

PACIFIC UPDATE CONFERENCE 2016

**DISEASE BASED COSTING
FROM FIJI HEALTH ACCOUNTS**



PRESENTATION OUTLINE

➤ **Introduction**

- National Health Accounts

➤ **Methodology**

- System of Health Accounts
- Disease Based Costing

➤ **Results**

- Health Expenditure by ICD-10 Classification
- Health Expenditure by ICD-10 Classification & Gender
- Health Expenditure by ICD-10 Classification & Ethnicity

INTRODUCTION

National Health Accounts (NHA)

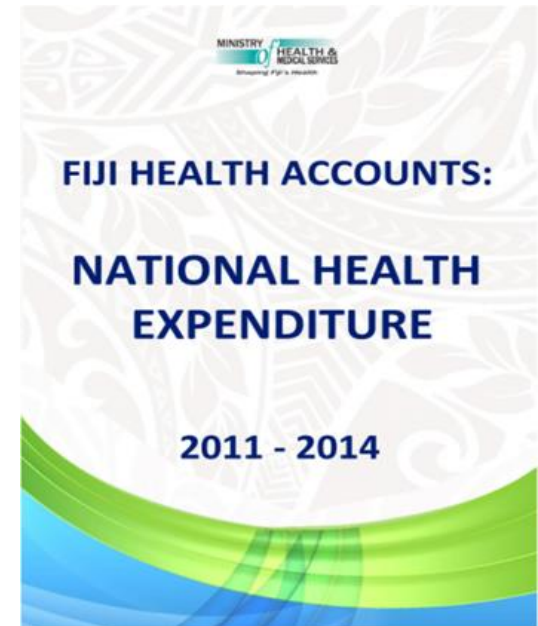
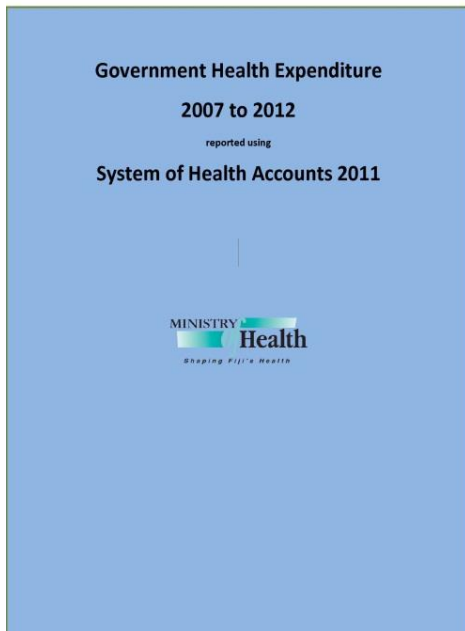
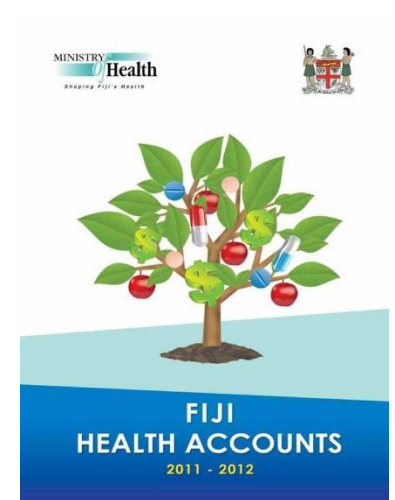
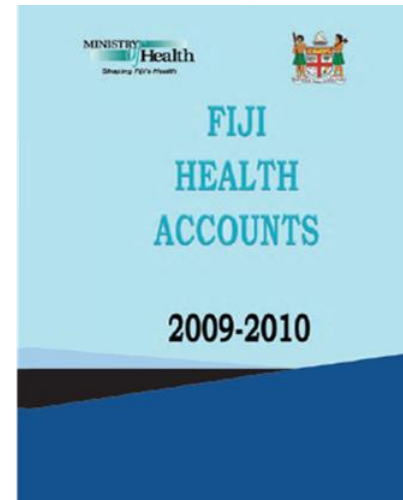
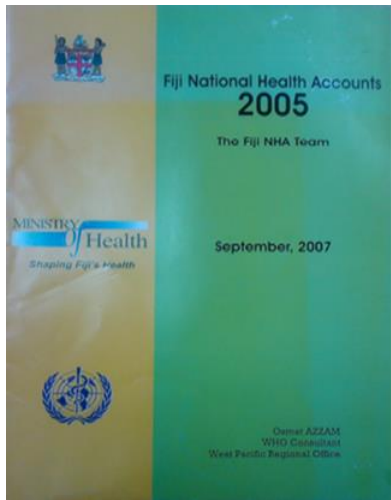
- Is a monitoring and evaluation tool to track total Health expenditure for the country

Methodology

- Uses the International System of Health Accounts 2011 framework
- Classifies health expenditure by revenue sources, financing schemes, health providers, health functions, factors of provision, capital and beneficiaries (disease, gender, age, geographic, etc.)

