions

		Total Admissions from Tuberculosis								Average	Rate
		2001	2002	2003	2004	2005	2006	2007	2008	2006–2008	per 100,000
1	Western	258	171	165	190	250	209	274	239	240.7	125
2	Gulf	231	230	318	286	480	520	640	346	502.0	392
3	Central	178	166	209	170	188	138	133	135	135.3	62.7
4	NCD	563	901	477	1,434	579	1,842	1,478	1,478	1,599.3	491
5	MBP	427	340	344	401	388	456	357	299	370.7	148
6	Oro	270	245	223	241	229	196	248	250	231.3	144
7	SHP	134	50	92	153	102	159	170	288	205.7	28.2
8	Enga	108	146	135	129	112	165	163	183	170.3	47.3
9	WHP	312	540	430	312	397	328	473	406	402.3	76.9
10	Simbu	299	397	405	426	414	456	267	447	390.0	133
11	EHP	177	303	368	443	466	380	373	422	391.7	77.7
12	Morobe	557	844	782	850	800	1,004	945	847	932.0	142
13	Madang	653	726	820	811	934	729	496	766	663.7	151
14	ESP	112	289	167	308	168	319	380	437	378.7	94.7
15	WSP	255	230	224	207	233	233	223	269	241.7	110
16	Manus	30	58	21	38	45	19	24	19	20.7	39.8
17	NIP	152	262	317	194	253	210	206	218	211.3	146
18	ENB	471	375	467	518	424	551	575	455	527.0	201
19	WNB	422	379	216	366	389	282	214	435	310.3	132
20	ARB	237	143	181	274	393	458	228	250	312.0	158
<b>Southern</b>		1,927	2,053	1,736	2,722	2,114	3,361	3,130	2,747	3,079.3	242
<b>Highlands</b>		1,030	1,436	1,430	1,463	1,491	1,488	1,446	1,746	1,560.0	64.7
<b>Momase</b>		1,577	2,089	1,993	2,176	2,135	2,285	2,044	2,319	2,216.0	129
<b>Islands</b>		1,312	1,217	1,202	1,390	1,504	1,520	1,247	1,377	1,381.3	155
<b>PNG TOTAL</b>		<b>5,846</b>	<b>6,795</b>	<b>6,361</b>	<b>7,751</b>	<b>7,244</b>	<b>8,654</b>	<b>7,867</b>	<b>8,189</b>	<b>8,236.7</b>	<b>131</b>

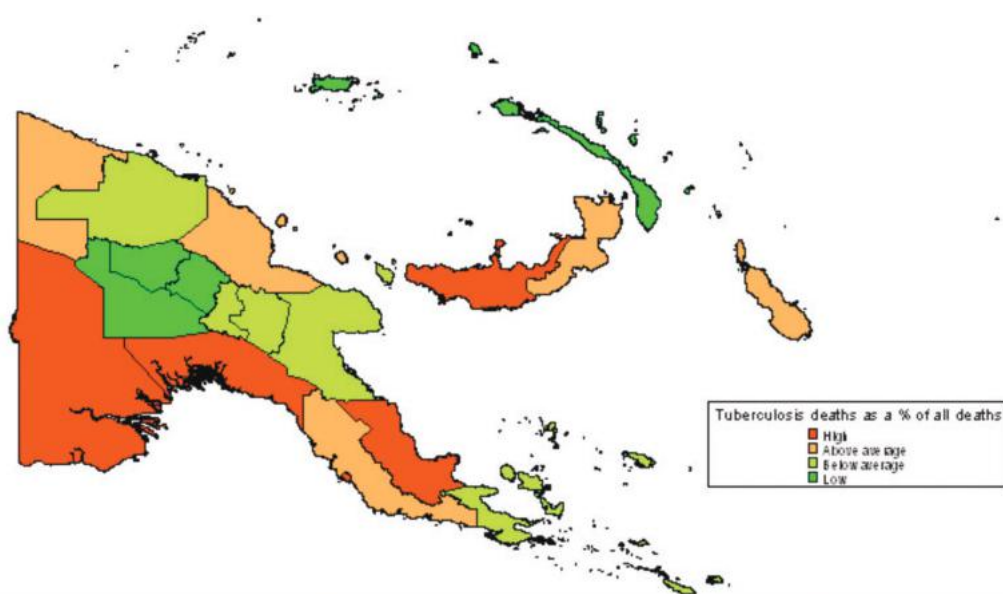
### Tuberculosis Admissions as a Percentage of All Admissions



**Tuberculosis Deaths**

		Total Deaths from Tuberculosis								Average	Rate
		2001	2002	2003	2004	2005	2006	2007	2008	2006–2008	per 100,000
1	Western	37	24	30	23	30	27	79	31	45.7	23.7
2	Gulf	15	23	29	27	30	33	25	19	25.7	20.1
3	Central	9	12	21	10	11	6	13	11	10.0	4.6
4	NCD	20	73	10	80	34	81	88	117	95.3	29.3
5	MBP	19	25	22	20	22	30	19	27	25.3	10.1
6	Oro	5	20	13	28	29	30	36	48	38.0	23.7
7	SHP	10	5	19	22	10	12	20	18	16.7	2.3
8	Enga	6	5	8	9	7	13	24	28	21.7	6.0
9	WHP	10	33	34	19	41	44	49	34	42.3	8.1
10	Simbu	27	23	25	38	23	30	18	32	26.7	9.1
11	EHP	21	35	28	34	37	27	39	70	45.3	9.0
12	Morobe	72	75	77	111	101	103	87	90	93.3	14.3
13	Madang	52	43	60	65	79	39	47	50	45.3	10.3
14	ESP	11	37	21	37	16	22	29	34	28.3	7.1
15	WSP	27	17	20	24	18	27	21	24	24.0	10.9
16	Manus	0	1	3	0	5	2	3	1	2.0	3.9
17	NIP	5	13	14	8	15	6	13	17	12.0	8.3
18	ENB	24	38	25	45	35	51	41	57	49.7	19.0
19	WNB	42	31	25	36	51	34	18	71	41.0	17.5
20	ARB	15	13	18	21	20	21	28	22	23.7	12.0
<b>Southern Highlands</b>		105	177	125	188	156	207	260	253	240.0	18.9
<b>Momase</b>		74	101	114	122	118	126	150	182	152.7	6.3
<b>Islands</b>		162	172	178	237	214	191	184	198	191.0	11.1
<b>Islands</b>		86	96	85	110	126	114	103	168	128.3	14.4
<b>PNG TOTAL</b>		<b>427</b>	<b>546</b>	<b>502</b>	<b>657</b>	<b>614</b>	<b>638</b>	<b>697</b>	<b>801</b>	<b>712.0</b>	<b>11.3</b>

**Tuberculosis Deaths as a Percentage of All Reported Deaths**



## Newly Detected Extrapulmonary Cases

		Newly Detected Extrapulmonary Cases								Average 2006– 2008	Rate per 100,000
		2001	2002	2003	2004	2005	2006	2007	2008		
1	Western	1,680	1,751	710	217	193	162	232	195	374	292.0
2	Gulf	199	235	289	182	153	285	590	246	294	136.4
3	Central	158	227	334	377	394	340	277	266	1,435	440.5
4	NCD	1,350	288	791	1,205	982	1,421	1,418	1,465	210	83.9
5	MBP	195	180	188	219	135	227	196	207	162	101.0
6	Oro	212	260	118	166	142	203	152	131	72	9.9
7	SHP	37	31	52	71	40	80	77	59	62	17.2
8	Enga	149	83	69	54	24	98	20	68	142	27.1
9	WHP	60	26	47	108	172	164	100	161	85	28.9
10	Simbu	42	72	308	77	255	84	69	102	300	59.6
11	EHP	45	76	79	67	308	258	451	192	304	46.4
12	Morobe	229	319	433	315	341	305	285	322	177	40.3
13	Madang	93	159	122	197	263	180	191	161	223	55.7
14	ESP	170	205	170	266	151	198	275	195	148	67.3
15	WSP	96	103	96	121	72	162	136	145	4	8.3
16	Manus	1	4	33	1	2	1	5	7	53	36.4
17	NIP	37	68	63	56	54	58	51	49	137	52.5
18	ENB	34	31	54	117	80	139	130	143	302	128.6
19	WNB	198	227	171	261	313	279	284	343	70	35.5
20	ARB	70	53	96	98	123	86	59	65	2,671	209.9
<b>Southern</b>		3,794	2,941	2,430	2,366	1,999	2,638	2,865	2,510	661	27.4
<b>Highlands</b>		333	288	555	377	799	684	717	582	852	49.7
<b>Momase</b>		588	786	821	899	827	845	887	823	566	63.6
<b>Islands</b>		340	383	417	533	572	563	529	607	4,750	75.5
<b>PNG TOTAL</b>		<b>5,055</b>	<b>4,398</b>	<b>4,223</b>	<b>4,175</b>	<b>4,197</b>	<b>4,730</b>	<b>4,998</b>	<b>4,522</b>	<b>374</b>	<b>292.0</b>



## Newly Detected Sputum Positive Cases

		Newly Detected Sputum Positive Cases								Average 2006– 2008	Rate per 100,000
		2001	2002	2003	2004	2005	2006	2007	2008		
1	Western	77	56	35	70	34	27	29	82	46	23.9
2	Gulf	17	10	7	16	19	23	44	24	30	23.7
3	Central	101	117	230	128	118	120	126	124	123	57.2
4	NCD	75	172	748	385	314	469	628	610	569	174.7
5	MBP	112	116	166	127	194	176	173	193	181	72.2
6	Oro	52	70	50	99	51	70	36	33	46	28.9
7	SHP	0	8	11	34	13	8	8	25	14	1.9
8	Enga	45	22	44	62	21	17	11	41	23	6.4
9	WHP	3	3	56	15	9	29	37	39	35	6.7
10	Simbu	9	21	46	205	158	60	64	88	71	24.0
11	EHP	0	28	12	7	33	27	30	44	34	6.7
12	Morobe	199	196	305	255	249	230	251	296	259	39.6
13	Madang	125	80	94	77	168	145	145	163	151	34.3
14	ESP	225	122	101	71	58	86	191	137	138	34.5
15	WSP	15	29	37	35	62	33	41	32	35	16.1
16	Manus	1	4	16	0	0	3	7	4	5	9.0
17	NIP	72	87	120	69	34	73	22	68	54	37.6
18	ENB	41	54	71	103	101	113	134	85	111	42.3
19	WNB	87	82	31	96	146	153	84	154	130	55.5
20	ARB	95	71	113	45	71	87	48	81	72	36.5
<b>Southern</b>		434	541	1,236	825	730	885	1,036	1,066	996	78.2
<b>Highlands</b>		57	82	169	323	234	141	150	237	176	7.3
<b>Momase</b>		564	427	537	438	537	494	628	628	583	34.0
<b>Islands</b>		296	298	351	313	352	429	295	392	372	41.8
<b>PNG TOTAL</b>		<b>1,351</b>	<b>1,348</b>	<b>2,293</b>	<b>1,899</b>	<b>1,853</b>	<b>1,949</b>	<b>2,109</b>	<b>2,323</b>	<b>2,127</b>	<b>33.8</b>

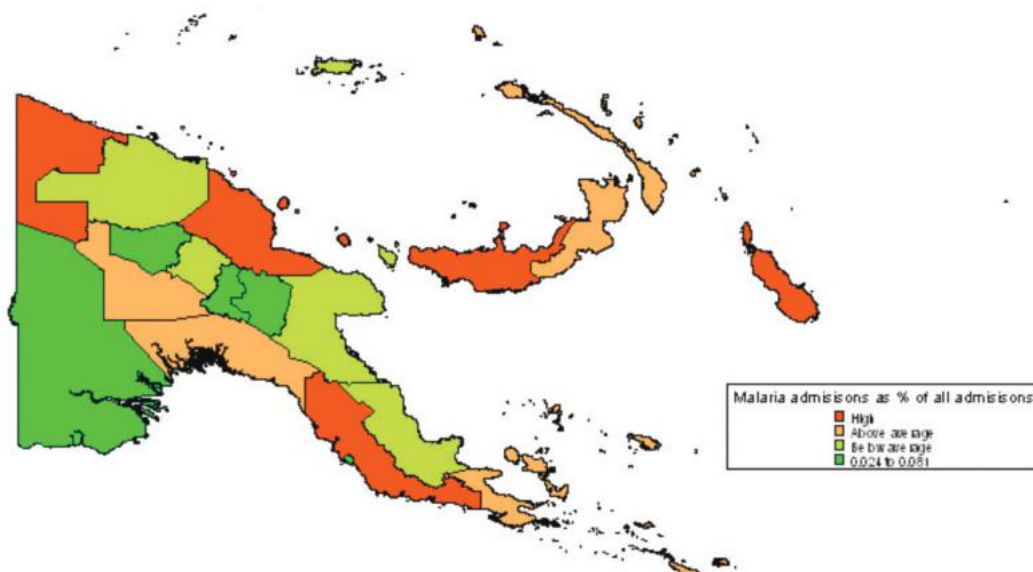


**Malaria**

**Malaria Admissions**

		Total Admissions from Malaria								Average	Rate
		2001	2002	2003	2004	2005	2006	2007	2008	2006–2008	per 100,000
1	Western	588	446	404	472	311	373	396	293	354.0	184
2	Gulf	604	532	371	267	431	520	861	483	621.3	486
3	Central	810	669	681	833	976	1,041	722	669	810.7	376
4	NCD	790	908	352	729	445	560	684	579	607.7	187
5	MBP	1,823	1,523	1,318	1,140	1,194	1,127	1,501	2,021	1,549.7	619
6	Oro	956	683	803	884	649	612	639	585	612.0	382
7	SHP	2,557	1,658	1,562	1,390	2,209	2,840	2,220	2,067	2,375.7	326
8	Enga	482	435	673	537	621	343	393	353	363.0	101
9	WHP	2,178	2,506	2,888	1,875	2,405	2,273	1,670	1,270	1,737.7	332
10	Simbu	1,276	930	734	922	1,578	1,369	851	598	939.3	319
11	EHP	848	1,519	1,365	1,226	1,113	998	1,062	838	966.0	192
12	Morobe	1,842	1,800	1,587	1,468	1,576	1,898	1,992	2,170	2,020.0	309
13	Madang	1,806	2,252	2,350	2,766	2,831	2,782	2,064	2,418	2,421.3	550
14	ESP	1,149	1,603	943	1,799	808	1,352	1,369	1,143	1,288.0	322
15	WSP	1,188	1,282	1,401	1,250	1,123	1,109	791	814	904.7	412
16	Manus	381	462	328	274	281	320	186	213	239.7	461
17	NIP	1,786	1,270	1,124	1,437	1,243	1,066	1,209	1,450	1,241.7	859
18	ENB	2,350	3,003	2,817	4,061	2,566	2,887	2,211	2,149	2,415.7	923
19	WNB	1,997	1,592	1,673	2,083	2,240	1,956	1,451	2,245	1,884.0	802
20	ARB	2,547	2,502	3,445	3,990	3,232	2,728	1,338	1,200	1,755.3	890
<b>Southern</b>		5,571	4,761	3,929	4,325	4,006	4,233	4,803	4,630	4,555.3	358
<b>Highlands</b>		7,341	7,048	7,222	5,950	7,926	7,823	6,196	5,126	6,381.7	265
<b>Momase</b>		5,985	6,937	6,281	7,283	6,338	7,141	6,216	6,545	6,634.0	387
<b>Islands</b>		9,061	8,829	9,387	11,845	9,562	8,957	6,395	7,257	7,536.3	846
<b>PNG TOTAL</b>		<b>27,958</b>	<b>27,575</b>	<b>26,819</b>	<b>29,403</b>	<b>27,832</b>	<b>28,154</b>	<b>23,610</b>	<b>23,558</b>	<b>25,107</b>	<b>399</b>

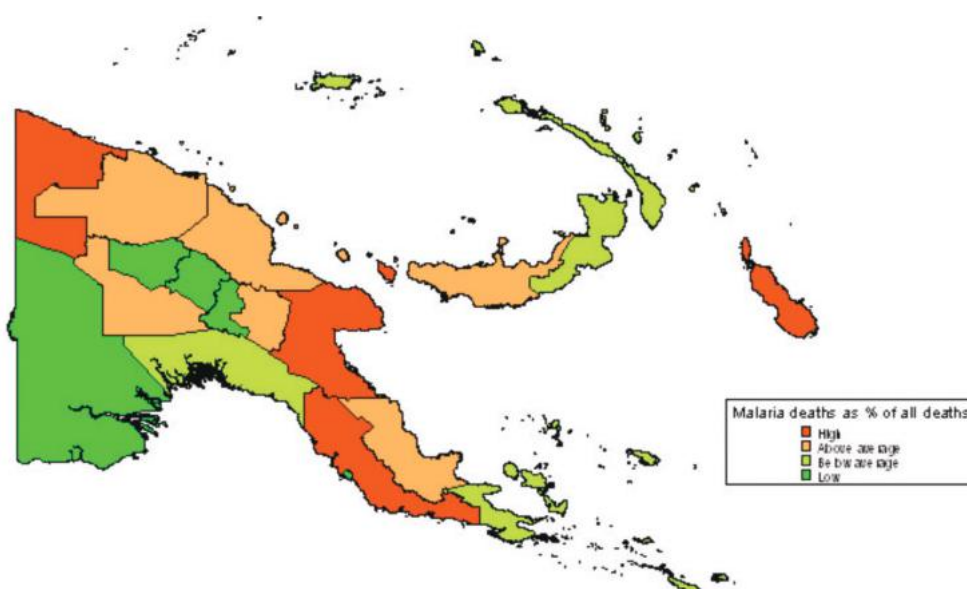
**Malaria Admissions as a Percentage of All Admissions**



**Malaria Deaths**

		Total Deaths from Malaria								Average	Rate
		2001	2002	2003	2004	2005	2006	2007	2008	2006–2008	per 100,000
1	Western	19	13	10	8	13	9	12	8	9.7	5.0
2	Gulf	21	9	12	4	10	14	12	2	9.3	7.3
3	Central	27	18	15	16	17	10	12	11	11.0	5.1
4	NCD	2	64	10	25	23	33	27	15	25.0	7.7
5	MBP	44	27	21	13	27	24	22	31	25.7	10.3
6	Oro	5	17	7	24	21	15	23	27	21.7	13.5
7	SHP	78	27	34	32	39	57	40	34	43.7	6.0
8	Enga	3	13	8	9	12	4	10	11	8.3	2.3
9	WHP	21	39	39	36	43	48	35	28	37.0	7.1
10	Simbu	33	21	23	27	34	20	20	10	16.7	5.7
11	EHP	19	39	37	54	85	36	41	58	45.0	8.9
12	Morobe	79	100	79	102	118	146	100	97	114.3	17.5
13	Madang	47	45	36	45	56	42	38	61	47.0	10.7
14	ESP	53	50	42	68	29	53	33	47	44.3	11.1
15	WSP	25	39	25	31	34	33	30	22	28.3	12.9
16	Manus	6	11	9	6	14	9	8	3	6.7	12.8
17	NIP	29	19	16	18	19	13	27	17	19.0	13.1
18	ENB	24	34	22	37	25	31	33	63	42.3	16.2
19	WNB	27	27	22	25	56	28	19	49	32.0	13.6
20	ARB	32	42	51	40	50	43	22	34	33.0	16.7
<b>Southern Highlands</b>		118	148	75	90	111	105	108	94	102.3	8.0
<b>Momase</b>		154	139	141	158	213	165	146	141	150.7	6.2
<b>Islands</b>		204	234	182	246	237	274	201	227	234.0	13.7
<b>Islands</b>		118	133	120	126	164	124	109	166	133.0	14.9
<b>PNG TOTAL</b>		594	654	518	620	725	668	564	628	620.0	9.9

**Malaria Deaths as a Percentage of All Reported Deaths**

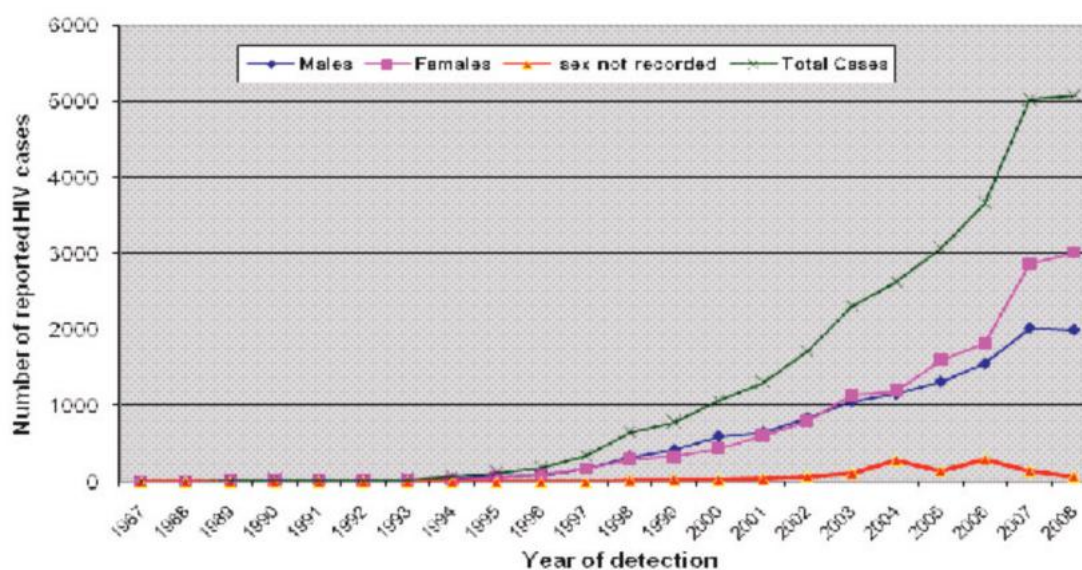


### HIV/STIs

#### New and Cumulative HIV infections Reported in PNG 1987–2008

Year of detection	Male	Female	Unknown	Number of annual HIV infections	Cumulative number of HIV infections
1987	2	4	0	6	6
1988	8	5	0	13	19
1989	11	7	0	18	37
1990	24	12	0	36	73
1991	17	16	2	35	108
1992	12	18	0	30	138
1993	19	21	0	40	178
1994	42	31	1	74	252
1995	68	57	1	126	378
1996	94	96	2	192	570
1997	173	174	1	348	918
1998	331	307	23	661	1,579
1999	421	336	34	791	2,370
2000	601	448	25	1,074	3,444
2001	649	618	46	1,313	4,757
2002	841	797	76	1,714	6,471
2003	1,058	1,142	117	2,317	8,788
2004	1,157	1,197	282	2,636	11,424
2005	1,321	1,607	147	3,075	14,499
2006	1,553	1,824	296	3,673	18,172
2007	2,027	2,868	143	5,038	23,210
2008	2,003	3,013	68	5,084	28,294
<b>Total</b>	<b>12,432</b>	<b>14,598</b>	<b>1,264</b>	<b>28,294</b>	