NHA History in Fiji

- First report in Fiji in 2007
- Most recent report 2015



SOME EXAMPLE RESULTS FROM NHA

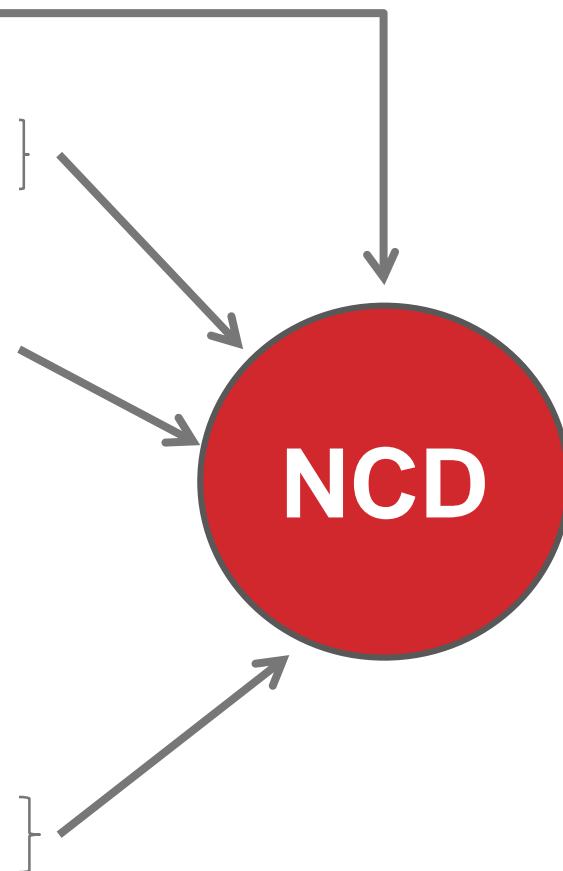
Indicators	2014 (FJ\$m)
Current Health Expenditure (CHE)	FJ\$310.3m (USD165.1m)
Capital Expenditure (HK)	FJ\$32.7m (USD17.4m)
GCHE as a % CHE	61.6%
Private expenditure as a % of CHE	34.6%
Development partner funds as a % CHE	3.8%
CHE as a % of GDP	4.4%
CHE per capita	FJ\$358.4m (USD190.8m)
Out of Pocket (OOP) Expenditure as a % of CHE	25.3%
Curative care as a % of CHE	40.9%
Preventive care as a % of CHE	25.0%
Hospital spending as a % of CHE	46.3%

METHODOLOGY FOR DBC UNDER SHA 2011

- **Uses only curative health expenditure (~40% of CHE)**
- **Uses the International Classification of Diseases (ICD) 10 classification**
- **Disease funded program expenditures are coded directly to respective ICD 10 e.g. TB funded program**
- **Other expenditures are distributed to diseases using allocation keys**
 - Uses patient utilization data from MOHMS patient information systems: patient visits, patient days, average length of stay, primary diagnosis

DISEASE CLASSIFICATION USING ICD-10

Conditions	ICD GroupCode
Certain infectious and parasitic diseases	A00 - B99
Neoplasms	C00 - D48
Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	D50 - D89
Endocrine, nutritional and metabolic diseases	E00 - E89
Mental, Behavioral and Neurodevelopmental disorders	F00 - F99
Diseases of the nervous system	G00 - G99
Diseases of the eye and adnexa	H00 - H59
Diseases of the ear and mastoid process	H60 - H95
Diseases of the circulatory system	I00 - I99
Diseases of the respiratory system	J00 - J99
Diseases of the digestive system	K00 - K93
Diseases of the skin and subcutaneous tissue	L00 - L99
Diseases of the musculoskeletal system and connective tissue	M00 - M99
Diseases of the genitourinary system	N00 - N99
Pregnancy, childbirth and the puerperium	O00 - O99
Certain conditions originating in the perinatal period	P00 - P96
Congenital malformations, deformations and chromosomal abnormalities	Q00 - Q99
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	R00 - R99
Injury, poisoning and certain other consequences of external causes	S00 - T88
External Causes of Morbidity and Mortality	U50 - Y98
Factors influencing health status and contact with health services	Z00 - Z99