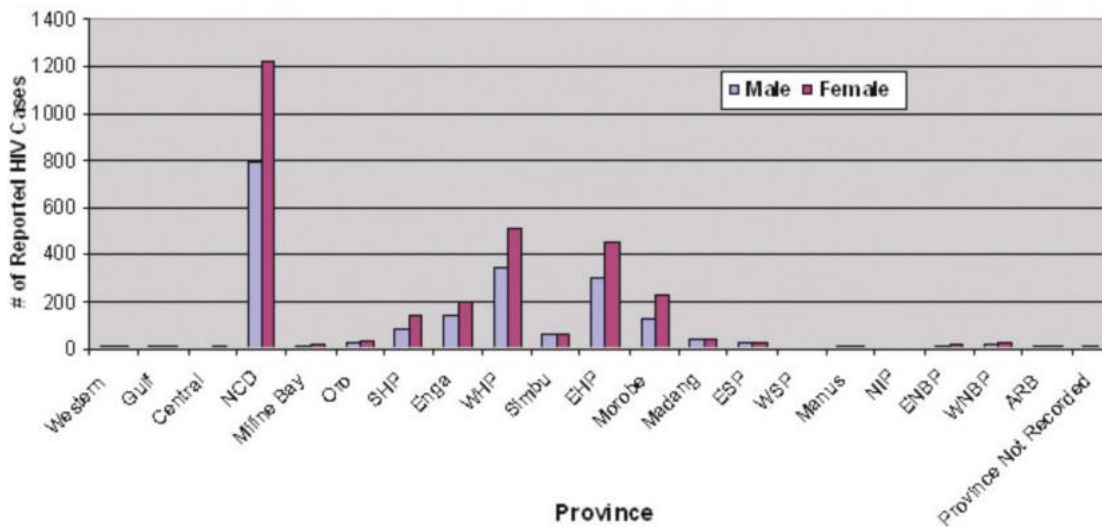
#### Number of Reported HIV Infections in PNG, 1987–2008



Age and Sex Distribution of HIV Infections Reported in PNG, 2008

Age group	Male	% Male	Female	% Female	Sex unknown	Total	% Total
0–4	28	1.40	44	1.46	0	72	1.42
5–9	19	0.95	9	0.30	0	28	0.55
10–14	4	0.20	8	0.27	0	12	0.24
15–19	18	0.90	176	5.84	1	195	3.84
20–24	116	5.79	408	15.93	9	605	11.90
25–29	191	9.54	404	13.41	9	604	11.88
30–34	166	8.29	276	9.16	6	448	8.81
35–39	171	8.54	162	5.38	6	339	6.67
40–44	132	6.59	67	2.22	5	204	4.01
45–49	92	4.59	50	1.66	1	143	2.81
50–54	67	3.34	23	0.76	1	91	1.79
55–59	29	1.45	5	0.17	2	36	0.71
Over 60	30	1.50	9	0.30	0	39	0.77
Unknown	940	46.93	1,300	43.15	28	2,268	44.61
<b>Total</b>	<b>2,003</b>	<b>100.00</b>	<b>3,013</b>	<b>100.00</b>	<b>68</b>	<b>5,084</b>	<b>100.00</b>

Number of Reported HIV Infections by Sex and Province of Detection, 2008





## Male Genital Ulcers — Outpatients

		Year								Average 2006– 2008	Rate per 100,000
		2001	2002	2003	2004	2005	2006	2007	2008		
1	Western	129	90	77	66	94	126	208	134	156	156.8
2	Gulf	35	26	35	15	30	45	27	33	35	52.7
3	Central	83	79	105	61	47	52	45	352	150	132.9
4	NCD	379	317	302	291	213	212	353	293	286	160.6
5	MBP	224	109	108	145	167	185	105	96	129	98.7
6	Oro	79	63	61	71	71	48	76	78	67	80.0
7	SHP	373	423	721	503	520	622	630	854	702	189.0
8	Enga	546	550	629	565	763	794	525	698	672	359.3
9	WHP	1,673	1,615	1,027	923	958	733	876	851	820	306.9
10	Simbu	726	636	796	475	455	445	353	480	426	278.6
11	EHP	809	848	771	873	1,028	995	1,564	1,995	1,518	584.8
12	Morobe	545	305	334	269	273	319	346	221	295	86.7
13	Madang	146	128	110	105	115	99	145	194	146	63.6
14	ESP	131	179	83	204	99	103	147	253	168	83.7
15	WSP	106	99	61	36	38	29	33	35	32	28.7
16	Manus	6	5	12	7	5	7	17	134	53	196.4
17	NIP	43	31	34	38	29	53	40	34	42	55.2
18	ENB	128	368	81	89	104	85	106	154	115	83.6
19	WNB	71	90	58	107	157	91	56	81	76	60.3
20	ARB	40	22	48	40	24	26	45	36	36	35.2
	<b>Southern Highlands</b>	929	684	688	649	622	688	814	986	823	122.5
	<b>Momase</b>	4,127	4,027	3,944	3,339	3,724	3,589	3,598	3,948	4,878	413.8
	<b>Islands</b>	928	711	588	614	525	550	671	703	641	72.6
	<b>Islands</b>	288	516	233	281	319	262	264	439	322	68.7
	<b>PNG TOTAL</b>	<b>6,272</b>	<b>5,983</b>	<b>5,453</b>	<b>4,883</b>	<b>5,190</b>	<b>5,069</b>	<b>5,697</b>	<b>7,006</b>	<b>5,924</b>	<b>181.7</b>

## Female Genital Ulcers — Outpatients

		Year								Average 2006– 2008	Rate per 100,000
		2001	2002	2003	2004	2005	2006	2007	2008		
1	Western	87	24	38	43	31	82	138	50	90	96.8
2	Gulf	34	21	28	16	21	23	25	38	29	46.6
3	Central	51	85	62	47	52	34	41	50	42	40.4
4	NCD	148	159	164	146	136	139	205	284	209	141.8
5	MBP	137	88	66	155	146	162	53	66	94	78.2
6	Oro	41	36	39	64	39	37	54	45	45	59.5
7	SHP	379	345	591	434	506	598	549	685	611	170.8
8	Enga	461	444	452	469	696	718	383	540	547	315.5
9	WHP	1,302	1,570	2,191	937	800	629	767	840	745	291.1
10	Simbu	525	447	623	400	488	445	357	445	416	294.0
11	EHP	600	672	617	632	975	924	1,486	2,156	1,522	621.9
12	Morobe	326	203	232	201	191	249	219	161	210	66.8
13	Madang	118	102	96	82	109	86	118	145	116	55.2
14	ESP	106	130	75	121	108	130	102	175	136	68.0
15	WSP	28	25	30	25	39	16	13	43	24	22.5
16	Manus	8	4	5	3	2	6	17	6	10	38.5
17	NIP	29	11	18	16	8	27	27	24	26	38.3
18	ENB	84	126	52	49	44	74	57	66	66	52.9
19	WNB	43	42	49	50	56	56	88	58	67	61.9
20	ARB	57	24	43	87	34	49	26	25	33	34.8
	<b>Southern Highlands</b>	498	413	397	471	425	477	516	533	509	84.6
	<b>Momase</b>	3,267	3,478	4,474	2,872	3,465	3,314	3,542	4,666	3,841	327.4
	<b>Islands</b>	578	460	433	429	447	481	452	524	486	58.5
	<b>Islands</b>	221	207	167	205	144	212	215	179	202	47.9
	<b>PNG TOTAL</b>	<b>4,564</b>	<b>4,558</b>	<b>5,471</b>	<b>3,977</b>	<b>4,481</b>	<b>4,484</b>	<b>4,725</b>	<b>5,902</b>	<b>5,037</b>	<b>166.4</b>

## Male Genital Discharge — Outpatients

		Year								Average 2006– 2008	Rate per 100,000
		2001	2002	2003	2004	2005	2006	2007	2008		
1	Western	278	107	83	102	240	150	197	208	185	185.9
2	Gulf	53	55	24	19	21	28	51	25	35	52.2
3	Central	73	80	91	114	98	78	86	100	88	78.1
4	NCD	824	749	550	477	495	559	724	563	615	345.5
5	MBP	220	174	193	230	366	328	452	337	372	285.6
6	Oro	83	91	102	122	92	122	165	125	137	163.1
7	SHP	1,027	1,161	1,267	1,315	1,401	1,307	1,303	1,776	1,462	393.6
8	Enga	1,483	1,562	1,538	1,263	1,653	1,695	1,443	1,555	1,564	836.0
9	WHP	3,421	2,754	2,595	2,448	2,190	2,041	2,336	3,497	2,625	982.5
10	Simbu	1,176	1,183	1,373	1,206	1,218	1,376	1,110	1,638	1,375	899.1
11	EHP	2,419	2,937	2,756	3,461	3,001	3,825	4,721	5,200	4,582	1765
12	Morobe	830	609	588	808	772	804	993	1,140	979	287.4
13	Madang	237	201	193	162	251	197	222	325	248	108.1
14	ESP	134	178	106	262	135	198	192	331	240	120.0
15	WSP	287	243	180	139	58	72	113	508	231	204.8
16	Manus	15	20	27	15	7	17	34	55	35	131.8
17	NIP	42	43	91	53	29	80	74	127	94	122.1
18	ENB	286	382	154	181	97	124	132	143	133	96.7
19	WNB	196	171	122	184	184	101	105	169	125	99.2
20	ARB	49	17	40	31	24	6	24	74	35	34.2
	<b>Southern</b>	1,531	1,256	1,043	1,064	1,312	1,265	1,675	1,358	1,433	231.4
	<b>Highlands</b>	9,526	9,497	9,529	9,693	9,463	10,244	10,913	13,666	11,608	937.5
	<b>Momase</b>	1,488	1,231	1,067	1,371	1,216	1,271	1,520	2,304	1,698	192.3
	<b>Islands</b>	588	633	434	464	341	328	369	568	422	90.0
	<b>PNG TOTAL</b>	<b>13,133</b>	<b>12,617</b>	<b>12,073</b>	<b>12,592</b>	<b>12,332</b>	<b>13,108</b>	<b>14,477</b>	<b>17,896</b>	<b>15,160</b>	<b>464.9</b>

## Female Genital Discharge — Outpatients

		Year								Average 2006– 2008	Rate per 100,000
		2001	2002	2003	2004	2005	2006	2007	2008		
1	Western	385	96	123	105	205	197	270	309	259	278.1
2	Gulf	120	60	38	31	40	57	58	77	64	104.1
3	Central	72	93	74	112	84	65	75	104	81	78.9
4	NCD	690	757	678	664	729	932	1,077	982	997	675.5
5	MBP	222	155	158	200	247	221	301	313	278	232.4
6	Oro	112	94	129	113	112	127	138	113	126	165.4
7	SHP	1,282	1,399	1,490	1,888	2,270	2,005	2,180	2,508	2,231	624.0
8	Enga	1,211	1,224	1,398	1,671	2,049	2,125	1,938	2,109	2,057	1187
9	WHP	4,143	3,877	4,514	5,056	4,500	4,143	4,848	5,868	4,953	1935
10	Simbu	1,947	1,709	2,362	2,848	2,635	2,646	2,211	2,957	2,605	1842
11	EHP	2,842	3,603	4,026	4,552	4,934	6,049	8,025	9,260	7,778	3178
12	Morobe	902	740	933	1,359	1,335	1,599	1,526	1,731	1,619	515.6
13	Madang	311	317	470	349	377	448	603	551	534	253.5
14	ESP	250	256	253	545	415	505	527	624	552	276.9
15	WSP	233	223	191	177	121	98	151	427	225	211.5
16	Manus	51	32	43	42	29	42	73	79	65	257.4
17	NIP	95	73	79	109	96	113	115	107	112	164.4
18	ENB	480	606	447	378	346	611	735	949	765	616.2
19	WNB	250	310	178	305	347	355	313	346	338	310.6
20	ARB	164	52	115	102	103	54	67	177	99	103.6
	<b>Southern</b>	1,601	1,255	1,200	1,225	1,417	1,599	1,919	1,898	1,805	300.3
	<b>Highlands</b>	11,425	11,812	13,790	15,651	16,388	16,968	19,202	22,702	19,624	1673
	<b>Momase</b>	1,696	1,536	1,847	2,430	2,248	2,650	2,807	3,333	2,930	352.8
	<b>Islands</b>	1,040	1,073	862	936	921	1,175	1,303	1,658	1,379	326.7
	<b>PNG TOTAL</b>	<b>15,762</b>	<b>15,676</b>	<b>17,699</b>	<b>20,242</b>	<b>20,974</b>	<b>22,392</b>	<b>25,231</b>	<b>29,591</b>	<b>25,738</b>	<b>850.4</b>

## Environmental Sustainability

### Water Supply by Place of Residence

Category	Urban %	Rural %	Total %
Piped to house/yard	57.7	3.2	9.1
Piped to neighbourhood	12.3	6.7	7.3
River/stream	2.8	42.6	38.3
Rain water/tank	14.6	10.9	11.4
Well/spring	10.3	31.4	29.2
Other	1.8	5	4.4
Not reported	0.5	0.2	0.3
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Source: DHS 2006.

### Type of Sanitation by Place of Residence

Category	Urban %	Rural %	Total %
Own flush toilet	39.5	1.1	5.3
Shared flush toilet	7.2	0.7	1.5
Traditional pit latrine	35	73.7	69.5
Improved pit latrine	8.2	2.9	3.4
No facility/bush/seashore	4.8	17.7	16.3
Other	4.6	3.6	3.6
Not reported	0.7	0.3	0.4
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Source: DHS 2006.

### Domestic Electricity Supply by Place of Residence

Category	Urban %	Rural %	Total %
Yes	61.3	6.5	12.4
No	38.2	93.1	87.2
Not reported	0.5	0.3	0.4
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Source: DHS 2006.







## Chapter 13

### Health Programs (2001–2009) in Review



This chapter includes summary information about a range of health programs in PNG.

#### I. Family Health

Family Health programs include Child Health, Maternal Health, and Adolescent Health.

##### Child Health

The neonatal, infant, and child morbidity and mortality rates in Papua New Guinea remain unacceptably high, and are among the worst in the Pacific region, despite modest progress in the last decade. The most common causes of morbidity and mortality are respiratory infections (particularly pneumonia), malaria, and diarrhoea. Poor environments and sanitation, close birth spacing, low education levels of mothers, maternal and child malnutrition, anaemia, and low immunisation coverage are the leading contributing factors to poor health and mortality among neonates, infants, and children. The increase in child abuse and injuries in many communities is alarming, particularly considering that PNG is a signatory to the Convention on the Rights of the Child (1989).

The 2006 Demographic and Health Survey shows an average decrease in infant and child mortality rates of 10% over the years 1996 to 2006. However, the neonatal death rate has remained unchanged over the past ten years. Although improved, the overall coverage of immunisation remains a challenge for the PNG health sector.

Continuing priority programs over the coming ten years will include routine and supplementary immunisation, Integrated Management of Childhood Illness (IMCI), Oxygen Concentrator roll-out, and school health programs.

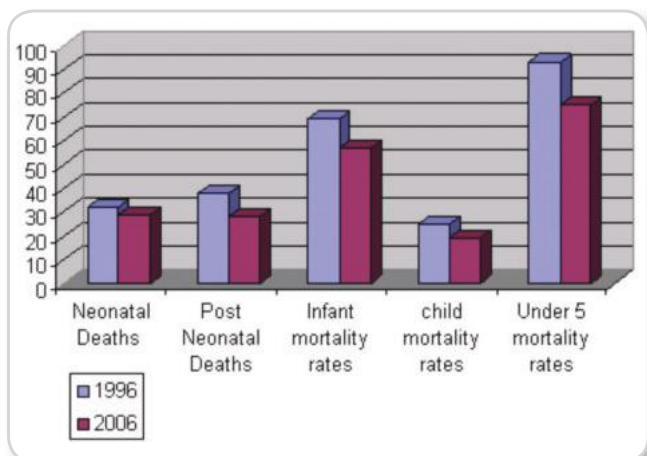
##### Looking Back Over the Past Ten Years

**Achievements:** In spite of the challenges articulated above, our achievements in the key performance outcomes over the past nine years have seen some positive results, as presented in the following tables. The Demographic and Health Survey (DHS) 2006 indicates that there has been some reduction in the infant and child mortality rates.

**Figure 1 Status of TB Program 2006–2008**

Mortality Rates	1996	2006
Neonatal deaths	32	29
Post neonatal deaths	38	28
Infant Mortality Rate	69	57
Child Mortality Rate	25	19
Under 5 Mortality Rate	93	75

**Figure 2 Under 5 Mortality Rates (2006 DHS)**



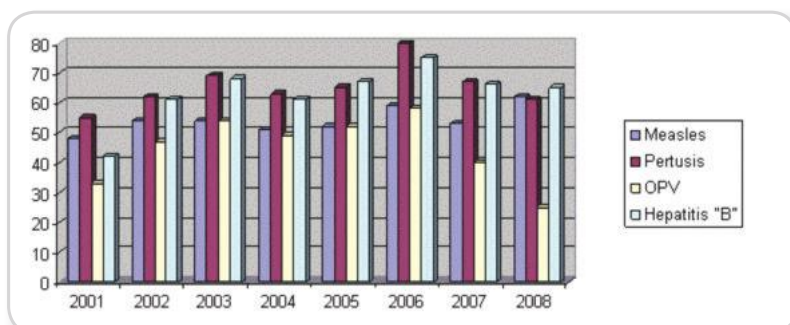
**Figure 3 Less than 5 years Case Fatality Rates (%)**

Disease	2004	2005	2006	2007	2008
Pneumonia	4.7	4.3	3.3	2.5	3.0
Malaria	1.3				2.1
Diarrhoea	3.0	3.6	3.3	3.2	3.0
Measles	4.0				

**Figure 4 Immunisation Coverage Rates**

Vaccine	2001	2002	2003	2004	2005	2006	2007	2008	Average 2006–2008
Measles	48	54	54	51	52	59	53	62	57.9
Pertussis	55	62	69	63	65	80	67	61	69.0
OPV	33	47	54	49	52	58	40	25	40.7
Hepatitis B	42	61	68	61	67	75	66	65	68.6

**Figure 5 Immunisation Coverage Rates**



**Looking Forward to the Next Ten Years**

Major challenges and key areas that will require continued support and commitment by all stakeholders include:

- Achieving 100% roll-out of the IMCI Program to all provinces and districts.
- Continuing the routine and supplementary immunisation program.
- Strengthening community IMCI advocacy, training, and partnering program with parents, to prevent childhood illnesses at home.
- Continuing school health medical program.
- Promoting exclusive breastfeeding.
- Continuing to review and ensure Standard Paediatric Treatment Manuals and Guidelines are available and in use by all health workers.
- Achieving 100% availability of essential drugs for treatment of common illnesses.
- Ensuring availability of oral rehydration salts and intravenous fluids.
- Advocating on child abuse and injuries.

### Maternal Health

The maternal mortality rate in Papua New Guinea remains unacceptable high, and is the second-highest in the Asia-Pacific region and high in comparison globally. The maternal mortality indicator has worsened. It is estimated that about 1,500 women die as a result of complications during and after childbirth. The two most common complications during and after childbirth are prolonged labour and bleeding associated with infection. These are also the major cause of maternal deaths. It is also reported that maternal deaths in PNG are often associated with other underlying causes, such as TB, malaria, diabetes, and HIV/AIDS.

### Looking Back over the Past Ten Years

Maternal mortality in Papua New Guinea remains unacceptably high; it has worsened in the past 12 years. The maternal mortality rate has doubled from 370 per 100,000 in 1996, to 733 per 100,000 in 2006 (DHS 2006). Most experts believe that it could be much higher.

Only 40% of births are supervised or assisted by a trained health worker and village health volunteer, while 60% of births occur in the village without such assistance.

The absence of skilled health workers in midwifery, as well as appropriate drugs and equipment, has had adverse effects on the management of prenatal care and the management of obstetric complications. Health workers, especially community health workers who are the first point of contact, lack competency in midwifery skills.

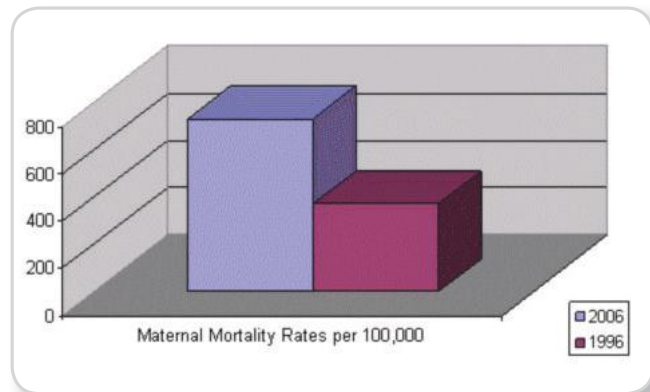
Antenatal and family planning coverage are still low, and outreach patrols have continued to decline over the past 15 years. The ineffective, delayed, or too-many-layered referral chain has affected the referral of obstetric emergency cases to hospitals, with serious consequences for effective management of obstetric complications. The proportion of delivery rooms with running water, a sink, and lighting has declined over the past ten years (ASR 2008). The fragmented health service delivery has had a negative impact on maternal health in PNG.

**Achievements:** In spite of the challenges articulated, our achievements in key performance outcomes over the last nine years have included some positive results in family planning acceptor rates and couple year protection, a slight reduction in total fertility rates, and an increase in the mean age at first birth and percentage of women having begun child bearing (DHS 2006).