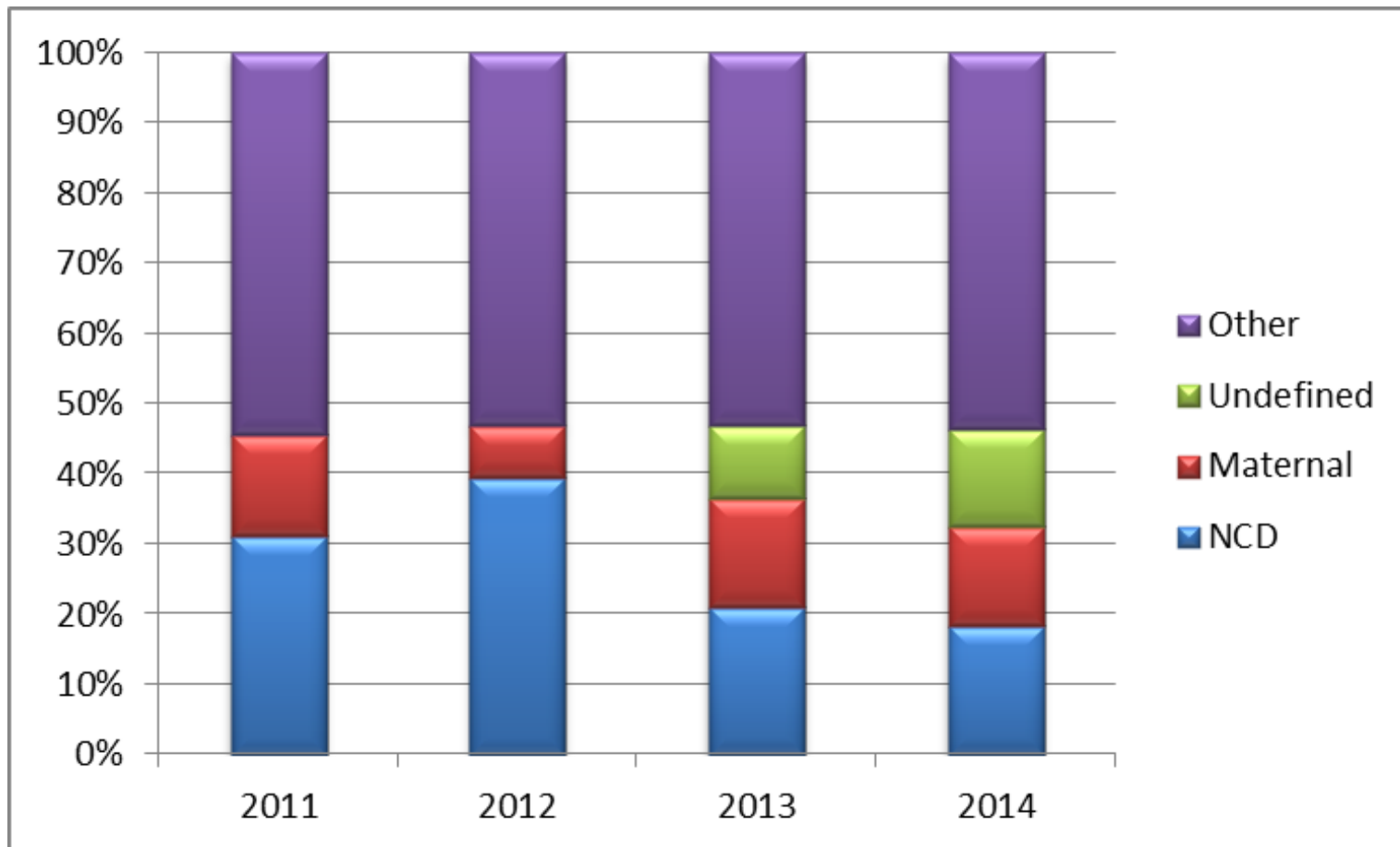
RESULTS – DISEASE EXPENDITURE BY ICD-10 CATEGORIES

GroupCode	ICD10 Group code description	2011 (Govt IP Costs)	Percent	2012 (Govt IP Costs)	Percent	2013 (Total OP and IP Costs)	Percent	2014 (Total OP and IP Costs)	Percent
A00 - B99	Certain infectious and parasitic diseases	4,262,789	11.3%	4,527,789	12.3%	4,652,499	4.2%	10,458,645	8.2%
C00 - D48	Neoplasms	1,577,464	4.2%	900,943	2.4%	1,132,544	1.0%	270,915	0.2%
D50 - D89	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	386,021	1.0%	384,065	1.0%	550,353	0.5%	691,051	0.5%
E00 - E89	Endocrine, nutritional and metabolic diseases	2,742,863	7.3%	3,467,106	9.4%	5,783,031	5.2%	5,129,381	4.0%
F00 - F99	Mental, Behavioral and Neurodevelopmental disorders	1,251,554	3.3%	221,933	0.6%	455,091	0.4%	395,472	0.3%
G00 - G99	Diseases of the nervous system	799,355	2.1%	1,156,209	3.1%	630,361	0.6%	444,995	0.4%
H00 - H59	Diseases of the eye and adnexa	193,664	0.5%	72,863	0.2%	1,300,526	1.2%	1,924,904	1.5%
H60 - H95	Diseases of the ear and mastoid process	49,002	0.1%	40,191	0.1%	2,600,588	2.3%	2,113,037	1.7%
I00 - I99	Diseases of the circulatory system	3,230,525	8.6%	4,664,433	12.7%	10,732,398	9.6%	13,318,607	10.5%
J00 - J99	Diseases of the respiratory system	3,343,778	8.9%	3,548,030	9.6%	11,359,718	10.2%	14,378,172	11.3%
K00 - K93	Diseases of the digestive system	1,925,566	5.1%	1,509,374	4.1%	5,166,515	4.6%	5,267,201	4.2%
L00 - L99	Diseases of the skin and subcutaneous tissue	1,994,511	5.3%	1,601,501	4.3%	6,767,455	6.1%	9,370,603	7.4%
M00 - M99	Diseases of the musculoskeletal system and connective tissue	1,139,835	3.0%	656,906	1.8%	7,442,459	6.7%	8,892,011	7.0%
N00 - N99	Diseases of the genitourinary system	1,806,952	4.8%	1,808,591	4.9%	2,858,523	2.6%	2,177,720	1.7%
O00 - O99	Pregnancy, childbirth and the puerperium	5,449,086	14.4%	2,744,494	7.4%	17,313,573	15.6%	17,991,881	14.2%
P00 - P96	Certain conditions originating in the perinatal period	2,440,872	6.5%	2,361,763	6.4%	1,140,926	1.0%	613,804	0.5%
Q00 - Q99	Congenital malformations, deformations and chromosomal abnormalities	347,209	0.9%	319,249	0.9%	243,255	0.2%	44,499	0.0%