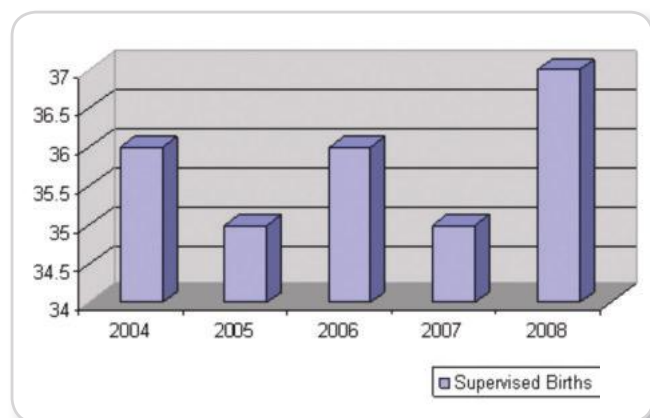
**Figure 1 Key Performance Indicators (DHS 2006)**

Vital Statistics	1996	2006
Maternal Mortality/100,000	370	733
Total Fertility Rates	4.8	4.4
% women 15–19 years begun child bearing	21.0	20.5

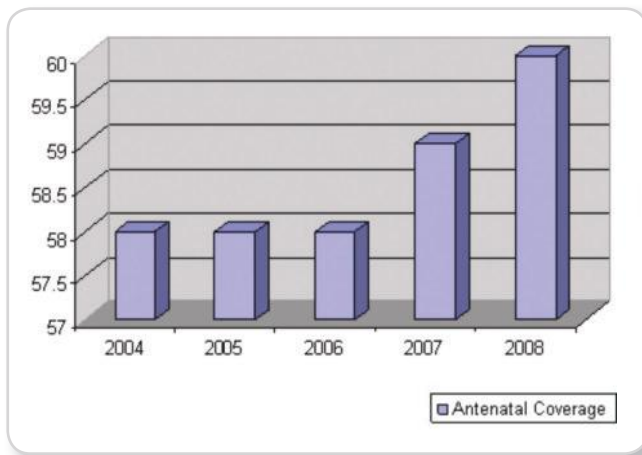
**Figure 2 Maternal Mortality Rates per 100,000 (DHS 2006)**



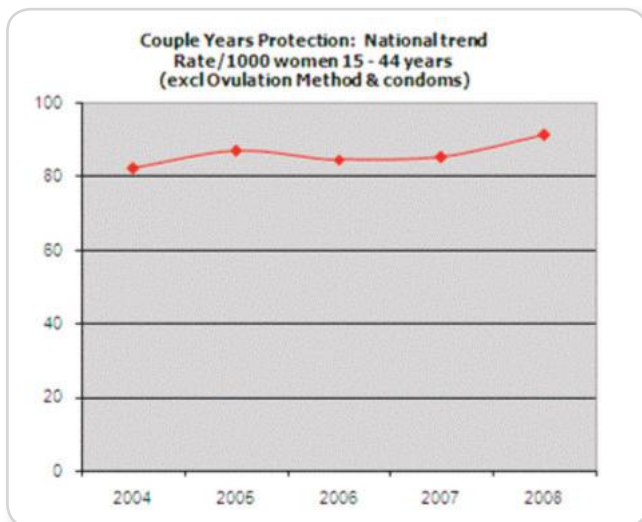
**Figure 3 Supervised Births in Health Centres and Hospitals — National Trend (NHIS and ASR 2008)**



**Figure 4 Antenatal Coverage First Visit — National Trend (NHIS and ASR 2008)**



**Figure 5 Family Planning Couple Years Protection (NHIS and ASR 2008)**



**Looking Forward to the Next Ten Years**

Major challenges and key areas that will require continued support and commitment by all stakeholders include:

- Strengthening the health service delivery system.
- Improving midwifery skills for all cadres of health workers, and in particular community health workers.
- Improving health facility labour wards, including adequate supplies of running water, sinks, and lighting to labour wards and delivery rooms.
- Developing minimum standard integrated obstetric emergency tool kits and guidelines for management of emergency obstetric cases.
- Continuing to update standard treatment manual pocket book of obstetrics and gynaecology for nurses, HEOs, and doctors.

- Increasing awareness of families and communities of the importance of obstetric emergency preparedness, especially the five delays in the repatriation of a mother in obstetric complications.
- Ensuring every hospital, district hospital, health centre, and community health post has a health worker trained in midwifery skills.
- Strengthening and increasing the clinical outreach programs.
- Strengthening and expanding the village health volunteer program and incorporating with Healthy Island/Health Village program.
- In collaboration with the Department of Education including safe motherhood and adult health as part of the higher school curriculum.

**2. Disease Control**

**Tuberculosis Control Program**

Tuberculosis remains one of the top ten leading causes of hospital and health centre admissions, and is the third highest cause of morbidity and mortality in PNG. In 2008, out of the ten leading causes of hospital admissions and discharges, tuberculosis was the number one leading cause of mortality, and ranked as the second highest cause of case fatality rates. It also recorded the highest number of bed day stays. TB was the third highest cause of mortality in rural health facilities. TB co-infection with HIV and emerging multi-drug resistant strains of TB bacilli also ensure it remains a major public health challenge for the nation.

The national TB program has been to implement the TB DOTS program in the country, strengthen the diagnostic and laboratory facilities and quality assurance through EQA, improve the skill of health workers, and scale up TB/HIV activities. The scaling up advocacy and social mobilisation activities have been undertaken by our partners. There is an estimated TB DOTS coverage of 51% throughout the country.

There has been good collaboration with other partners in implementing the national TB program, including:

- World Vision supporting and implementing the Advocacy and Social Mobilisation (ACSM) component.
- HOPE Worldwide technical component in two provinces.
- WHO technical support and procurement of TB drugs and microscopes.



**Figure 1 Status of TB Program 2006–2008**

	Prevalence per 100,000	Mortality per 100,000	Case Fatality	Case Detection Rate	Treatment Success Rate	DOTS coverage
Southern	242	18.9				
Highlands	64.7	6.3				
Momase	129	11.1				
Islands	155	14.4				
National	131	11.36	10%	30%	73%	51%

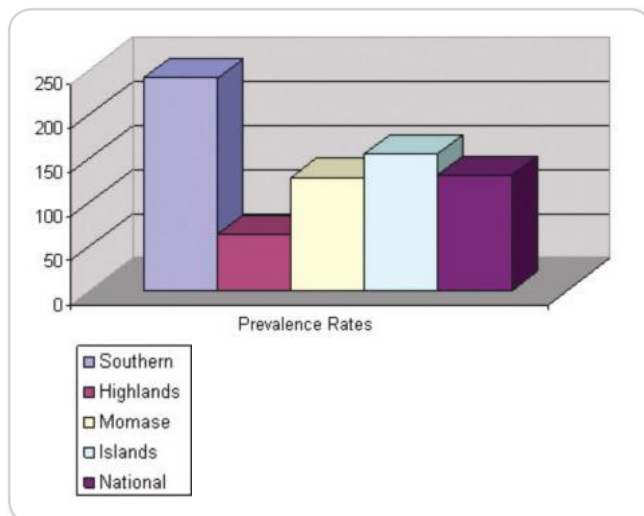
- PNG Institute of Medical Research (IMR) operational research.
- JTA International for monitoring and evaluation.
- Queensland Laboratory EQA and sputum culture.
- Church Health Services as implementing partners.

**Looking Back over the Past Ten Years**

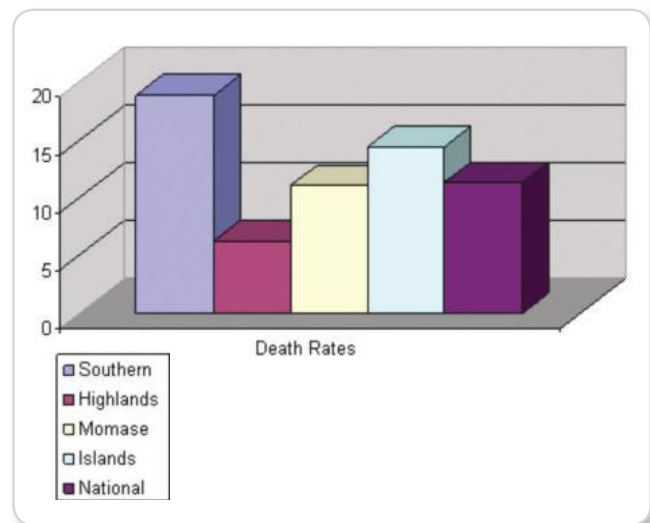
The objective of the *National Health Plan 2001–2010* was to increase the treatment completion rate from 38% to 70% by 2010. The goal of the current country strategic plan 2009–2013 is to reduce the prevalence and death rates by half, by the year 2020.

**Achievements:** In spite of the challenges articulated above, our achievements in the key performance outcomes, particularly the treatment completion rate, has been achieved over the past nine years, and the program has seen positive results as per the following tables.

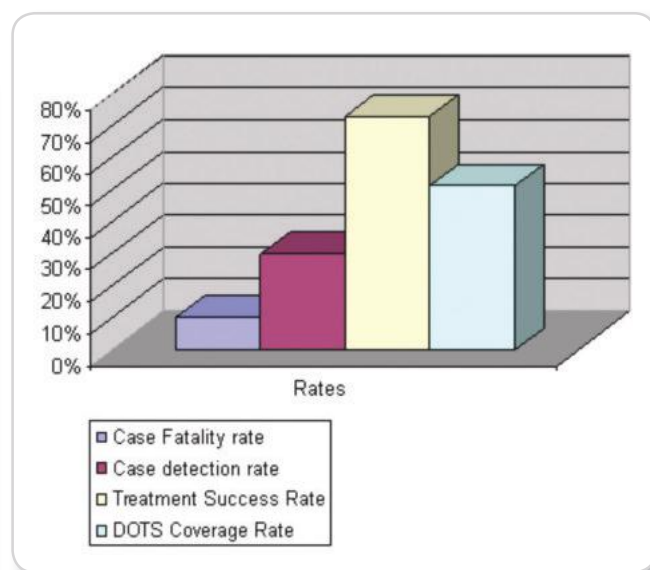
**Figure 2 Prevalence Rates per 100,000 (NHIS and ASR 2008)**



**Figure 3 Death Rates per 100,000 (NHIS and ASR 2008)**



**Figure 4 Status of TB Program (NHIS and ASR 2008)**



### Looking Forward to the Next Ten Years

Major challenges and key areas that will require continued support and commitment by all stakeholders include:

- Strengthening political commitment for tuberculosis control.
- Continuing scaling up of efforts with regard to co-infection by TB and HIV/AIDS.
- Strengthening laboratory diagnostic facility and EQA.
- Assessing MDR with operational research, with support from IMR.
- Continuing partnerships with our stakeholders.
- Strengthening drug supply and management system.
- Achieving 100% DOTS coverage.
- Increasing staffing for national and provincial TB programs.
- Improving and strengthening monitoring, surveillance, and reporting.
- Building capacity of laboratory network for good quality training.
- Introducing culture and drug sensitivity test (DRST).
- Building the capacity of the CPHL.

### Malaria Control Program

Malaria causes ill health, disability, and deaths in PNG, and remains one of the leading public health challenges for the nation. It is one of the top ten leading causes of hospital and health centre admissions and is overall the second highest cause of deaths in PNG. There is widespread variation in prevalence rates between provinces and regions. The mortality rates from cerebral malaria have been high among the age groups of 1–4 years and 25–40 years. Women and children remain the most vulnerable groups.

However, the morbidity and mortality rates have decreased over the past ten years. There has been a reduction in prevalence rates and mortality rates, but there still remain many challenges in implementing malaria treatment and prevention programs.

The presence of widespread resistant strains of parasites has had an impact on the effectiveness of treatment. A lack of qualified and trained laboratory staff, and the absence of diagnostic equipment at rural facilities, have led to over-diagnosis and over-treatment, and have had a negative impact on the quality, accuracy, and timeliness of reporting.

IRS household spraying in the Highlands region is not occurring, due to funding constraints and inadequate staffing levels. The risk of epidemic is high due to seasonal variations, vector behaviour, drug resistance, and the effects of climate change. The statistics also indicate high rates of treatment failures.

There has been good collaboration with other partners in implementing the malaria control program, including:

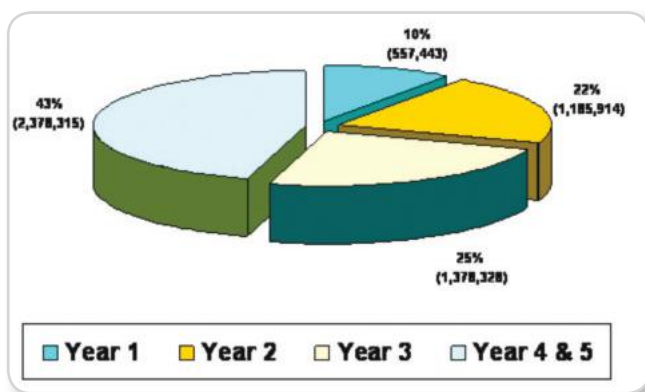
- Rotary against Malaria and GFM for the procurement and distribution of bed nets.
- Institute of Medical Research for malaria research activities.
- Oil Search Ltd, which has conducted indoor residual spraying, community based malaria treatment, and shared information on their experiences.

### Looking Back over the Past Ten Years

The objective of the *National Health Plan 2001–2010* was to reduce the malaria prevalence rate from 664 per 100,000 of population, to 330 per 100,000 by the end of 2010, and similarly to reduce mortality rates from 12.6 to 6.2 per 100,000 of population.

**Achievements:** In spite of the challenges articulated above, our achievements in the key performance outcomes over the past nine years have seen some positive results, as presented in the following tables. There has been a reduction of prevalence rates from 664 per 100,000 of population to 401 per 100,000, and mortality rates from 12.6 to 9.9 per 100,000.

**Figure 1 Coverage over Global Fund Project Period by LLINs (2004–2009)**



**Figure 2 Prevalence, Mortality, and Case Fatality Rates (2006–2008)**

	Prevalence per 100,000	Mortality per 100,000	Case Fatality per 100,000
Southern	363	8	
Highlands	267	6.2	
Momase	383	13.7	
Islands	846	14.9	
National	401	9.9	

**Figure 3 LLIN, Microscopes, and RDT Kits Distributed (2006–2008)**

	LLIN Distributed	Districts Covered	Microscopes Distributed	RDT Kits Distributed	ACT Distributed
Southern					
Highlands					
Momase					
Islands					
National	1,128,063	50	48	908 cartons <sup>1</sup>	472,578

### Looking Forward to the Next Ten Years

Major challenges and key areas that will require continued support and commitment by all stakeholders include:

- Strengthening political commitment for malaria control.
- Expanding roll-out of high quality diagnostic facilities, equipment, diagnosis treatment, and prevention measures across the country.
- Ensuring uninterrupted and 100% access to medical supplies for malaria treatment throughout the country.
- Creating greater health worker capacity for malaria control program.
- Continuing partnerships with stakeholders in procurement, and malaria research and development, to address widespread mosquito behaviours and drug-resistant strains of malaria parasites.

### Sexually Transmitted Infections/HIV and AIDS Program

Sexually transmitted infections, including HIV and AIDS, are a major public health concern in PNG. The STI and HIV infection rate is the highest in the Asia-Pacific region. It is not only a health concern, but an economic burden to families, communities, and the nation. In 2008, 93% of new HIV infections were reported in eight provinces.

<sup>1</sup> Note: 908 cartons is equivalent to 450,000 RDT Kits.

These included the five Highlands provinces, and NCD, Morobe, and Madang.

Sexually transmitted infections (STIs) continue to increase throughout the country. Over 80% of cases with genital ulcers and genital discharges are being reported from the five provinces of the Highlands region. Evidence from the NHIS data demonstrates that cases of genital discharge are highest amongst women. HIV infection is also highest among women in the 15–24 year age group, and new infections among men are highest in the 30–40 year age group. The increasing trend of STI cases (with genital discharge and ulcers) indicates a pending HIV epidemic. The majority of genital ulcers and discharges reported (over 30%) came from EHP.

The commonest route of transmission was heterosexual sex, which accounted for 46.87%. However, more than half (51.38%) had not recorded the mode of transmission. The majority of the newly diagnosed HIV-positive cases are from the Highlands region, National Capital District, and Morobe. The dangers of untreated or non-compliance with treatment of syndromic management of STI cases could lead to infertility and entry points for HIV infections. Prevalence rates were highest among STI clients (8.1%), followed by patients with other conditions (7.0%), VCT clients (4.9%), and patients with TB (3.5%).

Despite issues surrounding data quality, there are important messages that the surveillance report data provides. New HIV and STI infections are increasingly detected among teenage groups, especially young female youths. In the third quarter of 2009, approximately 57% of all HIV testing was from

NCD, Morobe, EHP, WHP, Enga, and SHP, and 90% of detected HIV infection cases were reported from these six provinces.

In this program there has been good collaboration with other partners and stakeholders, especially the roll-out of VCT sites, behavioural change studies, and in implementing the STI and HIV/AIDS program. These partners include:

- Anglicare STOP AIDS
- FBOs, NGOs, and CBOs
- Oil Search Ltd
- Kainantu Gold.

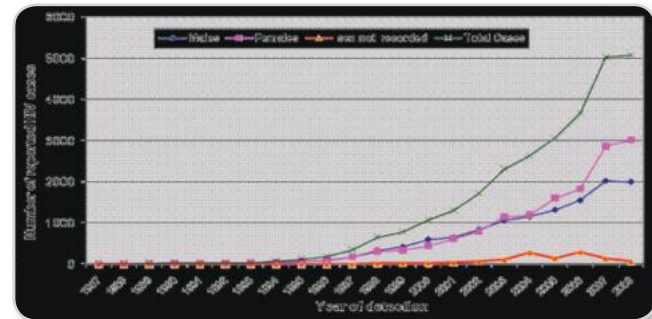
**Looking Back over the Past Ten Years  
Status of STIs and HIV/AIDS**

Sexually transmitted infections and HIV transmission continue to increase annually. The surveillance report data indicates that genital discharges are prevalent and highest among females (62%) and then males (36%). Most notably there were high infections of genital ulcers and discharges in the Eastern Highlands Province.

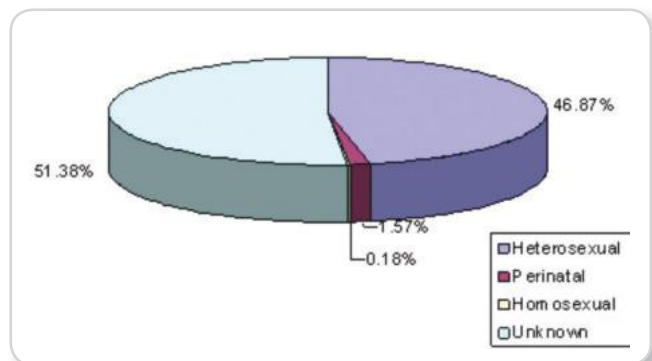
By the end of December 2008, a cumulative total of 28,294 HIV infections had been reported, since the first reported infection in 1987. These cumulative infections included 12,432 males (44%), 14,598 females (51%), and 1,264 people (5%) where their sex was not reported. Most of the infections had occurred though unprotected heterosexual sex.

In 2008, a total of 5,084 new HIV infections were reported through the various STI and HIV/AIDS confirmation and surveillance reporting systems. There were 46 more infections in 2008 than in 2007. The most common route of transmission was heterosexual sex, which accounted for 46.87%. However, more than half of the reported infections (51.38%) did not record the mode of transmission.

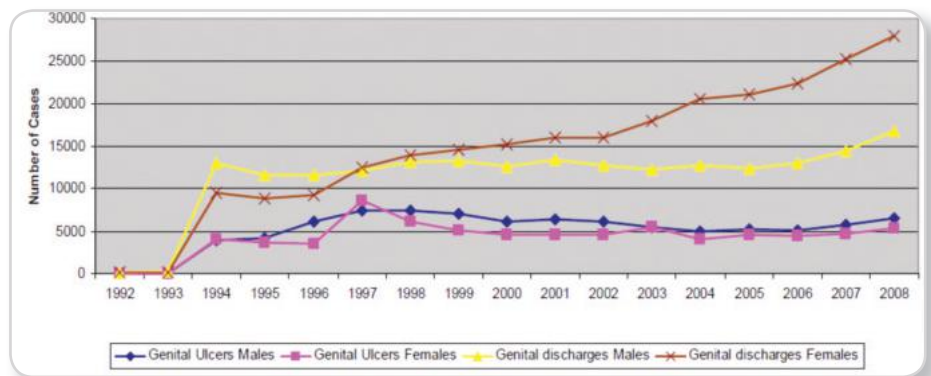
**Figure 1 Number of Reported HIV Infections in PNG, 1987–2008 (NDoH STI/HIV Annual Surveillance Report 2009)**



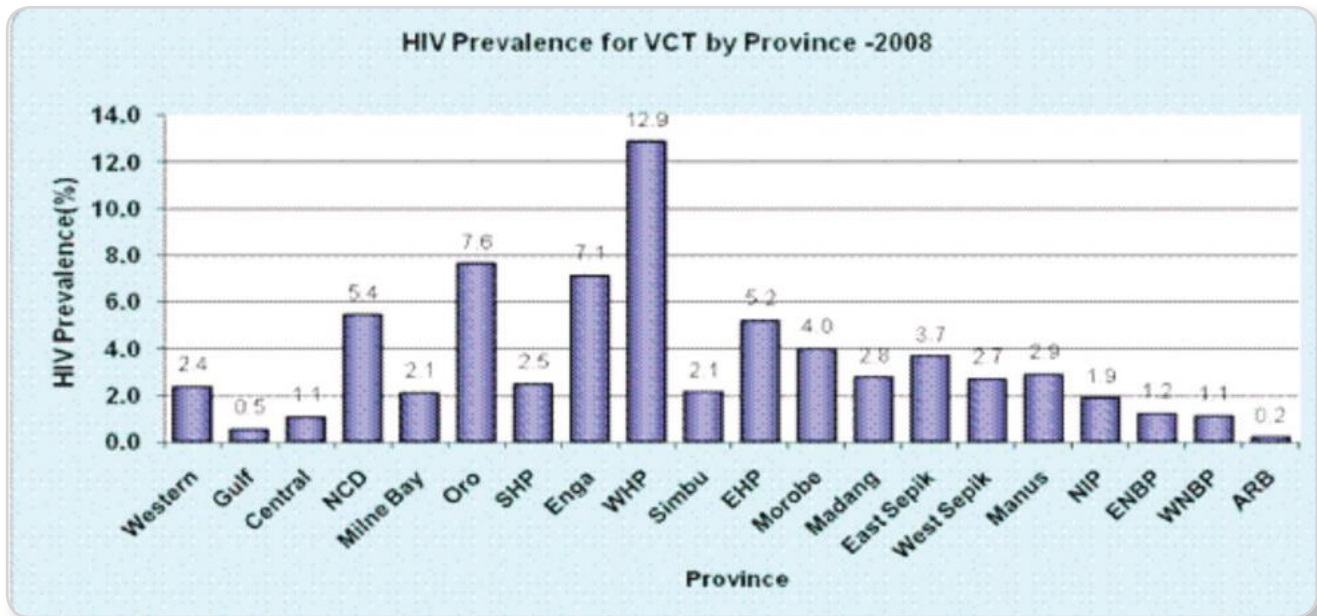
**Figure 2 Percentage of Infection by Mode of Transmission (NDoH STI/HIV Annual Surveillance Report 2009)**



**Figure 3 Number of Genital Ulcers and Genital Discharge Cases by Gender 1994–2008**



**Figure 4 HIV prevalence in VCT clients by Province of Testing, 2008 (NDoH STI/HIV Annual Surveillance Report 2009)**



**VCT Testing**

The establishment and scaling-up of VCT sites for HIV testing and access to trained counsellors has resulted in an increase of case reporting of HIV infections. HIV testing sites increased over the two years 2007 to 2008, from 60 to 201 sites. The scale-up of HIV testing resulted in over 120,000 people being tested at the 201 VCT sites. The Highlands provinces of EHP, WHP, SHP, and also NCD, had the largest numbers of people tested for STIs/HIV.

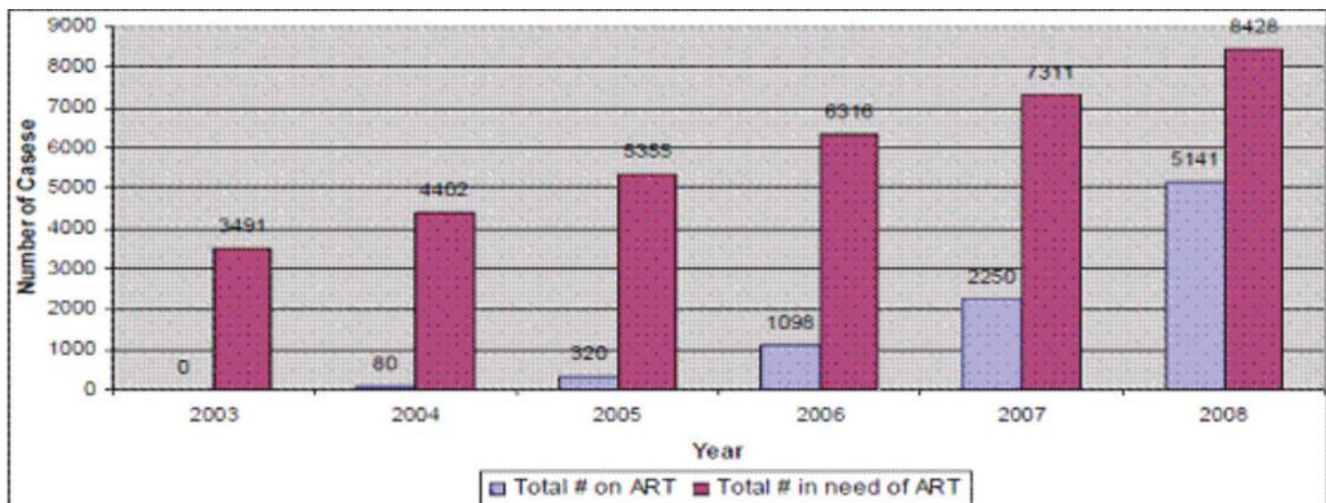
Five out of every 100 VCT clients tested for HIV in PNG were confirmed positive in 2008. More VCT clients tested positive in WHP (895/6,952, 13%), followed by clients in Oro (31/406, 7.6%), Enga (225/3,150, 7.1%), NCD (418/7,679, 5.4%), and EHP (676/12,996, 5.2%).

The HIV prevalence was more than 1% in all provinces, except in those seen in Gulf Province (7/1,280, 0.5%), and the Autonomous Region of Bougainville (3/1,336, 0.2%).

**ART Treatment**

For the total new HIV-positive cases reported in 2008, only 2,216 (43.6%) were registered and 1,334 (26.24%) started ART treatment. The total number of patients in need of treatment increased from 3,401 in 2003 to 8,428 in 2008. This increase has been steady with 4,402 in need of treatment in 2004. The number of people increased to 5,355 in 2005 and 6,316 in 2006. In 2007, there were 7,311 people, which further increased to 8,428 in 2008. The program started with 80 people on ART in 2004 and increased to 320 in

**Figure 5: Total Number of Patients on ART and Estimated Number in Need of ART in PNG 2003–2008 (NDoH STI/HIV Annual Surveillance Report 2009)**



2005. The number further increased to 1,098 in 2006 and 2,250 in 2007. In 2008, there were 5,195 adults and children on ART. Figure 5 shows the ART coverage rates for 2003 to 2008.

### Monitoring and Surveillance

The quality of case reporting data has improved in recent years; however, the major challenge remaining is the non-reporting of HIV-confirmed infections by laboratory confirmatory sites. There is a major reporting gap that requires more attention at all levels. For example, in 2008 there were a total of 5,084 case confirmed positive, but only 2,989 were reported to NDoH, and the remainder were obtained through regular follow-up and phone contacts.

Where provincial and confirmatory laboratories are not forwarding reports to NDoH in a timely manner, this has also affected the reliability and quality of data. The completeness of data has improved; however, there still remains a challenge where demographic data is incomplete (i.e. age, gender, province or province of origin, and mode of transmission). Such missing data limits the surveillance unit's ability to conduct a detailed analysis of variables of interest to monitor HIV infections at provincial and national level. In the past two years much effort has been placed on training to improve the quantity and quality of data.

### Looking Forward to the Next Ten Years

Major challenges and key areas that will require continued support and commitment by all stakeholders include:

- Continuing advocacy/strengthening political commitment for HIV/AIDS and STI program.
- Continuing to collaborate and strengthen partnerships with our partners and stakeholders.
- Continuing roll-out of health worker training on surveillance reporting forms, especially the need for data quality and quantity, and quality, efficient, and timely reporting at all levels.
- Continuing roll-out of quality assurance training on the testing performed by health workers and the HIV/STI testing sites, especially for health workers on rapid tests.
- Increasing health promotion and awareness activities.
- Continuing to strengthen HIV surveillance.
- Strengthening the support for HIV-positive clients needing ART treatment and care.

- Strengthening and increasing collaboration in the scale-up of HIV testing for TB patients.
- Strengthening and increasing support to provinces that require donated blood screening.
- Strengthening the partnership with IMR and other stakeholders to support operational research.

## 3. Health Protection

Health protection services (Environmental Health) in Papua New Guinea are primarily aimed at protecting and promoting sustainable community health. These services are provided through program activities that include Water Supply and Sanitation, Food Safety and Quarantine, and Sustainable Development and Healthy Environment. The services provided through these program activities are aimed at removing risk factors relating to human behaviour and changes to the environment through unplanned developments.

### Water Supply and Sanitation

Program activity in this area is designed to provide, through active community and other stakeholder participation, a sustainable water supply and improved excreta waste disposal systems throughout the country. Papua New Guinea has begun experiencing the emergence of diseases such as cholera that relate directly to poor water supply and sanitation services. Cases of other water-borne diseases have also been reported. Poor water and sanitation services remain a challenge for health sector and other stakeholders, and this has only increased with the emergence of cholera in PNG.

### Looking Back Over the Past Ten Years

The focus for the *National Health Plan 2001–2010* was to achieve improvements in areas such as:

- Promoting and expanding safe community water supply and sanitation services.
- Developing guidelines, adapting standards, and monitoring coverage.
- Establishing drought-proof water supplies for high schools, hospitals, health centres, and communities.
- Increasing awareness and education.
- Improving coordination and partnerships.

Given lack of reliable data on coverage in rural communities, high schools, and health centres it is difficult to identify current levels of coverage in those areas.

### Looking Forward to the Next Ten Years

Major challenges and issues still remain and will be addressed in the next ten years. The focus of attention for the new plan must be the identified key areas.

#### Food Safety and Quarantine

Prevention of food-borne and exotic diseases can be achieved only through effective food safety and quarantine services.

Food safety deals with protecting food from contamination and preventing the sale of unsafe food. Quarantine is concerned with preventing the entry of exotic diseases, banned food, and other items from overseas.

Effective prevention measures include the following:

- Full implementation of the *Food Sanitation Act 1991*.
- Implementation of the *Quarantine Act*.
- Ensuring effective quarantine services.
- Ensuring effective monitoring of the safe manufacturing and sale of foodstuffs.
- Public awareness and education about safe food practices.

#### Looking Back Over the Past Ten Years

The focus for the *National Health Plan 2001–2010* and its achievements were:

- Quarantine law reviewed for submission to Legislative Council in 2010.
- Establishment of the Food Sanitation Council in 2002.
- Finalisation of the Food Regulation in 2007.
- Introduction of food import inspection guidelines.
- Strengthening effective partnerships with internal revenue commission, NQOIC, Port Services, Immigration, Stevedoring/Customs Clearing Agency, ICC, Provincial and Local Authorities, and other international agencies.

#### Looking Forward to the Next Ten Years

Major challenges and issues still remain and will be addressed in the next ten years. The focus of attention for the new plan must be the identified key areas.

### Sustainable Development and Healthy Environment

Ill health is commonly associated with an unhealthy physical environment, within which individuals and communities live and work. Aspects of unhealthy environments that predispose individuals and communities to disease and ill health include poor disposal of solid and chemical wastes, noise and air pollution, exposure to radiation, unsafe workplaces, poor housing, and development activities that fail to take account of health requirements.

The process and programs required to maintain a healthy physical environment include environmental impact assessment, worker's health, and management of all solid and chemical wastes.

Effective prevention measures will include the following:

- Reviewing and updating legislation.
- Developing standards and guidelines.
- Improving skills of technical staff.
- Promoting and supporting implementation of the Healthy Islands Plan.
- Effectively monitoring environmental pollution.
- Improving partnerships with public authorities and the private sector.
- Increasing public awareness and education.

#### Looking Forward to the Next Ten Years

Major challenges and issues still remain and will be addressed in the next ten years. The focus of attention for the new plan must be the identified key areas.

## 4. Human Resource Management

The human resource management program includes four sections:

- Health workforce planning
- Health training and curriculum development
- Industrial relations
- Payroll.

The availability of the right number and right skills mix of a qualified health workforce (and their effective management), along with the right type of ongoing training, enhances the quality of care that can be provided to the rural and urban population. Proper planning and training of the health workforce are difficult when there is a lack of information available at the provincial and national levels.

The absence of a database on human resources makes it difficult to estimate projections for workforce requirements by category.

Initial human resource planning and training was planned at a time where there was little population growth and disease burden. The increasing population growth, impacts of new and emerging diseases, as well as re-emerging diseases, and changing patterns of human behaviour and environment, continue to outpace the human resource capacity of the health sector to deal with the needs of the people.

### Looking Back Over the Past Ten Years

Our achievements over the past ten years have included:

#### Human Resource Policy Planning and Information

- Development of the human resource strategy, supported by HSSP and MSH.
- Human resource information system designed and database developed.
- Human resource policy document finalised and endorsed by National Health Board.
- Work studies on staff minimum standards completed.
- Human resources forum conducted to develop human resource workforce plan and categorised into eight indicative projects.

#### Human Resource Training and Curriculum

- CHW curriculum reviewed and piloted in two schools and now rolled-out to all CHW Training Schools.
- General nursing program reviewed in 2003–2004 and all nursing schools are implementing the Diploma in General Nursing (with the exception of Mendi School of Nursing).

#### Human Resource Management and Labour Relations

- Implemented the Health Workers Awards.
- Provided technical support to hospital restructure.
- Implemented Concept payroll system in NDoH and 19 hospitals.

### Looking Forward to the Next Ten Years

#### Challenges

The following factors will present challenges in the implementation of the new National Health Plan:

- Poor human resource information and database on all categories of health workers at all levels (provinces, hospitals, churches, NDoH, and training institutions).
- Ageing workforce.
- Human resource strategy that was developed in 2003 has been shelved because of the high cost.
- No human resource workforce strategic plan.

#### Interventions

HRM will pursue the following strategies to implement the new National Health Plan:

- Develop a human resource workforce plan based on the Human Resource Forum recommendations.
- Develop an effective health information system.
- Develop a communication strategy.
- Develop management training programs.
- Develop a communication strategy for a better dialogue with health worker unions.

## 5. Health Facilities

Health Facilities includes land, buildings, static plant, medical equipment, and other assets used to support and deliver health services. These range from national facilities to aid posts. Establishment and maintenance of health facilities continues to be a major challenge facing the health sector.

### Looking Back over the Past Ten Years

The key achievements of the branch in the past ten years include:

- Making available the medical equipment inventory database for all public hospitals.
- Establishing 19 provincial biomedical equipment workshops.
- Training over 25 biomedical technicians.
- Establishing a National Policy on medical equipment for PNG.
- Securing over K200 million for infrastructure replacement and rehabilitation.
- Drafting the Health Housing policy.



- Replacing a considerable number of medical equipment and static plant for provincial public hospitals.
- Establishing guidelines and materials for Equipment Care and Operations course at DWU.
- Installing over 900 two-way HF radios throughout the country.
- Purchasing, installing, and commissioning cobalt radiotherapy machine.

### Challenges

There remain a number of significant challenges, including lack of:

- Adequate assets policies and standards.
- Effective asset management system.
- Technical capacity in the public and private sector for maintenance of health assets.
- Technical knowledge and resources to adopt new medical technology.
- Housing for health staff.
- Effective infrastructure procurement mechanism and contract management.
- Effective health infrastructure project management.

### Looking Forward to the Next Ten Years

Major challenges and key areas that will require continued support and commitment by all stakeholders in the next ten year plan include:

- Developing and establishing Health Assets Registration System.
- Improving health asset maintenance and replacement management system.
- Establishing and implementing the Health Assets Management and Maintenance Policy.
- Organising training and development of specialist technical staff.
- Establishing and implementing health assets quality control.
- Undertaking research and introducing new health technology for PNG.
- Developing and establishing standard master plans for levels of health facilities in PNG.
- Continuing development of standard designs for levels of facilities and specialties.

- Reviewing and revising health assets minimum standards for levels of health facilities and specialties.
- Developing health staff home ownership scheme.
- Establishing Public–Private Partnership collaboration for management and maintenance of health assets.
- Undertaking valuation of levels of health facilities in PNG.

## 6. Monitoring, Evaluation, and Research

The MERB has six units:

- Monitoring and Evaluation (M&E)
- Research
- National Health Information System (NHIS)
- Management Information System (MIS)
- Hospital Statistics
- Information Technology (IT).

In 2009 the staff ceiling for the branch was 19, with current strength at 12, with four vacant positions and three on studies.

### Core Business

- To collect and collate statistics from 700+ facilities in PNG to determine disease trends and patterns, and also to assess sector performance. We maintain and keep three databases for all data collected.

### Program Goal

- To improve the quality of patient care and public health programs through timely availability and use of reliable data.

### Objectives

- To have improved access to an integrated health and management information system by 2010.
- To have improved the capacity to use information to plan, manage, and monitor programs by 2005.

### Indicators

- Proportion of provinces having functioning health and management information system.
- Proportion of provinces and hospitals using information to plan, manage, and monitor and evaluate their own program performance.

### Policies/Principles/Guidelines

- The health information system and adoption of new technology will remain a national function.
- Health Research System will remain an integral function of service delivery.
- Health information will be widely distributed for planning and decision making at all levels.
- The Medical Research Advisory Committee will be the sole body responsible for ethics clearance and the monitoring of all health and medical research in PNG.
- All patient-related data will remain strictly confidential.

### Major Priorities

- Improve staff numbers and skills at all levels.
- Integrate health and management information systems and their use.
- Establish international linkages and information sharing capacity.
- Improve the capacity of the Papua New Guinea IMR to undertake research and training.
- Improve the capacity for health systems research.
- Improve inter-sectoral collaboration in research and reporting.
- Review and update legislation.

### Looking Back over the Past Ten Years

The branch has significantly progressed against its key objectives and priorities, including:

- Mid-term review of NPH in 2005.
- Annual sector review completed since 2001.
- Conversion of ICD9 to ICD10 hospital coding, which extended to all 20 hospitals in PNG.
- Facilitation of IMRG independent reviews for the health sector since 2006.
- Facilitation of the 2006 DHS study on behalf of NDoH.
- Collaborating with DNPM to monitor PNG MDGs on behalf of NDoH.
- Review of NHIS in last three years, with eventual roll-out beginning 2009.
- Started working on integration of health and management information system for NDoH.

- Handling quarterly MRAC meeting to approve and clear research protocols.

While progress has been made, some challenges have required particular commitment from the team:

- Concerns about quality and reliability of data.
- Timelines of data remain the biggest challenge.
- Research is still a much neglected area.
- Provinces and hospitals are still not reporting on time.
- Staff shortages have been a setback to effectively implementing our program (especially in IT).
- Staff capacity to analyse and report routinely to program managers and provinces has been lacking.

### Looking Forward to the Next Ten Years

Major challenges and key areas that will require continued support and commitment by all stakeholders in the next ten year plan include:

- Strengthening the branch by recruiting and training the **right people** to work.
- Building on existing linkages and working relationships, and creating new ones with our important partners and stakeholders.
- Assisting provinces to report on time, by making health information a part of provincial and hospital management agenda.
- Completing and starting to implement our policies on Research and Management Information.
- Building and strengthening research capacity in the branch to carry out research, as well as play a coordinating role.
- Improving and strengthening IT infrastructure for next 2–3 years to carry out one of the current corporate plan pillars on ICT.

## 7. Health Care Financing

Health care financing consists of both public and private funding of health services. In Papua New Guinea the government budget and external sources make up the bulk of public health financing. A full review of health financing can be found in Volume 1, Chapter 6, of this NHP.

### Looking Back over the Past Ten Years

The achievements of the branch over the past ten years have included:

- Presentation of budget to Treasury from 2001–2008.
- First evidence-based budget presented in 2009.
- Increased funding for recurrent budget.
- Increased funding from development partners.
- Support for the establishment of oncology services in Lae.
- Additional funds received through Functional Grants to Provincial Health Services with NDoH support.
- NDoH Budgetary support for post-graduate training for all cadres of workers.
- Maintenance and upkeep of health facilities, primarily in hospitals.

### Challenges

- With the downturn in the world economy, together with the reduction in the Treasury Budget forecast, enormous pressure will be placed on health care providers to provide the present level of health care.
- Accountability and data collection must improve.
- With the number of staff wishing to retire over the next five years, the sector needs to commence discussions with all stakeholders, including DPM and universities, to address retirement, replacement, and future training to ensure workforce stability.

### Looking Forward to the Next Ten Years

Major challenges and key areas that will require continued support and commitment by all stakeholders in the next ten year plan include:

- NDoH has developed its Corporate Plan 2009–2013. An evidence-based budget is a key focus of this plan over the next ten years.

- In collaboration with DNPM, submit Development Budget proposals for major infrastructure improvement.
- Continue with Budget workshops.
- Increase focus on addressing governance issues in NDoH, including the strengthening of external and internal audits and the Internal Audit Committee.
- Conduct Quarterly Budget Reviews to determine financial performance within the sector.

## 8. Health SWAp (Health Sector Improvement Program or HSIP)

A SWAp is a program-based approach operating at the level of the entire sector. It is an approach and not a blueprint. It is based on key principles and proposes to progressively apply these. Program-based approaches are defined as a ‘way of engaging in development cooperation based on the principle of coordinated support for a locally owned programme of development, such as a national poverty reduction strategy, a sector programme, a thematic programme or a programme of a specific organization’<sup>2</sup>.

The SWAp is a ‘mechanism’ of working between government and development partners for coordinating support (aid) to a public expenditure program to improve efficiency and effectiveness for intended outcomes.

The PNG National Department of Health (NDoH) started to move towards a sector-wide approach in the late 1990s, with the goal of achieving sustainable improvement in health services in PNG. In PNG the Health SWAp is known as the Health Services Improvement Program (HSIP).

### Looking Back over the Past Ten Years

The NDoH has moved forward since 2000 in progressively implementing the SWAp arrangements. Key principles of the SWAp include:

- A process in which funding supports a single sector policy and expenditure framework.
- Government in leadership for planning, implementation, and management.
- Common approach for planning, budgeting, procurement, management, accounting, reporting, and monitoring mechanisms.

A summary of the progress against each of the key component areas is listed in the following section.

<sup>2</sup> OEDC – DAC 2005.

### **Policy and Planning**

- NHP (2001–2010).
- MTEF (2007–2009).
- Strategic Plan (2006–2008).
- Annual Activity Plans (AAP).
- 10 program budget structure.
- Expert Panel Review.
- Bi-annual Government of PNG–DP Summit.

### **Management**

- HSIP Steering Committee (formerly Task Force).
- HSIP Management Branch/HSIP Secretariat.
- Health Sector Finance and Program Committees.

### **Partnership Arrangements**

- GoPNG–DPs Partnership Arrangement.
- Annual Provincial Agreement/Resource Envelops.
- Performance-based Agreements — NGOs, developers etc.
- Public–Private Partnerships for service delivery, management, and procurements (being developed).

### **Financial Resources**

- HSIP Trust Accounts.
- Resource Envelops.
- PIPs and Supplement Budgets.
- Recurrent budgets and provincial health grants.

### **Monitoring Framework**

- NHIS — National Health Information System.
- ASR — Annual Sector Review (21 core indicators).
- IMRG — Independent Monitoring & Review Group.
- NHC — Annual National Health Conference.
- Quarterly Reviews — tracks Programs AAPs.
- PLLSMA reviews.
- Other reports — monthly financial and implementation reports, provincial HSIPTA acquittal reports, and specific program and project reports.

### **Development Partners Engagement and Commitment with HSIP**

- DPs have signed up to the National Health Plan and seven Strategic Directions.
- Six DPs have signed up to the Partnership Arrangements.
- DPs signed the Kavieng Declaration.
- Challenging for DPs to align their procedures and systems with GoPNG.
- All DPs require open and transparent processes and good levels of accountability.
- DPs prepared to invest in strengthening government systems.
- Some concern at pace of implementation, but long-term commitment to process exists.

### **Challenges — Structural and Legal Framework**

- Organic Law implications on roles and responsibilities.
- Government leadership and more proactive engagement of Central Agencies.
- DPs policies and legal frameworks and implications for full integration in the HSIP.
- Government systems, processes, and mechanisms not conducive for SWAp arrangements for planning, budgeting, procurement, accounting, monitoring, and reporting.
- No cohesion and synchronisation of policies/strategies, planning, budgeting, management, reporting, and monitoring.
- Weak inter-sectoral linkages and coordination for planning, resource allocations, and human resource management.

### **Operational issues/challenges**

- Absorptive capacities: Staffing and institutional capacity at all levels of the health system for implementation.
- Insufficient capacity at the PHO and HSIP Secretariat to move funds to provinces and facility levels.
- Confusion in roles and responsibilities of players (some think HSIP is a super project).
- CSTB — not efficient and transparent enough in selection, awards, and contract clearance delays.
- Service delivery infrastructure in provinces and districts insufficient or lacking to facilitate service delivery.

- Slow implementation of District Treasuries Roll-out Program and Integrated Financial Management System to enable fund flow to districts and facilities level.
  - Slow implementation of other government essential reforms initiatives for improved service delivery.
  - Resources.
- Looking Forward to the Next Ten Years**
- Major challenges and key areas that will require continued support and commitment by all stakeholders include:
- Government embarking on capacity provision and building across the health system and for program implementation.
  - Providing a dedicated staff at each PHO to manage HSIPTA.
  - Reviewing the HSIPTA Instrument to broaden fund disbursement mechanism.
  - Providing funding direct to ‘service delivery points’ — hospitals and rural health facility levels — appropriately where capacity exists.
  - Facilities to have own AAP.
  - Determining capacity at facility level and NGOs to move funds for service delivery.
  - Consolidating, improving existing systems/processes, and developing for efficient and effective delivery mechanisms.
  - Streamlining and amalgamating HSIPMB and HSIP Secretariat functions into the NDoH proper structure and Corporate Plans.
  - Streamlining provincial HSIPTA management into the new structure of the *Provincial Health Authorities Act 2007*.
  - Ensuring Provincial HSIPTA on PGAS.
  - Ensuring HSIPTA on main government accounting system when IFMS operational.
  - Improving quality of MTEF and aligning with the government Fiscal Strategy and LTDS.
  - Improving or streamlining process for quarterly reviews for program and resources reallocations at both national and provincial levels.
  - NDoH restructuring and streamlining (PHAA) development and implementation.
  - Addressing staffing situation at HSIP MB and Secretariat, which are responsible for procurement of health items for health services and to facilitate fund disbursements to provinces and implementation agencies.
  - Strengthening provincial service delivery capacity.







## Chapter 14

### Emerging Context for 2011–2020



The operating environment for implementation of the *National Health Plan 2011–2020* will be significantly different from that experienced during the previous ten-year period. This environment will also continue to change and evolve during the time span of the Plan's implementation. Details are provided below regarding some of the most significant influences that are anticipated to affect the health sector in the coming ten years.

#### Climate Change

International deliberations on the emergence of climate change, its potential impacts on health, and the identification of mitigation and response strategies, has been underway since the 1990 Earth Summit, following which the United Nations Framework Convention on Climate Change (UNFCCC) was signed in 1992 by 192 parties.

This Framework defines climate change as a change of climate that can be attributed directly or indirectly to human activity, which alters the composition of

the global atmosphere, and which is in addition to natural climate variability observed over comparable time periods<sup>3</sup>. Furthermore, the Framework commits member nations to engage in 'minimizing adverse effects on the economy, on public health and on the quality of the environment'<sup>4</sup>.

The Framework is complemented by the Kyoto Protocol of 1997, which commits its 184 member parties to reduce their emissions of greenhouse gases, with a preliminary emphasis on industrialised countries. These countries must employ domestic measures, and also use market-based mechanisms, such as earning emission credits through investment in sustainable development projects that reduce emissions in developing countries.

The World Health Assembly of 2008<sup>5</sup> recognised that the overall impact of climate change on human health is expected to be adverse, with the greatest impacts felt in developing countries, small island developing states, and vulnerable local communities that have the least capacity to prepare for and adapt to such change. Some of the observed and projected impacts include:

- increases in malnutrition associated with lack of food security

<sup>3</sup> UNFCCC, Article 1, United Nations, 1992.

<sup>4</sup> UNFCCC, Article 4 Item f, United Nations, 1992.

<sup>5</sup> WHA 61.19, World Health Organization, 2008.

## National Health Plan 2011–2020

- increases in death, disease, drowning, and injury, due to extreme weather events
- increases in the burden of food-borne, water-borne, and subsequent diarrhoeal diseases
- reduced water security and compromised sanitation
- increases in the frequency of cardio-respiratory diseases
- altered distribution of some infectious disease vectors
- fish poisoning
- increases in mental stress due to relocation of vulnerable communities.

Furthermore, these factors can potentially combine to threaten achievement of the health-related Millennium Development Goals and to hamper efforts to improve public health and reduce health inequalities. This is considered to be particularly so in poorer countries, with poor health infrastructure and weak health systems.

### Impact to Date in Papua New Guinea

With a vast number of coastal communities on the mainland, islands, and atolls that comprise PNG, the susceptibility to increased frequency and intensity of storm surges, coastal erosion, flooding, droughts, high tides, and saltwater intrusion will increase in the coming ten-year period of the new National Health Plan. In addition, gradual warming is projected to have a potential impact on those living at higher altitudes, by exposure to vector-borne diseases, such as dengue and malaria, and possibly to increased exposure to reptiles that previously remained at lower and warmer levels of altitude.

In recent years, coastal and atoll communities within PNG have suffered from higher-than-usual king tides, rising sea levels, and other extreme weather events (e.g. floods and cyclones), which have damaged community infrastructure, contaminated water sources, and resulted in the permanent relocation of some villages.

As a member of the Pacific Island countries, PNG has adopted the Pacific Islands Framework for Action on Climate Change 2006–2015, and the Regional Framework for Action to Protect Human Health from the Effects of Climate Change in the Asia Pacific Region of December 2007.

The Regional Framework, in particular, contains health-specific commitments for member countries and the WHO to jointly implement, namely to:

- Increase awareness of health consequences of climate change.
- Strengthen health systems capacity to provide protection from climate-related risks and substantially reduce health systems greenhouse gas emissions.
- Ensure that health concerns are addressed in decisions to reduce risks from climate change in other key sectors<sup>6</sup>.

PNG has also adopted the Disaster Risk Reduction and Disaster Management Framework for Action, and in 2008 entered into a partnership with Australia to cooperate on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (REDD).

### Implications for the National Health Plan 2011–2020

With technical support from the WHO, the NDoH will take the lead in implementing the recommendations of the 2009 Madang Commitment with respect to climate change and health<sup>7</sup>. Successful implementation of these recommendations will be highly dependent on the establishment and nurturing of a strong working relationship with the PNG Office of Climate Change and Environmental Sustainability, and across all sectors of Government.

The recommendations include:

- Plan and implement studies on health vulnerability due to climate change.
- Develop national strategies and action plans for health sector adaptation, as part of national adaptation programs and national communication reports to the United Nations Framework Convention on Climate Change and the Pacific Islands Framework for Action on Climate Change.
- Increase awareness among policy-makers and the private sector about the impact of climate change on health, the determinants of health, and the livelihoods of islanders.

<sup>6</sup> Report: Eighth Meeting of Ministers of Health for the Pacific Island Countries, World Health Organization, Western Pacific, 2009.

<sup>7</sup> The Madang Commitment was agreed at the Meeting of Ministers for Health for the Pacific Island Countries in Madang in 2009.



- Mobilise communities to better adapt to the health consequences of climate change, as well as other impacts, applying the healthy settings approach embedded in Healthy Islands.
- Strengthen national capacity to develop and implement effective interventions to minimise climate-related health risks and enhance community resilience for adaptation, with special regard for the most vulnerable populations. In particular, reinforce existing programs, and build up the capacity of health and other related sectors in terms of infrastructure, human resources, and financial resources.
- Assess the health implications of decisions made on climate change by other key sectors, such as energy, agriculture, fisheries, industry, water supply and sanitation, transport, and urban and rural planning, and advocate for decisions that would improve health. It is critical that key sectors are engaged in adaptation planning for the health sector.

Anticipated strategies to support improving the capacity and preparedness of the health sector to address the impacts of climate change are included in Volume 1 under Key Result Area 8 Improve Preparedness for Disease Outbreaks and Emerging Population Health Issues.

## Lifestyle Illnesses

Lifestyle diseases are generally non-communicable conditions influenced by preventable risk factors that are related to lifestyle. They are more commonly seen in low-to-middle-income countries where people are making lifestyle transitions. The most common risk factors for lifestyle disease are tobacco and other drug use, unhealthy diet, physical inactivity, and excess alcohol consumption. However, other factors, such as sexual practices, family violence, and motor vehicle accidents also contribute highly to the burden of lifestyle disease on low-to-middle-income countries.

These lifestyle risk factors can lead to increased rates of cancer, cardiovascular diseases, diabetes, stroke, chronic respiratory disease, and blindness. For a country the burden of lifestyle diseases can include decreased social and economic development. They also place an additional burden on medical services.

Lifestyle factors can be effectively prevented with education and awareness programs aimed at promoting healthy lifestyles. Government plays a key role in ensuring access to healthy foods and food security; regulation of problematic tobacco, alcohol, and betel nut use; and provision of healthy spaces such as sporting fields.

The *National Health Plan 2001–2010* aimed its efforts towards the following priorities:

- Reviewing and updating of legislation
- Increasing community awareness and education
- Providing screening and limited and basic diagnostic, treatment, and rehabilitative services
- Improving surveillance and reporting
- Improving the knowledge and skills of health workers.

## Impact to Date in PNG

The priority areas identified in the *National Health Plan 2001–2010* were not fully realised, due to a general lack of resourcing and commitment to the prevention of lifestyle-related disease. The development of a national program was hindered by lack of resources and budget allocation in the first five years. In 2005, a Lifestyle Disease Unit was established, but program activity in 2007 and 2008 was limited to donor-funded programs. From 2009 onwards, a limited Lifestyle Disease Program became operational with two full-time staff. In 2010, a dedicated budget line item for the Lifestyle Disease Program was established, with an initial funding appropriation of K500,000.

There has not so far been a sufficient focus on reliable surveillance and data collection, resulting in inadequate documentation of the risk factors for lifestyle diseases in Papua New Guinea. The Secretary for Health commissioned a discussion paper on The Social Determinants of Health in Papua New Guinea, which outlined a number of the social and economic risk factors for lifestyle diseases in the country. A Ministerial Taskforce on Social Protection will investigate the social and economic determinants of health and social services, which will result in further evidence on the subject.

Based on international experience, chronic conditions related to sexually transmitted infections, and tobacco, drug, and alcohol consumption will continue to be a problem for Papua New Guinea, as it continues to undergo economic development and social transition. There will likely be a gradual decrease in diseases related to poverty, such as cataract blindness, chronic respiratory disease, and rheumatic heart disease, as people gain better access to employment, the cash economy, health services, and become less exposed to manual labour and subsistence living.

However, a more sedentary lifestyle, increased cash incomes, and increased access to high energy foods, will likely result in increasing rates of cardiovascular disease, diabetes, and cancer over the coming years. Changes are already being seen in cities and, as the economy expands, the rates of lifestyle disease will also increase outside of cities.

### **Implications for the National Health Plan 2011–2020**

The burden that lifestyle-related diseases put on the health system is costly and increases the patient load at hospitals and health services. Community education, awareness, and prevention campaigns are the most effective measures in reducing the rates of lifestyle disease. Focusing on reducing tobacco use, excess alcohol consumption, and betel nut use; promoting healthy eating and exercise; educating on safe sexual practices; and combating the family violence epidemic, should be the main priorities for Papua New Guinea. Government needs to have a focus on ensuring food security, access to healthy foods, and access to recreation facilities to meet increased demand from the population when educated in the benefits of healthy eating and exercise.

The National Department of Health is investigating the benefit of preventive health clinics in providing a range of services to assist in the prevention of lifestyle and non-communicable diseases. This approach is being modelled on the successful 'At 40 Clinic' at the Alotau Hospital and the Moro Clinic's Lifestyle Program. Preventive health services might include:

#### **Non-communicable diseases**

- Blood glucose and cholesterol tests
- Nutrition and physical exercise advice
- Mental health and wellbeing services
- Drug and alcohol counselling and advice.

#### **Communicable diseases**

- Childhood immunisation
- Screening services
- Personal health and hygiene advice.

#### **Sexual and reproductive health and family health**

- Education on safe sexual practices
- Family planning and safe motherhood programs
- Youth health education programs
- Community health promotion programs.

A further major development planned in the period 2011 to 2020 is the establishment of a National Public Health Institute (NPHI). The design of the NPHI is likely to include social health, health promotion, disease surveillance, and public health research. The NPHI would therefore have a specific focus on the prevention of lifestyle and non-communicable disease through health promotion, education, awareness, research, and surveillance approaches.

### **Pandemics**

A disease outbreak is the occurrence of cases of disease in excess of what would normally be expected in a defined community, geographical area, or season. An outbreak may occur in a restricted geographical area, or may extend over several countries. When a disease outbreak extends beyond the borders of one country, it becomes a pandemic. Disease outbreaks may last for a few days, weeks, or sometimes for several years.

Papua New Guinea is exposed to the risk of pandemic outbreaks, due to its weak national health system, the convergence of an international labour force serving the resources sector, and the proximity to the densely populated South East Asian Region. In 2003, avian influenza became a major concern for the region, and prompted the development of a range of national surveillance activities and response planning in Papua New Guinea and across the Pacific. Avian influenza was never detected in Papua New Guinea, but the threat enabled more detailed planning to be undertaken, resulting in the development of the National Contingency Plan for Pandemic Influenza.

The National Contingency Plan for Pandemic Influenza was developed in 2007 and officially endorsed in 2009. The Plan aims to outline the arrangements for the management of avian influenza in humans, and pandemic influenza in Papua New Guinea. The Plan identifies the National Department of Health as a key agency in responding to pandemic influenza and provides the following objectives:

- Ensure adequate surveillance is in place, so that the country can rapidly detect, diagnose, characterise, and respond to a pandemic influenza virus that may gain entry into the country.
- Prevent the spread of avian influenza virus from its native host (wild birds) into and amongst domestic poultry or other non-native species, including humans.
- Prevent the entry into the country of avian influenza virus by any preventable measures (i.e. other than via wild migratory birds).

- Limit pandemic spread through early containment measures.
- Limit morbidity and mortality from infection during a pandemic.
- Ensure essential services during a pandemic, sustain infrastructure, and mitigate the impact to the economy and the function of the society.
- Provide the public, health care workers, the media, and other service providers with up-to-date information.

Papua New Guinea has obligations under the International Health Regulations, which were revised in 2005. The purpose and scope of the International Health Regulations is to prevent, control, and provide a public health response to the international spread of disease. The International Health Regulations:

- Cover all illnesses or medical conditions, irrespective of origin or source, which constitute a significant public health risk to humans.
- Outline certain minimum core public health capacities that must be maintained by health authorities.
- Outline obligations to notify the World Health Organization of events that may constitute a public health emergency of international concern.
- Provide authority for the World Health Organization to undertake independent investigation of public health events, and declare a public health emergency of international concern.
- Ensure that the human rights of persons and travellers are protected.
- Mandates the establishment of a National Focal Point for urgent communications.

Pandemic surveillance and response was not included as a specific area within the *National Health Plan 2001–2010*. Instead, the focus on surveillance centred on endemic disease surveillance. The *National Health Plan 2001–2010* did refer to the need to review and develop an effective surveillance and reporting system.

### Impact to Date in PNG

In 2009, Influenza A H1N1 (Swine Flu) was identified in North America and was rapidly identified as a global pandemic. Papua New Guinea recorded 12 cases in international travellers that were all detected and isolated. To date, Pandemic Influenza A H1N1 has not been detected in the general population.

In response to the emergence of Pandemic Influenza A H1N1 (Swine Flu), the National Contingency Plan for Pandemic Influenza was implemented. In line with the Plan, a National Taskforce was established to oversee the response to the pandemic. A National Focal Point was nominated, and relationships were established to ensure that the National Disaster Committee and National Executive Council remained informed and involved in the national response. The National Department of Health partnered with the World Health Organization and AusAID to establish a national surveillance and response unit called the Command and Control Centre.

The Command and Control Centre was staffed with two surveillance officers, an administrative officer, and was equipped with a 24 hour emergency line. The Centre staff worked closely with provincial governments and hospitals to quickly build an effective national infectious disease surveillance system. For H1N1, the Centre directed field samples to the WHO Reference Laboratory in Melbourne, Australia, for testing and laboratory confirmation of disease strains for positive and accurate identification and surveillance.

The Centre now investigates and provides regular reporting on all infectious disease outbreaks in Papua New Guinea. This improved surveillance and investigation function enabled the successful identification of the 2009 cholera outbreak and enabled a rapid national response. With the effective establishment and operation of the Command and Control Centre, the National Department of Health has been able to fully realise an improved national surveillance system for pandemics and infectious disease outbreaks in line with the *National Health Plan 2001–2010*.

The National Department of Health, through the National Focal Point for the International Health Regulations, provides mandatory reporting to the World Health Organization on any events that may constitute a public health emergency of international concern. In line with the International Health Regulations, the National Department of Health continues to work closely with the World Health Organization and other international partners to respond to disease outbreaks in Papua New Guinea. The Command and Control Centre provides outbreak surveillance and response information to the National Focal Point, so that the Secretary for Health and Senior Management can be briefed on outbreaks and appropriate responses, and reporting obligations under the International Health Regulations can be met.

### **Implications for the National Health Plan 2011–2020**

In light of the successes that the Command and Control Centre has provided in surveillance and response to disease outbreaks in Papua New Guinea, the National Department of Health will continue to develop the unit and national capacity in disease surveillance and response. The key element to this development is the National Public Health Institute.

A major focus of the National Public Health Institute will be a Centre for Disease Control (CDC), which will ensure a strong national focal point to oversee surveillance and response to disease outbreaks in Papua New Guinea. The National Public Health Institute will take a comprehensive approach to the prevention and control of disease in Papua New Guinea and will be based on international best practice.

## **Trauma and Violence**

### **Implications for the National Health Plan 2011–2020**

Anticipated strategies in support of trauma and violence are included in Volume 1 under Key Result Area 7 Promote Healthy Lifestyles — under the first objective to increase the health sector response to prevention of injuries, trauma, and violence with an impact on families and the community.

## **Agricultural and Extractive Industries**

Extractive and agricultural industries are operating in large parts of PNG, many in very remote areas, and have been the major contributors to budget surpluses in recent years. Many of these industries are involved in the provision of health services in one form or another, although their approach differs significantly.

Extractive industries tend to build completely new infrastructure for health service provision to their employees, due to their more often remote locations, and to attract highly skilled staff. Their activities tend to have a shorter time period of operation, typically 10–30 years.

Agricultural industries tend to operate in less isolated areas, where services do already exist, and do not face the same pressures of providing a high quality health service to attract staff. Their timeframe of operation is usually long-term and often extends over many generations of workers.

Understanding the motivations and incentives of these different industries will help the PNG Government to best harness productive partnerships.

Some unique opportunities that exist with such industry engagement include:

- Due to the remote locations of extractive industries, where health infrastructure is often fragile, a partnership offers an immediate opportunity for health system strengthening that would otherwise take years.
- Extractive industries have specialist expertise in locating and maintaining workforce and infrastructure in remote locations.
- The government and both agricultural and extractive industries have a shared agenda in terms of social development. Partnerships can potentially create a win–win for both parties and this is firm ground for the development of partnerships.

However, it is also necessary to recognise the wider impact that industry has on the determinants of health, which often lie outside of the health services. These industries affect the communities in which they operate, by introducing profound changes to the social, economic, and physical environment of the people in the area.

Any partnership arrangement needs to be transparent about the possible trade-off being made between different societal benefits and harms. Collaboration with other Central Agencies and Line Departments in the areas of distribution of economic benefits, the focus of infrastructure investments, and monitoring and regulation of environmental impacts, and of occupational health and safety provisions, is vital for all industry activities.

### **Impact to Date in Papua New Guinea**

Industry involvement in the provision of health services varies from one organisation to the next and is not formalised through one single mechanism. A relatively good partnership dynamic between the private and public players exists. However, most of the relationships have arisen in an ad hoc manner, or are based on particular health issues (such as HIV/AIDS in the Enclaves Project). The relationships may need further formalising and a wider health systems strengthening approach. A description of the provision of health services by some of the more significant players is provided below.

#### **Ok Tedi Mining Limited**

Ok Tedi Mining Limited (OTML) employs 2,000 people in Western Province, and provides health services for employees and their families at the main mine site in Tabubil, as well as for the wider community through its support of Kiunga Hospital. Health services are funded both through the company's own actions, as well as

through its contributions to the PNG Sustainable Development Program (PNGSDP).

Funding through the PNGSDP has the potential to have a substantial impact for the health sector in Western Province, and across the nation, if harnessed for health specific investments.

### **Oil Search Limited**

Based in Moro, Southern Highlands, Oil Search have fielded and funded a highly-skilled public health team, who have provided support and supervision for surrounding church, government, and NGO health providers. They have developed innovative approaches to malaria control, by making standard treatment courses and malaria diagnostics available through local community workers and storekeepers. They have also supported an extensive HIV/AIDS control program for the area. They were involved in strengthening the local health physical infrastructure, both through Rural Development Enclaves Project (the Enclaves Project) funding, and funding that originated from the oil companies' activities, such as tax credit schemes.

### **CTP Higaturu Oil Palm Company**

CTP Higaturu Oil Palm Company (CTP) operates in a rural and semi-urban area in Oro Province. It has 2,500 employees, and also buys raw materials from 6,000 independent growers in the area. CTP owns and manages a health centre, which is small but has new equipment, including a laboratory that is also used by nearby government health centres. The company also runs 12 aid posts in the villages where its employees and independent growers live. Responding to their workforce needs, they were the first provider of HIV services in Oro Province, and the first non-health system provider.

### **New Britain Palm Oil Limited and Ramu Agri Industries Limited**

New Britain Palm Oil Limited (NBPOL), which also owns Ramu Agri Industries Limited (RAIL), employs 9,000 full-time workers, and an additional 3,000 seasonal workers, across West New Britain. NBPOL provides comprehensive health care for all its workers and their dependents. In 2008 this figure stood at over 21,000 people in New Britain, and over 5,000 people in Ramu. A network of three health centres and 28 aid posts are located within company compounds. The main health centre has full laboratory facilities, which function to the capacity of a provincial hospital, as well as a minor operating theatre, an ultrasound scanner, and an ECG machine.

NBPOL employs 50 health workers (nursing officers and community health workers), two doctors and two health extension officers.

Additionally, the NBPOL foundation fund has financed the construction of aid posts, water bores in many villages, and the establishment of an eye clinic at Kimbe General Hospital.

RAIL employs 2,300 permanent staff and 700 seasonal workers, across Morobe and Madang Provinces. The RAIL clinic, operational on a 24-hour basis, provides free health care for all employees and their immediate families. Additionally, the facility provides clinical and logistical support services to the government Gusap Health Centre, provides clinical consultations and laboratory services to third parties, and receives referrals from Gusap Health Centre and Barrack Kainantu Limited. Outreach visits are performed across the company's outlying estates during the off-crop period. RAIL employs one general practitioner and 16 health workers, and operates two full-time ambulances, due to the large distance from Angau Hospital. The facility is also involved in the rural medical training program, and has financed the rehabilitation of one government health centre and several smaller facilities, and is undertaking two hospital projects in Lae and Madang.

### **WR Carpenters & Co-Estates**

WR Carpenters employs approximately 5,000 people in the Western Highlands Province (including seasonal workers), particularly focused in their plantations in North Wagi District, Angliamp South Wagi District, and the Hagen Open District. The company operates nine aid posts, which are each staffed by a nursing officer and community health worker, and provides free services to employees and their families, and to the surrounding communities. The company has two full-time vehicles for health services, and through the Enclaves Project is obliged to build or renovate nine of the company's own facilities, seven government health facilities, and seven church health facilities. The company has also undertaken maintenance and redevelopment projects at the Mt Hagen and Kudjip hospitals.

### **Implications for the National Health Plan 2011–2020**

The recent PNG Health Partnerships Study jointly undertaken by the World Health Organization, Asian Development Bank, and NDoH made the following recommendations for consideration during the implementation of the new National Health Plan:

- Agricultural and extractive industries with an interest in health service provision should work cooperatively with each other by forming a board to assist and maintain dialogue with the government in providing direction and coordination of industry health service activities.

- The extractive industries should further explore the suitability of mechanisms, such as trust funds, to be used more widely to sustain health systems in remote areas, once the industries leave.
- The NDoH should engage directly with the PNG LNG (Liquefied Natural Gas) project, to ensure health activities and resources related to the project are consistent with and are also supportive of the National Health Plan, so they do not increase inequity between provinces.

Anticipated strategies to support the strengthening of partnerships with the agricultural and extractive industries are included in Volume 1 under Key Result Area 2 Strengthening Partnership and Coordination with Stakeholders, which is elaborated further in the next section, Partnerships for Health.

## Partnerships for Health

Health systems tend to be complex in nature and the case of Papua New Guinea presents no exception to this norm. The operating environment within which health services are delivered in Papua New Guinea presents significant challenges of which the factors of geography, demography, the decentralised nature of government, and its associated financial and legal mechanisms all have a part to play. Furthermore, the health sector includes multiple players.

The Government provides the bulk of health services, while Churches are the second largest provider, with services focused largely in the rural areas. Other providers with an increasing role in health service delivery include the agricultural and extractive industries, non-government organisations (NGOs), and the private sector. Additionally, the health sector benefits from the participation of a large number of development partners, ranging from bi-lateral partners to multi-lateral partners, international NGOs, and large-scale grant providers.

Within this setting, now more than ever it is apparent that government cannot meet the health needs of the population alone; health is everybody's business. Partnership arrangements can play a crucial role in bringing an increasing number of players and interests together in pursuit of a common aim. This National Health Plan, therefore, strives to set the direction and goals for all players in the health sector, outlining a holistic approach to implementation of the Plan under one single policy, measured through a single information system, and financed through coordinated mechanisms.

## Impact to Date in Papua New Guinea

The ten-year period of the *National Health Plan 2001–2010* has seen four developments within the Government of PNG and the health sector, which will influence the strengthening of partnerships across the health sector over the next decade. These are:

### **The National Policy on Partnerships in the Health Sector for PNG, 2003**

This policy document made significant progress in outlining the government's expectations and aspirations for improved health partnerships between the various players in the sector, but did not indicate any effective mechanisms by which the partnership policy would be implemented. In subsequent years it has not been built upon through other policy or legislative initiatives.

### **The PNG Government policy on procurement through Public–Private Partnerships, 2008**

This policy focuses primarily on large infrastructure and service projects, with a value in excess of 50 million Kina. This presents a potential mechanism for the construction of health infrastructure within the coming ten years, although it will be necessary to ensure these projects support the focus on primary health care for the rural majority and urban disadvantaged (for example, by combining a number of rural health infrastructure projects to reach the minimum threshold of 50 million Kina). Furthermore, it presents an opportunity for the health sector to advocate across government for application of this policy to improve the enabling environment for health (for example, by the use of the mechanism to improve road and bridge services to remote areas).

### **The Christian Health Services of PNG Act 2007**

This legislation describes objectives, purposes, and functions for the Christian Health Services (CHS) of PNG, defining standards for accountability and clinical services for all members of the CHS, and identifies mechanisms for accounting of government funds by members, reporting of key health information by members, and engagement of CHS in policy debate within the health sector. However, a number of shortcomings have been identified by preliminary review by the NDoH, and it is currently being considered by the Office of the Solicitor General, before implementation commences.

### The Provincial Health Authorities Act 2007

This legislation enables any Provincial Governor and the Minister for Health and HIV/AIDS to enter into an Agreement to bring the administration of rural health services and public hospital services in a province together under one single Provincial Health Authority. This agreement allows the Provincial Health Authority to enter contracts and partnerships, and to delegate some functions for the delivery of health services in its province.

Partnership arrangements in their varying forms, as they currently exist between the government and non-state players, have the potential for broadening and formalising the reach of partnerships in the health sector. This has also been the subject of an extensive study conducted jointly by the World Health Organization, the Asian Development Bank, and the National Department of Health. A summary of the current activities of the main players is provided below.

#### Churches

The current relationship between the government and the churches for the provision of health services in PNG is the most significant and strategically important health partnership arrangement in the sector. It predates independence, is relational in nature, and it focuses primarily on care for the most vulnerable section of the population — the rural majority.

Churches run 45% of all health facilities, and employ 23% of all health workers. The church facilities are typically health centres and sub centres; however, some of the health centres run by the churches operate more as 'rural hospitals' and are able, for example, to offer the full range of emergency obstetric care.

According to the review of health services in 2003<sup>8</sup>, church facilities deliver about half of all ambulatory care, facility-based deliveries, and immunisations in the provinces. In recent years, the churches have also been playing an increased role in Port Moresby, where they have entered into partnerships with the provincial government to re-establish urban clinics that had stopped functioning. The churches involved in rejuvenating urban clinics have been the Catholic, Seventh Day Adventist (SDA), and Four Square Church, as well as St John. The exception is Sopas Hospital in Enga Province. It used to operate as the Enga Provincial Hospital, until the SDA Church closed the facility in 2000, due to regular tribal fights in the area.

### Extractive and Agricultural Industry Health Partnerships<sup>9</sup>

The extractive and agricultural industries are increasing their role in health service provision, particularly in remote areas. Motivation for their involvement in health service delivery ranges from good business sense in terms of productivity (maintaining a healthy workforce and attracting skilled personnel to remote locations), to a desire to establish 'social licence' within the communities within which they work as well as internationally, or as a response to environmental and health damage caused by their activities, or as private providers contracted by external parties to do so for a profit.

Current industries providing health services to varying degrees include:

- Ok Tedi mine, Western Province
- CTP Higaturu Oil Palm Company, Oro Province
- Oil Search Company, Moro, Southern Highlands Province
- New Britain Palm Oil Limited (including Ramu Agri Industries Limited), West New Britain Province, Morobe Province, and Madang Province
- WR Carpenters and Co-Estates, Western Highlands Province.

#### Non-state Players — NGOs and Private Providers

The two largest NGOs operating in the health sector include Susu Mamas and St John Association of PNG.

Susu Mamas provides services in nutrition, antenatal and postnatal care, immunisation, family planning, and follow up of HIV-positive others. Traditionally Susu Mamas has financed its activities through internal and external donors. However, recently it has focused on preventing mother-to-child transmission of HIV infection and has negotiated a national contract that involves working in a number of provincial hospitals. This has meant building relationships at both the administrative and institutional level, and the maintenance of strong links with the business sector in PNG. The health care staff working for this NGO are trained nurses and midwives.

Some of the St John activities operate with public funding; for example, St John is providing the blood service on behalf of the NDoH in 20 locations throughout PNG.

<sup>8</sup> Churches Medical Council response to the Church Health Services Review, Draft Report, June 19, 2003.

<sup>9</sup> Refer to the section above specifically examining Agricultural and Extractive Industry for further detail.

St John has more recently entered into partnerships for managing public health facilities in the National Capital District. It has also been asked to operate a health-focused rescue helicopter for the districts close to Port Moresby. Funding for this has come through the DSIP under the direction of the Members of Parliament for that area.

There are approximately 500 smaller, community-based NGOs mainly linked to HIV, malaria, and TB activities. The partnerships that are built with these NGOs are somewhat of a different nature from the partnerships with the larger NGOs. Most of the partnerships and service contracts with these NGOs have either a donor as a direct partner or the NACS in some cases.

The role of private for-profit providers is still currently small, but is growing rapidly. The formal private providers tend to operate in the urban areas and provide services for those who can afford to pay. Additionally these formal private providers are recognised through licensing or registration mechanisms. Informal providers tend to operate in the rural areas and currently include traditional healers and Village Health Volunteers.

### Implications for the National Health Plan 2011–2020

Partnerships create interrelations between different actors in the health system and help to establish organisational and economical efficiencies within the health system. Partnerships can range from relationships that are built mainly on trust and a shared commitment to shared values and goals, to relationships that are more detailed and rely heavily on the legally enforceable nature of a contract. All partnerships are likely to be more successful in the long term when based on closely aligned core values and goals<sup>10</sup>.

Key Result Area 2 in Volume 1 of the National Health Plan describes the objectives and anticipated strategies for strengthening partnerships across the health sector and coordination with stakeholders. These are intentionally two-faceted, with one objective relating to the potential use of Public–Private Partnerships, as per the National Government’s policy on PPPs (i.e. service and infrastructure projects worth in excess of 50 million Kina), and with a second objective relating to the definition, cultivation, and expansion of partnerships across the health sector with the entire spectrum of players providing health services.



<sup>10</sup> PNG Health Partnerships Interim Report, WHO and ADB, 2009.





## Chapter 15

### Costing the *National Health Plan 2011–2020*



#### Methodology

As summarised in Volume 1, the costing of the Plan is organised along the main capacity inputs of staff, medical supplies, operations, and capital costs requirement. The costs are classified as recurrent and capital.

##### **Recurrent Costs:**

- Personnel
- Medical supplies
- Operating costs (operation and maintenance).

##### **Capital Costs:**

- Buildings
- Medical and general equipment (incl. transport)
- Long term training (HR development plan not yet available).

##### **The service levels were also used to organise the data:**

- Rural health services
- Provincial general and national referral hospitals
- Central level, including NDoH.

The current year, 2010, constitutes the base year, representing current costs and funding levels, and is largely derived from the MTEF 2010–2012. Projected cost estimates have been maintained in 2010 prices.

Overall service improvements, primarily in rural health services, have been projected to reach 2004 levels per population by 2015, or an increase of general service volumes compared with current service provision by up to 40%. The overall rural health services improvement is expected to reduce the load of PHC services on the provincial general hospitals, and thereby release capacity to enhance and increase referral and specialised services.

The approach to costing of services — linking costs with service outputs and required resources to deliver services — is based on the Monash RHS costing study: Modelling costs and efficiency of primary health care services in Papua New Guinea (Monash University, sponsored by the Asian Development Bank).

A population growth of 2.7% per year has been assumed.

## Personnel expenditure

Personnel Expenditure Summary (K'000)	2010	2011	2012	2013	2014	2015
NDoH	33,071	33,071	33,071	33,071	33,071	33,071
NDoH ICT personnel		90	180	270	360	450
Pre-service Training	15,876	16,591	17,339	18,120	18,937	19,791
General Hospitals	171,946	171,946	171,946	171,946	171,946	171,946
Regional Hospitals					486	2,900
Provincial/District Health Administration	7,548	7,548	7,548	7,548	7,548	7,548
Provincial ICT personnel		720	1,440	2,160	2,880	3,600
Rural Health Services	142,871	149,310	156,039	163,072	170,422	178,103
<b>Total</b>	<b>371,312</b>	<b>379,277</b>	<b>387,564</b>	<b>396,188</b>	<b>405,650</b>	<b>417,408</b>

General Hospitals	Service staff	Other	Total	2010 Approp.	Dischrg.	Bed days	ALOS
101 Daru	66	18	84	4,046	606	9,722	16.0
102 Kerema	48	61	109	4,105	768	6,814	8.9
103 PMGH	654	611	1,265	30,896	25,168	93,971	3.7
104 Alotau	181	98	279	8,827	4,523	27,436	6.1
105 Popondetta	65	52	117	5,939	3,264	19,428	6.0
106 Mendi	155	48	203	7,930	4,151	33,422	8.1
107 Kundiawa	165	64	229	7,341	4,417	55,131	12.5
108 Goroka	278	64	342	9,814	11,276	71,213	6.3
109 Angau	244	177	421	18,211	12,451	69,545	5.6
110 Modilon	188	38	226	7,982	4,737	24,109	5.1
111 Boram	115	39	154	7,753	5,320	33,232	6.2
112 Vanimo	98	66	164	4,879	2,155	19,885	9.2
113 Lorengau	55	23	78	3,427	1,636	10,663	6.5
114 Kavieng	57	49	106	6,642	2,853	20,624	7.2
115 Kimbe	139	69	208	8,392	2,238	29,622	13.2
116 Nonga	152	25	177	9,714	3,499	NA	NA
117 Arawa (Buka)	93	77	170	5,953	1,443	34,740	24.1
118 Mt Hagen	244	131	375	10,638	10,754	74,348	6.9
119 Enga (Wabag)	92	38	130	6,539	3,100	43,427	14.0
120 Laloki	39	33	72	2,919		21,704	
<b>Total</b>	<b>3,128</b>	<b>1,781</b>	<b>4,909</b>	<b>171,946</b>	<b>104,359</b>		

**NDoH and provincial/district health administrations:** Personnel expected to remain at 2010 levels<sup>11</sup>.

**Pre-service training:** Costs are derived from NDoH appropriations (240); no deliberate costing undertaken yet (cf. WB). Projection estimates are based on the estimates of staff required for RHS below, i.e. staff increase of about 25% (24.7%) by 2015 is equivalent to a gradual increase of staff by 4.5% per year until 2015. After 2015, staff increases equivalent to the annual population growth are factored in.

**Provincial General Hospitals:** Tentative service timing estimates indicate possible overall under-utilisation of service staff of around 70%. The under-utilisation is to a large extent confirmed by ALOS analysis which shows that half of the PGHs have an average of 13 bed days per admitted in-patient. With PGH services in general expected to increase by the equivalent of the annual population growth, current staff levels should overall be sufficient to absorb these service increases until 2015. After 2015, staff increases equivalent to the annual population growth are factored in.

Personnel implications of **Regional hospitals development** and **ICT development** are costs associated with capital costs investments and are documented in the section on capital costs.

### Rural Health Services

The approach taken to estimating requirements for rural health services clinical service staff is based on the Monash study.

The total direct clinical service time required to perform the existing health service output levels is calculated based on reported output levels for all RHS facilities (NHIS 2008) and the estimated average timing for each type of service.

The total number of service staff required to perform current levels of services is then calculated by the number of minutes that staff at each health centre are able to devote to clinical services (% clinical time available per service staff), by comparing with current staffing levels at all health facilities (from NHIS staff inventory).

The difference is then an indication of shortfall (over-utilisation) or oversupply (under-utilisation) in staffing time available for delivery of services at current reported levels.

Projected service staff requirements are calculated using the same methodology, by estimating total direct clinical service time required to deliver a targeted level of service provision to the population.

Salary costs for health staff are based on number of staff (NHIS) by staff categories multiplied by average (current 2010) unit staff salaries per staff category. Appropriation or expenditure information on health staff in the provinces is submerged in overall provincial public servants personnel expenditure, and the central payroll does not provide any meaningful basis either.

<b>Current RHS staff (see note 1):</b>	<b>Govt</b>	<b>CHS</b>	<b>Total</b>
Service staff (see note 2)	3,810	3,156	<b>6,966</b>
Other staff	794	839	<b>1,633</b>
Total	4,604	3,995	<b>8,599</b>
<b>Adjust for Aid Post staff (see note 3):</b>			
AP staff (CHW)	1,219	663	<b>1,882</b>
Service staff, excl. APs	2,591	2,493	<b>5,084</b>
Number facilities (RH, HC)	356	342	<b>698</b>
<b>Activity timing — current services:</b>			
Actual service staff (see note 4)	2,462	2,427	<b>4,889</b>
Number facilities	319	310	<b>629</b>
Required service staff	1,947	2,176	<b>4,123</b>
Capacity utilisation	79%	90%	<b>84%</b>

<sup>11</sup> The 240 NDoH personnel costs have been adjusted for the extraordinary retirements and retrenchments appropriated specifically in 2010.

Activity timing — projected services:			
Required service staff	2,797	3,297	6,094
Increase service staff	113.6%	135.8%	124.7%

## Notes:

- (1) Current total RHS staff: facilities from NHIS with staff data (4 provinces updated by 'staff count').
- (2) Direct clinical service staff: MOs, HEOs, EHOs, NOs, CHWs.
- (3) Adjusted for AP staff as these were not covered by service timing analysis (no service data available, thus AP staffing assumed maintained at current level).
- (4) Service staff — activity timing: facilities from NHIS with staff as well as service data.

The required service staff increase of about 25% (24.7%) by 2015 is equivalent to a gradual increase of staff by 4.5% per year until 2015, estimated as the service staff capacity required to provide the projected services below. After 2015, staff increases equivalent to the annual population growth is factored in.

RHS — Current services '000 (2008):	Govt	CHS	Total
Outpatients	3,898	3,616	7,514
Discharges	53	91	144
Deliveries	16	27	44
Family planning	243	160	404
ANC	107	72	179
Child health	724	595	1,319
Immunisations	1,196	835	2,031
RHS — Projected services '000 (2015):	Govt	CHS	Total
Outpatients	5,392	5,002	10,395
Discharges	96	165	261
Deliveries	33	54	88
Family planning	492	325	817
ANC	219	148	368
Child health	830	682	1,513
Immunisations	1,372	958	2,330

## Number of rural health facilities (CHS and Government)

RHS health facilities (RH, HC):	Govt	CHS	Total
Current RHS — total	356	342	698
Activity timing — staff and service data	319	310	629

**Total of 698 current RHS facilities:** sourced from NHIS facility inventory with staff data (status mid 2009). Also used in determining capital costs by extrapolation of RHS study sample of 55 facilities.

**Total of 629 RHS facilities** from NHIS used for activity timing includes facilities with staff as well as service data. The difference is made up of facilities with no services recorded in the NHIS.

## Medical Supplies

Medical Supplies Summary (K'000)	2010	2011	2012	2013	2014	2015	
<b>General Hospitals:</b>							
AMS (incl. kits)	25,419	26,126	26,855	27,604	28,374	29,166	(1)
HIV/AIDS supplies	7,485	9,469	10,993	11,173	11,484	11,804	(2)
TB supplies (non-DOTS, FDC)	1,694	1,741	1,789	1,839	1,890	1,943	(3)
Tertiary care (cancer)	2,500	2,569	2,641	2,714	2,790	2,867	(4)
Other supplies	8,081	8,305	8,536	8,773	9,017	9,268	(4)
Regional hospitals					43	334	(7)
'Buffer' EOC instruments		250	250	250	250	250	
<b>Total General Hospitals</b>	<b>45,179</b>	<b>48,460</b>	<b>51,064</b>	<b>52,354</b>	<b>53,848</b>	<b>55,632</b>	
<b>Rural Health Services:</b>							
RHS — kits	16,617	70,105	75,646	81,624	88,075	95,035	(1)
RHS — AMS	41,652						(1)
Anti-malarials (ACT, RDT)	13,487	9,685	10,451	11,277	12,168	13,129	(5)
TB supplies (non-DOTS, FDC)	1,694	1,741	1,789	1,839	1,890	1,943	(3)
Vaccines, including pentavalent	9,817	10,090	10,370	10,658	10,955	11,259	(4)
<b>Total Rural Health Services</b>	<b>83,267</b>	<b>91,621</b>	<b>98,256</b>	<b>105,398</b>	<b>113,087</b>	<b>121,366</b>	
LLINs	16,517	18,840	9,880	10,727	9,637	9,905	(6)
Condoms	3,748	4,940	6,055	7,303	7,506	7,715	(2)
<b>Total Medical Supplies</b>	<b>148,710</b>	<b>163,861</b>	<b>165,255</b>	<b>175,783</b>	<b>184,079</b>	<b>194,619</b>	

### Notes:

(1) From 2011, and so long as kits (100%) are provided, the AMS will provide MS primarily to the PGH. MS requirements for PGH expected to increase by annual population growth.

Currently, about 5,800 HC kits are distributed to HCs and PGHs per year — 3 HC kits designed to cover 4,000–5,000 outpatients per year — corresponding to about 8m outpatients. It is estimated that this will need to increase to 7,800 kits in 2015 to cover about 11m outpatients. From then onwards, increase by annual population growth.

	2010	2011	2012	2013	2014	2015
AMS	53,900	26,126	26,855	27,604	28,374	29,166
Kits	29,788	70,105	75,646	81,624	88,075	95,035

(2) Until 2013 according to GFA (round 9) estimates; from then onwards annual population growth.

(3) Annual population growth; assumed 50% PGH, 50% RHS.

(4) Annual population growth.

(5) From 2011 included in 100% kits; 7.9% pa until 2015; then population growth.

(6) Until 2013 according to GFM (round 8) estimates of 100% population coverage; 2014 onwards costs of maintaining coverage levels.

(7) See capital costs: Regional hospital development.

### HIV/AIDS Supplies

From GFA round 9 estimated medical supplies costs.

HIV/AIDS Supplies (K'000)	2010	2011	2012	2013	2014	2015
Adult ART (includes second line)	3,039	4,266	5,474	6,697	6,883	7,075
Paed. (includes second line)	224	302	355	398	409	421
PPTCT and PEP	98	209	239	220	226	233
<b>Total ARVs</b>	<b>3,361</b>	<b>4,777</b>	<b>6,068</b>	<b>7,315</b>	<b>7,519</b>	<b>7,728</b>
<b>Health Products and Health Equipment:</b>						
STI and Syphilis test kits (VDRL/TPHA)	1,986	2,146	2,204	847	870	894
Lab Equipment	32	38	87	34	35	36
Other consumables	853	1,128	1,408	1,690	1,737	1,786
HIV rapid tests and other consumables	1,253	1,379	1,226	1,287	1,323	1,360
<b>Total Health Products and Equipment</b>	<b>4,124</b>	<b>4,692</b>	<b>4,924</b>	<b>3,858</b>	<b>3,965</b>	<b>4,076</b>
<b>Total HIV/AIDS Supplies</b>	<b>7,485</b>	<b>9,469</b>	<b>10,993</b>	<b>11,173</b>	<b>11,484</b>	<b>11,804</b>

### TB Supplies

From MTEF 2010–2012; Global Fund for TB.

TB Supplies (K'000)	2010	2011	2012	2013	2014	2015
Non-DOTS districts/provinces — AMS	1,915	1,968	2,022	2,079	2,136	2,196
FDC cat I&II from GDF	1,473	1,514	1,556	1,599	1,644	1,690
<b>Total TB Supplies</b>	<b>3,388</b>	<b>3,482</b>	<b>3,579</b>	<b>3,678</b>	<b>3,780</b>	<b>3,885</b>

### Other Supplies

From MTEF 2010–2012.

Other Supplies (K'000)	2010	2011	2012	2013	2014	2015
Shortfall (ART etc.)	1,000	1,028	1,056	1,086	1,116	1,147
Lab supplies	1,145	1,176	1,209	1,243	1,277	1,313
Family HS, disease control	3,034	3,119	3,205	3,295	3,386	3,480
Communicable diseases	966	992	1,020	1,048	1,077	1,107
ADB — rural enclaves MS	1,221	1,255	1,290	1,325	1,362	1,400
Various kits (Emergency obstetric, vasectomy etc.)	715	735	756	777	798	820
<b>Total Other Supplies</b>	<b>8,081</b>	<b>8,305</b>	<b>8,536</b>	<b>8,773</b>	<b>9,017</b>	<b>9,268</b>

### Anti-malarials

From MTEF 2010–2012; Global Fund for Malaria round 8 budget.

Anti-malarials (K'000)	2010	2011	2012	2013	2014	2015
ACT	5,742	4,612	4,976	5,369	5,794	6,251
Artesunate	2,365	2,222	2,398	2,587	2,791	3,012
RDT	5,379	2,852	3,077	3,320	3,583	3,866
<b>Total Anti-malarials</b>	<b>13,487</b>	<b>9,685</b>	<b>10,451</b>	<b>11,277</b>	<b>12,168</b>	<b>13,129</b>

## Vaccines

From MTEF 2010–2012; GAVI.

Vaccines (K'000)	2010	2011	2012	2013	2014	2015
Vaccines — AMS	2,000	2,056	2,113	2,171	2,232	2,294
Pentavalent — GAVI	7,817	8,034	8,257	8,487	8,723	8,965
<b>Total Vaccines</b>	<b>9,817</b>	<b>10,090</b>	<b>10,370</b>	<b>10,658</b>	<b>10,955</b>	<b>11,259</b>

## Condoms

From GFA round 9 estimated medical supplies costs.

Condoms (K'000)	2010	2011	2012	2013	2014	2015
Male — quantity ('000)	40,000	22,600	28,612	34,767	35,733	36,726
Male — unit cost	0.034	0.031	0.031	0.031	0.031	0.031
Total USD	1,359	701	887	1,078	1,108	1,139
Total K	3,748	1,933	2,447	2,973	3,056	3,141
Female — quantity ('000)		1,440	1,728	2,074	2,131	2,190
Female — unit cost procurement		0.695	0.695	0.695	0.695	0.695
Female — unit costs packaging		0.062	0.062	0.062	0.062	0.062
Total USD		1,090	1,308	1,570	1,613	1,658
Total K		3,007	3,609	4,330	4,451	4,574
<b>Total Condoms</b>	<b>3,748</b>	<b>4,940</b>	<b>6,055</b>	<b>7,303</b>	<b>7,506</b>	<b>7,715</b>

## Operating costs (operation and maintenance)

Operating Costs Summary (K'000)	2010	2011	2012	2013	2014	2015
Rural Health Services	80,168	99,686	105,347	111,394	117,856	124,763
Hospitals:						
Provincial General Hospitals	62,482	64,225	66,017	67,859	69,752	71,698
Hospital Capital Works Planning		750	750	750	750	750
Strategic hospital redevelopment					5,975	23,395
Remaining hospital redevelopment				15,862	23,641	23,641
Regional Hospitals development					106	1,139
Pre-service Training	1,004	1,083	1,169	1,261	1,296	1,332
Central Level	238,750	210,240	210,118	209,218	208,816	208,836
<b>Total Operating Costs</b>	<b>382,404</b>	<b>375,985</b>	<b>383,402</b>	<b>406,345</b>	<b>428,193</b>	<b>455,555</b>

### Rural Health Services

Estimates of rural health services costs and projections are based on the National Economic and Fiscal Commission (NEFC) cost of services study, highlighting the three Minimum Priority Activities:

1. Facility operations
2. Outreach (patrols)
3. Medical supplies distribution.

The original estimates from 2005 have been adjusted to 2010 prices. The costs of rural water supply have been moved to capital costs, and cost estimates based

from the EU Rural Water Supply project have been used instead of those contained in the NEFC cost estimates.

<b>RHS Operating Costs Summary (K'000)</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Facility operations (MPA 1&2) (1)	36,530	39,416	42,532	45,893	49,520	53,433
Medical supplies distribution (MPA 3) (2)	4,000	17,000	18,344	19,793	21,357	23,045
Patient transfer (3)	24,296	24,971	25,665	26,379	27,112	27,865
Province/district administration (3)	17,804	18,298	18,807	19,330	19,867	20,419
Adjusted for funding deficit 2010	-2,461					
<b>Total Operating Costs RHS</b>	<b>80,168</b>	<b>99,686</b>	<b>105,347</b>	<b>111,394</b>	<b>117,856</b>	<b>124,763</b>

## Notes

(1) 2011–2015 increase by 7.9% pa in line with RHS service increases; then annual population growth.

(2) Costs of medical supplies distribution from provincial transit stores to facilities in 2010 based on 40% kits. From 2011, 100% kits introduced; volume/weight of 100%

kits more than 4 times the current 40% kits. 2012–2015 increase by 7.9% pa in line with RHS service increases; then population growth.

(3) Annual population growth.

## NEFC cost estimates 2005 adjusted to 2010 prices and 2009 number of facilities

<b>Provincial Health Administration</b>	<b>K'000</b>
Administration	3,270
Human Resource Development	270
Provincial Health Board	651
Health Information System	17
Supervision	2,860
Disease Control	61
Distribution of Medical Supplies — adjusted	4,000
Health Promotion	3,338
<b>Total</b>	<b>14,466</b>
<b>District Health Administration</b>	<b>K'000</b>
Administration	1,008
DHMC	539
Supervision	2,370
Patient transfer	24,296
In-Service Training	1,425
Water Supply	10,549
Health Promotion	1,415
HC Radios	580
<b>Total</b>	<b>42,182</b>
<b>Total Provincial/District Administration</b>	<b>56,649</b>



<b>Facility Costs — operations and outreach</b>		<b>K'000</b>
Government facilities — direct grants		11,016
Government facilities — province		7,243
Number of Government facilities		331
Average costs per facility per year		55,162
Church facilities — direct grants		11,067
Church facilities — province		7,204
Number of CHS facilities		328
Average costs per facility per year		55,704
<b>Total Facility Costs</b>		<b>36,530</b>
<b>Total Costs RHS in relation to Funding</b>		<b>K'000</b>
Total Rural Health Services		93,178
Adjust for Rural water supply (as capital costs)		-10,549
Adjusted Total Rural Health Services		82,629
Funding deficit 2010		-2,461
Actual funding 2010		80,168

**Facility costs covered by facilities through direct facility grants and by the provincial health administration**

<b>Facility Costs</b>	<b>Covered by:</b>	
	<b>Facilities</b>	<b>Province</b>
Non-Medical Supplies	+	
HC maintenance	+	
HC transport (fuel/maintenance)	+	
Vehicle replacement		+
Medical equipment maintenance (including fridge)		+
VBA training	+	
Outreach patrols (including school visits)	+	
Aid Post supplies	+	
Aid Post maintenance	+	
Aid Post medical equipment maintenance		+

Note: Aid Post costs will be covered by the supervising facilities (RH, HC).

## Hospitals

Hospitals Operating Costs Summary (K'000)	2010	2011	2012	2013	2014	2015
PGH routine O&M	62,482	64,225	66,017	67,859	69,752	71,698
Hospital capital works planning		750	750	750	750	750
Strategic hospital redevelopment					5,975	23,395
Remaining hospital redevelopment				15,862	23,641	23,641
Regional Hospitals development					106	1,139

Overall appropriations for PGH routine O&M have increased by more than 80% since 2007, to reach an overall level in 2010 that is regarded as reasonably adequate, given the current service levels (in accordance with extracts from hospital

annual reports).

PGH routine operating costs are estimated to increase by annual population growth.

PGH (K'000)	2007 Expend	2008 Expend	2009 Approp	2010 Approp	Incr. 07–10	Out- patients	Dis- charges	Bed days	ALOS	Deliv- eries
101 Daru	617	1,357	966	1,493	242%	27,805	606	9,722	16	722
102 Kerema	1,153	1,238	1,449	1,469	127%	24,799	768	6,814	9	167
103 PMGH	7,906	7,881	12,667	14,546	184%	87,396	25,168	93,971	4	11,034
104 Alotau	1,096	1,822	2,069	2,105	192%	45,444	4,523	27,436	6	1,688
105 Popondetta	1,215	1,176	1,722	1,821	150%	26,348	3,264	19,428	6	1,438
106 Mendi	801	1,353	1,304	1,480	185%	68,523	4,151	33,422	8	1,238
107 Kundiawa	946	1,531	2,076	2,270	240%	37,655	4,417	55,131	12	696
108 Goroka	1,651	1,951	2,808	3,213	195%	60,036	11,276	71,213	6	4,164
109 Angau	4,046	6,302	7,504	11,088	274%	52,112	12,451	69,545	6	4,679
110 Modilon	1,869	2,329	2,250	2,801	150%	24,038	4,737	24,109	5	1,703
111 Boram	1,632	1,960	2,136	2,498	153%	19,774	5,320	33,232	6	1,838
112 Vanimo	993	1,423	1,527	1,536	155%	64,602	2,155	19,885	9	669
113 Lorengau	800	1,550	1,196	1,440	180%	28,142	1,636	10,663	7	612
114 Kavieng	1,673	1,694	1,787	2,019	121%	20,942	2,853	20,624	7	797
115 Kimbe	1,451	2,075	2,234	2,248	155%	83,695	2,238	29,622	13	1,117
116 Nonga	1,691	1,940	2,004	2,116	125%	14,950	3,499	NA	NA	1,156
117 Arawa	1,046	1,434	1,693	1,929	184%	25,300	1,443	34,740	24	1,041
118 Mt Hagen	1,997	2,567	2,815	3,137	157%	65,926	10,754	74,348	7	2,699
119 Enga	911	1,164	1,517	1,754	193%	167,629	3,100	43,427	14	1,245
120 Laloki	806	925	1,330	1,521	189%			21,704		
<b>Total</b>	<b>34,299</b>	<b>43,672</b>	<b>53,052</b>	<b>62,482</b>	<b>182%</b>	<b>945,116</b>	<b>104,359</b>	<b>699,036</b>	<b>7</b>	<b>38,703</b>

Operating cost implications of **Strategic Hospital redevelopment** and **Regional hospitals development** are costs associated with the specific investments in redevelopment of these hospitals and are documented in the section on capital costs.

### Pre-service training

Costs are derived from NDoH appropriations 240; no deliberate costing undertaken yet (cf. WB); Estimate based on annual population growth.

## Central level

Central Level Operating Costs (K'000)	2010	2011	2012	2013	2014	2015
NDoH	32,689	32,689	32,689	32,689	32,689	32,689
Program support etc. — non-costed	206,061	168,693	168,693	168,693	168,693	168,693
Costed CPHL (currently covered by DP/GF)		5,332	6,005	3,063	5,422	3,093
Net program support — non-costed	206,061	163,361	162,688	165,631	163,271	165,601
CPHL:						
Total requirements		14,675	15,227	11,384	13,341	11,032
Funded — Government (including in 240 NDoH above)		485	485	485	485	485
Net requirement		14,190	14,742	10,899	12,856	10,547
<b>Total Central Level</b>	<b>238,750</b>	<b>210,240</b>	<b>210,118</b>	<b>209,218</b>	<b>208,816</b>	<b>208,836</b>

**NDoH:** 2010 appropriations for 240, excluding medical supplies and pre-service training. Costs are expected to remain at 2010 level.

**Central Public Health Laboratory:** CPHL receives extensive support and assistance in its activities from donor partners. Donor partner funding streams beyond the immediate future can be uncertain. GFATM grants are for a limited period, although new grants may be received. To ensure a complete picture is obtained of the full programs provided by CPHL, donor funding is included in forward planning. For this analysis, it has been assumed that donors will continue funding the activities, apart from those impacted by rejection of the Round 9 proposal.

**Program support etc. — non-costed:** Of the total funds available from DPs in particular, approximately K206m has not been possible to capture in the costing. These amounts appear here as Central Level operating costs, and represent various specific program support and overhead costs, and discrete project funding, including ongoing capital projects. These currently available funds are thus in principle reflected as cost requirements, by assuming these costs are required in the plan period, although in a cost neutral manner as they have not been part of the deliberate costing of requirements.

Program Support (K'000)	MTEF 2010	Adjustments costed NHP:			2010		2011
		Med. Supp.	Capital	HSIP prov.	Not costed	Adjust Capital	Not costed
<b>Global Funds for Malaria, HIV/AIDS, TB:</b>							
Medical supplies and products	32,621	32,621					
Infrastructure and equipment	4,119				4,119	4,119	
Human resources (employment of staff)	17,174				17,174		17,174
Training	9,984				9,984		9,984
M & E	6,021				6,021		6,021
Management and administration	3,835				3,835		3,835

National Health Plan 2011–2020

TA	5,806				5,806		5,806
PSI: Advocacy etc.	6,400				6,400		6,400
Other	588				588		588
<b>Total GFM, GFA, GFT</b>	<b>86,549</b>	<b>32,621</b>			<b>53,928</b>	<b>4,119</b>	<b>49,809</b>
<b>AusAID:</b>							
Non-earmarked funds	23,900	4,290		8,500	11,110		11,110
Capital: STI clinics	23,900				23,900	23,900	
Malaria	7,200				7,200		7,200
PASHIP (NACS etc.)	10,700				10,700		10,700
Clinton Foundation — HIV/AIDS Initiative	8,400				8,400		8,400
TA – CBSC	17,900				17,900		17,900
Institute of Medical Research (IMR)	4,800				4,800		4,800
WHO Technical Support to PNG Health Sector	3,800				3,800		3,800
UPNG Medical School Support Program (MSSP)	6,000				6,000		6,000
Medical supplies — procurement manager	700				700		700
Other (review etc.)	600				600		600
<b>Total AusAID</b>	<b>107,900</b>	<b>4,290</b>		<b>8,500</b>	<b>95,110</b>	<b>23,900</b>	<b>71,210</b>
<b>NZAID:</b>							
Non-earmarked funds (provinces)	8,000			8,000			
Rural Health and HIV prevention (SCNZ)	5,525				5,525		5,525
Maternal and Reproductive Health	1,275				1,275		1,275
Bougainville Healthy Community Project	1,190				1,190		1,190
Social Marketing of Condoms (ADB)	850				850		850
New HIV/AIDS initiatives	1,275				1,275		1,275
HIV bio-behavioural survey (WB)	850				850		850
CBHC	320				320		320
Gulf Christian Health Services	390				390		390
Leitana Nehan Women's Development Agency	715				715		715
Various TA (advisor, IMRG and other requirements)	1,435				1,435		1,435
<b>Total NZAID</b>	<b>21,825</b>			<b>8,000</b>	<b>13,825</b>		<b>13,825</b>

UN agencies (UNICEF, WHO, UNFPA)	30,723	4,715			26,008	640	25,368
GAVI — Pentavalent vaccine	5,863	5,863					
EU rural water supply	21,533		21,533				
ADB	13,411	1,221			12,190	8,709	3,481
GoPNG Development budget (trsf. to HSIP):							
HSIP	7,000	7,000					
Measures to address health issues in Torres Strait	5,000				5,000		5,000
<b>Total GoPNG Development budget (trsf. to HSIP)</b>	<b>12,000</b>	<b>7,000</b>			<b>5,000</b>		<b>5,000</b>
<b>Total DP funding</b>	<b>299,804</b>	<b>55,710</b>	<b>21,533</b>	<b>16,500</b>	<b>206,061</b>	<b>37,368</b>	<b>168,693</b>
Adjust for DP funds captured in CPHL costing							5,332
<b>Total non-costed</b>					<b>206,061</b>		<b>163,361</b>

## Capital Costs

Capital Costs Summary (K'000)	2011–2020
Rural Health Services	454,025
Rural Water Supply	215,330
General Hospitals	2,624,943
Pre-service Training	0
Central (ICT development)	75,316
<b>Total Capital Costs</b>	<b>3,373,613</b>

## Rural Health Services

Rural Health Services (K'000)	2011–2020
<b>Health Centres/Rural Hospitals:</b>	
Buildings	233,023
Equipment	38,371
<b>Total HC/RH</b>	<b>271,394</b>
<b>Aid Posts:</b>	
Buildings	50,166
Equipment	4,170
<b>Total Aid Posts</b>	<b>54,336</b>
<b>CHP (trial in 21 provinces):</b>	
Buildings	120,093
Equipment	8,200
<b>Total CHP trial</b>	<b>128,293</b>
<b>Total RHC Capital</b>	<b>454,025</b>

The results from the Monash RHS cost study, based on a reasonably representative sample of 55 health facilities, have been extrapolated to national level by the total number of Government and CHS facilities.

### Health Centres/Rural Hospitals Equipment

Costs are estimated to replace currently missing equipment according to Health Centre and District Health Centre Minimum Standards and survey results for 55 sample facilities.

Equipment replacement is expected to commence in 2011 and to be completed over a period of three years.

The DHC Minimum Standards have been used as the basis for costing.

Minor equipment includes: Medical/Lab (microscope, BP machine (sphygmomanometer), nebuliser, and oxygen equipment), Refrigeration, Steriliser, Suction pumps, Scales, Lamps (examination, operating), Dental chair, and General furniture.

General equipment includes: Vehicle/dinghy, Radio installation, Generator, Beds (obstetric/delivery, examination, inpatient), and Operating table.

Equipment Costs (Kina)	Health Centre Minimum Standard	District Health Centre Minimum Standard
Minor equipment	588,698	1,308,200
General equipment	1,150,012	1,715,318
Total 55 sample facilities	1,738,710	3,023,517
Total RHS facilities (current G/M)	698	698
Total RHS costs	22,065,807	<b>38,371,185</b>
Total general equipment/HF	109,356	124,315
Total medical equipment/HF	20,983	41,792
% Refurbishment	24%	33%

### Buildings

Building Costs (Kina)	High	Low	Medium
Cost per square metre (Kina)	3,538	1,222	2,444
Cost/m <sup>2</sup> , including provincial weighting	4,062	1,403	2,807
Materials used	concrete	timber	concrete
<b>Total 55 Sample Facilities (Kina)</b>	<b>26,576,179</b>	<b>9,176,393</b>	<b>18,361,427</b>

The medium estimate has been used as the basis for this costing.

Rehabilitation Costs (Kina)	No. facilities	Required rehabilitation	If all rehabilitated
DH/RH	7	8,941,865	15,706,580
HC	48	9,419,562	30,937,766
Total	55	18,361,427	46,644,346
Rehab % of new construction			39%
Total RHS facilities (G and M)	698	698	698
<b>Total RHS Costs</b>		<b>233,023,206</b>	

## Aid Posts

Capital cost requirements for rehabilitation of current aid posts (open/staffed) have been estimated on the assumption that the rehabilitation and refurbishment percentages for health centres — 39% and 33% — also apply for aid posts.

Aid Posts (Kina)	Amount	Notes
Number of Aid Posts	1,800	Currently open/staffed
Construction per AP	70,800	Timber 58 m <sup>2</sup> at K1,220 per m <sup>2</sup>
General equipment per AP	2,000	Adjusted HC, a.o. excl. vehicle, IP beds etc.
Minor equipment per AP	5,000	Adjusted HC, a.o. only 1 fridge etc.
Rehabilitation all APs — HC%	50,166,429	HC rehab % of new construction used — 39%
Refurbishment all APs — HC%	4,169,980	HC refurb % used — 33%
<b>Total Aid Post Rehab./Refurb. Costs</b>	<b>54,336,410</b>	

## Community Health Posts

### Trial in 5 provinces

It has been assumed that a CHP will require three health staff, including one with midwifery expertise. If the size of a current aid post meant for two health staff is 58 m<sup>2</sup>, the size of a community health post with three health staff is assumed to be 87 m<sup>2</sup>, or 3/2 compared with an aid post.

### Estimated costs per CHP

**CHP Buildings:** The cost per m<sup>2</sup> used is K2,764, which is an average of the various m<sup>2</sup> costs used for HCs (low, medium, high estimates). A 5% allowance for general furniture has been added.

Costs (Kina)	m <sup>2</sup>	Cost/m <sup>2</sup>	Total
CHP building costs	87	2,764	240,256

**3 staff houses** (one per staff member @ 40 m<sup>2</sup>):

Costs (Kina)	m <sup>2</sup>	Cost/m <sup>2</sup>	Total
Building costs per staff house	40	2763.47	110,539
Building costs for three staff houses			331,616

**Equipment:** assumed based on Minimum Standards for HCs, adjusted for community health posts.

<b>Minor equipment:</b>	<b>Cost (Kina)</b>
BP machine (sphygmomanometer), nebuliser	683
Gas refrigerator	1,500
Steriliser	556
Suction pump	1,884
Scales	180
Lamps (examination, Coleman)	1,272
Other (lockable cupboard)	760
<b>Total costs per CHP — minor equipment</b>	<b>6,834</b>
<b>General equipment:</b>	<b>Cost (Kina)</b>
Radio installation	21,000
Purchase of generator	5,291
Purchase of water tank (small)	3,449
Beds:	
• obstetric/delivery bed	311
• examination bed	722
• two inpatient beds	1,444
<b>Total costs per CHP — general equipment</b>	<b>32,217</b>

**Total costs per CHP (Kina):**

Total for three staff houses	331,616
Equipment CHP	39,051
Buildings CHP	571,872
<b>Total costs per CHP</b>	<b>610,923</b>

**CHP tested in 21 provinces — 10 CHPs per province (Kina):**

Total Building costs	120,093,121
Total Equipment costs	8,200,802
<b>Total CHP costs in test period</b>	<b>128,293,924</b>

It is assumed that the recurrent costs implications — staff, medical supplies, operating costs — of establishing and operating the test CHPs are already captured in the costing of rural health services.



## Provincial General Hospitals

### Estimated Capital Costs for Proposed Hospital Construction

Hospitals (K'000)	Beds	Start	Years	Year commissioned	Construction costs
Kerema	110	2011	3	2014	79,000
Goroka	NA	2011	3	2014	60,000
Angau	580	2011	5	2016	410,000
Nonga	70	2011	3	2014	100,000
<b>Total for Strategic Hospital Redevelopment</b>					<b>649,000</b>
Boram	200	2016	3	2019	180,000
Kavieng	52	2016	3	2019	45,000
Popondetta	107	2016	3	2019	80,000
Daru	100	2016	3	2019	77,500
Wabag	100	2016	3	2019	80,000
PMC	150	2011	2	2013	259,310
Central	300	2017	4	2021	250,000
<b>Total for Remaining Hospital Redevelopment</b>					<b>971,810</b>
<b>Total PGH Redevelopment</b>					<b>1,620,810</b>

Number of beds represents the estimated number of beds in a completed facility. Goroka hospital is scheduled for renovation only. All other hospitals in the list represent new replacement facilities. Construction costs are thus the estimated capital outlay required to rebuild/upgrade facility to the designed number of beds.

Tari hospital currently in SHP will be upgraded to PGH status in Hela province. Costs are unknown, but capital works are expected covered by an outside source.

In addition to the capital for building, an allowance of 20% for equipment is accounted for, on the

assumption that, while equipment will be transferred from old buildings to new, some new items would be required<sup>12</sup>. Moreover, during the capital works is the appropriate time to undertake an equipment stocktake and replace as required. However, for any building and equipment expenditure, flow-on maintenance costs are also allowed for. These are estimated at 3% with a two-year lag for buildings, and 12.5% with a one-year lag for equipment. Apart from these recurrent costs, after completion of capital works, hospitals have the potential to operate within the recurrent costs already captured in the costing.

Hospitals (K'000)	Construction	Equipment	Bldg Maint.	Equip. Maint.	Total Capital	Total Recurrent	Annual recurrent
Kerema	79,000	15,800	14,220	13,825	94,800	28,045	4,345
Goroka	60,000	12,000	10,800	10,500	72,000	21,300	3,300
Angau	410,000	122,000	49,200	86,500	532,000	135,700	27,550
Nonga	100,000	20,000	18,000	17,500	120,000	35,500	5,500
<b>Total Strategic hospitals</b>	<b>649,000</b>	<b>169,800</b>	<b>92,220</b>	<b>128,325</b>	<b>818,800</b>	<b>220,545</b>	

<sup>12</sup> Except for Angau where an allowance of 30% for equipment has been used; and the Pacific Medical Center with 49% of estimated construction costs according to the PMC proposal.

Boram	180,000	36,000	5,400	9,000	216,000	14,400	9,900
Kavieng	45,000	9,000	1,350	2,250	54,000	3,600	2,475
Popondetta	80,000	16,000	2,400	4,000	96,000	6,400	4,400
Daru	77,500	15,500	2,325	3,875	93,000	6,200	4,263
Wabag	80,000	16,000	2,400	4,000	96,000	6,400	4,400
PMC	259,310	126,897	54,455	126,897	386,207	181,352	23,641
Central	250,000	50,000	0	0	300,000	0	13,750
<b>Total Remaining hospitals</b>	<b>971,810</b>	<b>269,397</b>	<b>68,330</b>	<b>150,022</b>	<b>1,241,207</b>	<b>218,352</b>	
<b>Total Estimated Costs</b>	<b>1,620,810</b>	<b>439,197</b>	<b>160,550</b>	<b>278,347</b>	<b>2,060,007</b>	<b>438,897</b>	

Annual recurrent costs reflect the associated additional building and equipment maintenance cost requirements after a hospital has been commissioned. No building and equipment maintenance costs have been factored in for the Central Province hospital, because it is not expected to be commissioned until 2021.

For the Pacific Medical Centre, the costs indicated in the proposal submitted by the consortium behind the PMC have been used.

PMC proposal (USD '000)	Range From	Range To	Average USD costs used	Costs in K'000
Total capital costs	125,000	155,000	140,000	386,207
Medical equipment	42,000	50,000	46,000	126,897
Construction			94,000	259,310

The same costing has then been applied to the PMC as the other hospitals, except for equipment costs, which have been extracted from the proposal as 49% of construction, against the allowance of 20% for the other PGHs.

In line with the PGHs, annual equipment maintenance costs have been assumed at 12.5% of equipment costs with one-year lag, and building maintenance costs as 3% of facility costs with two-years lag after commissioning.

### Regional Referral Hospital Development

Clinical capacity will be strengthened at four Provincial hospitals by enhancing diagnostic and specialist services. Assumed dates for enhancement commencement of the four hospitals are:

Regional Hospital	Commencement Date
Angau	2015
Mount Hagen	2015
Nonga	2014
Not yet known (same as Nonga)	2018

The Regional Hospital costs are developed on the basis of assuming that recurrent resource requirements at the four regional hospitals would increase by 20% phased in over 3 years — 5% in year one, rising to 15% in year two, and reaching 20% in year three. In addition to these recurrent resources, it is assumed that additional capital, overwhelmingly for equipment, will be required.

To model these costs, capital has been estimated at 30% of total 2010 recurrent costs (PE, G&S) of

the respective hospitals, and has been proposed as required in the first year of the enhancement. A maintenance allowance of 12.5% of the additional capital should be allowed with a one-year lag. The scheduling of the Regional Hospital enhancement in some selected sites may need to allow for the proposed capital works program, as service enhancement may not be feasible prior to replacement or refurbished buildings are commissioned.

Angau (K'000)	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Personnel					911	2,732	3,642	3,642	3,642	3,642	18,211
Medical Supplies					129	387	516	516	516	516	2,582
Operating Costs					555	1,664	2,218	2,218	2,218	2,218	11,092
Maintenance						267	267	267	267	267	1,333
Total Recurrent					1,594	5,049	6,644	6,644	6,644	6,644	33,218
Capital — Equipment					2,132						2,132

Mount Hagen (K'000)	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Personnel					532	1,596	2,128	2,128	2,128	2,128	10,638
Medical Supplies					77	231	308	308	308	308	1,538
Operating Costs					157	471	628	628	628	628	3,139
Maintenance						267	267	267	267	267	1,333
Total Recurrent					766	2,564	3,329	3,329	3,329	3,329	16,647
Capital — Equipment					1,054						1,054

Nonga (K'000)	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Personnel				486	1,457	1,943	1,943	1,943	1,943	1,943	11,657
Medical Supplies				43	128	171	171	171	171	171	1,026
Operating Costs				106	318	424	424	424	424	424	2,543
Maintenance					109	109	109	109	109	109	656
Total Recurrent				634	2,013	2,647	2,647	2,647	2,647	2,647	15,882
Capital — Equipment				875							875

4 <sup>th</sup> Regional Referral Hospital (K'000)	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Personnel								486	1,457	1,943	3,886
Medical Supplies								43	128	171	342
Operating Costs								106	318	424	848
Maintenance									109	109	219
Total Recurrent								634	2,013	2,647	5,294
Capital — Equipment								875			875

Note: Same figures as for Nonga, from 2018.

All (K'000)	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Personnel				486	2,900	6,270	7,713	8,198	9,170	9,656	44,392
Medical Supplies				43	334	789	995	1,038	1,123	1,166	5,487
Operating Costs				106	1,029	2,558	3,270	3,376	3,588	3,694	17,621
Maintenance					109	642	642	642	752	752	3,540
Total Recurrent				634	4,373	10,260	12,620	13,254	14,633	15,267	71,041
Capital — Equipment				875	3,186			875			4,936

### Port Moresby General Hospital Redevelopment

The resources required for a major redevelopment of national referral services in Port Moresby are unknown.

For modelling purposes, a nominal figure of K400m for a substantial Port Moresby redevelopment has been allowed for in the latter part of the planning decade plus a 20% equipment factor, making a total of K480m. A nominal start up in 2016 is suggested.

PMGH (K'000)	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Facilities Capital						50,000	100,000	100,000	100,000	50,000	400,000
Equipment Capital										80,000	80,000
Total Capital						50,000	100,000	100,000	100,000	130,000	480,000

Substantial master planning work needs to be undertaken prior to any major redevelopment of national referral services. It is proposed that this work be funded through a Capital Works Planning

and Minor Works (CWPMW) program. The CWPMW would coordinate planning for the PMGH, plus fund emergency minor works throughout provincial hospitals.

CWPMW (K'000)	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Capital works planning											
Recurrent	750	750	750	750	750	750	750	750	750	750	7,500
Minor works PGH											
Capital	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	80,000

### ICT Development

The ICT development cost estimates include deployment and operation of the national network, project costs, and deployment of networks, communications, and desktops at provincial level, as well as maintenance, licences, and replacement costs. The estimates do not include finance systems, or HR/Payroll systems (except MIS component).

ICT personnel will be required eventually at a level of 20 qualified ICT staff within NDoH, and 160 at provincial level, with the cost estimates assuming a gradual increase from two ICT staff at NDoH, and 16 at provincial level.

ICT (K'000)	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Provincial infrastructure	480	880	1,540	1,840	2,140	2,440	2,740	2,640	2,040	2,040	18,780
PNG HealthNet	350	800	1,450	1,700	1,800	1,900	1,900	1,900	1,900	1,900	15,600
Telemedicine	50	200	260	380	275	275	275	275	275	275	2,540
National infrastructure	50	120	120	72	72	122	72	200	200	150	1,178
Pharmaceutical (Supply and PGH)	50	900	900	100	100	100	200	300	120	120	2,890
District infrastructure	50	80	120	290	440	603	715	828	565	565	4,255
MIS asset management	400	500	400	180	220	220	220	220	220	220	2,800
Patient administration systems	130	350	944	776	771	1,052	1,045	775	865	865	7,573
Public health systems	50	100	100	100	100	100	100	100	100	100	950
Pathology/laboratory information	50	200	1,026	1,031	736	884	957	939	718	518	7,059
Medical imaging/other clinical	50	100	200	300	300	300	300	300	300	300	2,450
Human capacity development	190	280	370	460	550	640	730	820	910	1,000	5,950
Project management/governance	190	451	743	723	750	864	925	930	821	805	7,203
P&E — NDoH	90	180	270	360	450	540	630	720	810	900	4,950
P&E — Provincial	720	1,440	2,160	2,880	3,600	4,320	5,040	5,760	6,480	7,200	39,600
<b>Total</b>	<b>2,900</b>	<b>6,581</b>	<b>10,603</b>	<b>11,192</b>	<b>12,305</b>	<b>14,359</b>	<b>15,850</b>	<b>16,706</b>	<b>16,324</b>	<b>16,958</b>	<b>123,778</b>
<b>Summary ICT</b>											
Recurrent:											
Personnel — NDoH	90	180	270	360	450	540	630	720	810	900	4,950
Personnel — Provincial	720	1,440	2,160	2,880	3,600	4,320	5,040	5,760	6,480	7,200	39,600
Capital (all other costs assumed capital)	2,090	4,961	8,173	7,952	8,255	9,499	10,180	10,226	9,034	8,858	79,228
<b>Total</b>	<b>2,900</b>	<b>6,581</b>	<b>10,603</b>	<b>11,192</b>	<b>12,305</b>	<b>14,359</b>	<b>15,850</b>	<b>16,706</b>	<b>16,324</b>	<b>16,958</b>	<b>123,778</b>

### Rural Water Supply Costs

Costs are based on the EU Funded Rural Water Supply Project, and primarily Phase 1 completed over the three years to August 2008. The total appropriated for this phase was K30.4 million. Out of this amount K12.8 million was spent on the various water supply schemes. The different schemes were managed by

different NGOs, or what is referred to as Non State Actors (NSAs). The balance of K17.6 million was spent by the contractors to cover their overhead costs.

Phase 2 covers the period 2009 to 2011. Total funding for Phase 2 is Euro 17 million, equivalent to K64.6 million over three years, or K21.5 million per year.

Achievements Phase I		Number
Number of village schemes		134
Number of beneficiaries		76,738
Average population per village		573
Number of improved toilets		2,207
Average number of toilets per village		16
Number of gravity fed systems		57
Number of tanks (rain catchment)		455
Number of hydro ram pumps		3
Number of shallow wells and boreholes		27
Costs		Kina
Spent on the various water schemes		12,800,000
Contractors' overheads		17,600,000
<b>Total Spent Phase I Water Schemes</b>		<b>30,400,000</b>
Average spent on water schemes		95,522
Average spent on contractors' overheads		131,343
<b>Average Spent Per Water Scheme (134)</b>		<b>226,866</b>

### Phase 2 EU–RWSSP Costs — budget lines approved by the Program Evaluation Committee meetings between September 2009 and February 2010

NSA	Province	Beneficiaries	Number of schemes	Budgeted costs	Cost per scheme	Cost per beneficiary
ADRA	EHP	5,900	5	357,701	71,540	60.6
ADRA	Morobe	4,600	10	168,400	16,840	36.6
BU	WHP	9,800	7	478,176	68,311	48.8
CARE	EHP	7,630	7	1,227,201	175,314	160.8
GCDA	EHP	10,606	6	966,991	161,165	91.2
EHDA	Morobe	1,700	4	163,410	40,853	96.1
LDS	Morobe	5,862	6	336,000	56,000	57.3
<b>Totals</b>		<b>46,098</b>	<b>45</b>	<b>3,697,879</b>	<b>82,175</b>	<b>80.2</b>

The prices are taken from quotations before that time, and do not include transport or other logistical costs. They represent anywhere between 50% and 70% of the totally approved project costs.

## Funding availability

A base year was developed from which to add projected costs. Appropriation and funding data from the MTEF 2010–2012 provides this baseline, reflecting current costs as well as funds available from government and development partners to finance these costs<sup>13</sup>.

<b>Current Costs Baseline year (2010)</b>	<b>K'000</b>
<b>Personnel:</b>	<b>371,312</b>
Rural Health Services	150,419
General Hospitals	171,946
Pre-service Training	15,876
Central	33,071
<b>Medical Supplies:</b>	<b>148,710</b>
Rural Health Services	81,736
General Hospitals	46,710
Population Supplies (LLINs, condoms)	20,265
<b>Operating costs:</b>	<b>382,404</b>
Rural Health Services	78,947
General Hospitals	62,482
Pre-service Training	1,004
Central	239,971
<b>Capital:</b>	<b>22,460</b>
Rural Health Services	0
Rural Water Supply	21,533
General Hospitals	927
<b>Total Costs Baseline year (2010)</b>	<b>924,886</b>
<b>Funds Available Baseline Year (2010)</b>	<b>924,886</b>
<b>PNG Appropriations:</b>	<b>631,283</b>
Recurrent Expenditure	619,283
Capital/Development	12,000
<b>Development Partners:</b>	<b>293,603</b>
DPs	207,054
Global Funds	86,549

<sup>13</sup> User fee revenues have not been included. Where user fee data is supposed to be available (the PGHs), they are reported in such a manner that it is not possible to draw conclusions from them.

## Funds available — Baseline year

### Government funding

<b>Government — Recurrent Expenditure Appropriations 2010</b>	
<b>From MTEF 2010–2012</b>	<b>2010 (K'000)</b>
<b>Personnel Expenditure:</b>	<b>365,513</b>
NDoH (1)	33,071
Pre-service Training	15,876
General Hospitals	171,946
Church Services	60,839
<b>Provincial Health Services (2):</b>	
Provincial/District Health Administration	7,548
Provinces Health Facilities	76,233
<b>Total Provincial Health Services</b>	<b>83,781</b>
<b>Goods &amp; Services Expenditure:</b>	<b>252,843</b>
<b>Medical Supplies — central purchase</b>	<b>93,000</b>
<b>Other Goods and Services</b>	<b>159,843</b>
NDoH	32,689
Pre-service Training	1,004
General Hospitals	62,482
Church Services	18,283
<b>Provincial Health Services:</b>	
Central Health Grants (200)	39,203
Internal Revenue (700)	6,183
<b>Total Provincial Health Services</b>	<b>45,385</b>
<b>Total Recurrent</b>	<b>618,356</b>
<b>Capital Expenditure (capital formation)</b>	<b>927</b>
GoPNG Hospitals — G&S	927
<b>Total Government Recurrent Appropriations</b>	<b>619,283</b>

Notes:

(1) The 240 NDoH personnel costs have been adjusted for the extraordinary retirements and retrenchments appropriated specifically in 2010.

(2) Salary costs for health staff are estimates based on number of staff (NHIS). Appropriation or expenditure information on health staff in the provinces is submerged in overall provincial public servant personnel expenditure.

<b>Government — Development Expenditure Appropriations 2010</b>	
<b>From MTEF 2010–2012</b>	<b>2010 (K'000)</b>
HSIP	7,000
Measures to address health issues in Torres Strait	5,000
<b>Total Government Development Appropriations</b>	<b>12,000</b>



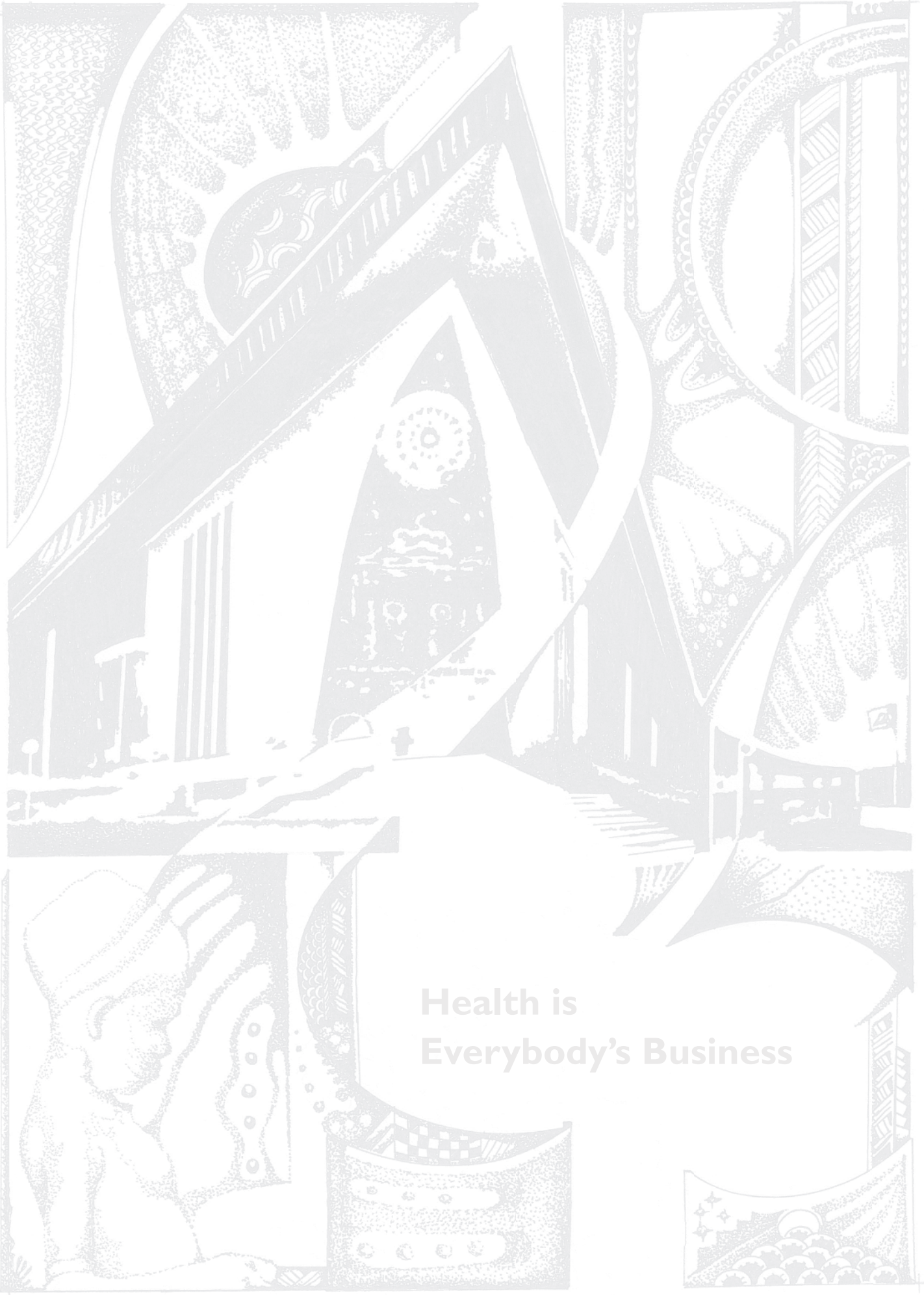
**Development Partner funding:**

<b>Development Partners From MTEF 2010–2012</b>	<b>2010 (K'000)</b>
NZAID	21,825
AusAID	107,900
WHO	20,414
UNICEF	7,480
UNFPA	2,830
ADB	13,411
GAVI	5,863
EU	21,533
CHS own staff (estimate)	5,799
<b>Total DPs</b>	<b>207,054</b>
GFM	67,820
GFA	5,518
GFT	13,211
<b>Total GFATM</b>	<b>86,549</b>
<b>Total Development Partners</b>	<b>293,603</b>

The CHS own staff is an estimate of staff employed and funded by CHS own funds, and most likely to be primarily staff paid from user fee revenues. The estimate is the difference between the estimated salary costs for CHS health staff, based on number of staff (NHIS) by staff categories, multiplied by average (current 2010) unit staff salaries per staff category,

and the CHS wage grants appropriations for 2010. The unit staff salaries are identical to those used by CMC in their budget requirements submissions for 2010, while the number of staff indicated in the CHS wage grant budgets are lower than the staff recorded in the NHIS.





## Health is Everybody's Business