R00 - R99	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	1,078,909	2.9%	1,358,704	3.7%	1,390,834	1.2%	1,141,281	0.9%
S00 - T88	Injury, poisoning and certain other consequences of external causes	2,971,570	7.9%	5,265,940	14.3%	4,864,732	4.4%	3,791,270	3.0%
U50 - Y98	External Causes of Morbidity and Mortality	16,523	0.0%	52,877	0.1%	413,810	0.4%	336,632	0.3%
Z00 - Z99	Factors influencing health status and contact with health services	726,532	1.9%	178,980	0.5%	12,995,076	11.7%	10,358,995	8.2%
XXX	Condition not coded					11,497,696	10.3%	17,758,014	14.0%
	Total DBC	37,734,580	100%	36,841,941	100%	111,291,966	100%	126,869,090	100%

EXPENDITURE SUMMARY BY DISEASE TYPE USING ICD10

	2011	2012	2013	2014
NCD	31.2	39.6	21.0	18.3
Maternal	14.4	7.4	15.6	14.2
Other	54.4	53.0	63.4	67.5

EXPENDITURE SUMMARY BY DISEASE TYPE USING ICD10



RESULTS – DISEASE EXPENDITURE BY ICD-10 CATEGORIES & GENDER

ICD-10	2013		2014	
	Female	Male	Female	Male
Certain infectious and parasitic diseases	43%	57%	43%	57%
Neoplasms	71%	29%	76%	24%
Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	63%	37%	68%	32%
Endocrine, nutritional and metabolic diseases	49%	51%	53%	47%
Mental, Behavioral and Neurodevelopmental disorders	53%	47%	40%	60%
Diseases of the nervous system	43%	57%	41%	59%
Diseases of the eye and adnexa	50%	50%	47%	53%
Diseases of the ear and mastoid process	65%	35%	50%	50%
Diseases of the circulatory system	37%	63%	42%	58%
Diseases of the respiratory system	41%	59%	41%	59%
Diseases of the digestive system	35%	65%	36%	64%
Diseases of the skin and subcutaneous tissue	43%	57%	42%	58%
Diseases of the musculoskeletal system and connective tissue	37%	63%	38%	62%
Diseases of the genitourinary system	68%	32%	62%	38%
Pregnancy, childbirth and the puerperium	100%	0%	100%	0%
Certain conditions originating in the perinatal period	49%	51%	60%	40%
Congenital malformations, deformations and chromosomal abnormalities	52%	48%	41%	59%
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	49%	51%	47%	53%
Injury, poisoning and certain other consequences of external causes	33%	67%	32%	68%
External Causes of Morbidity and Mortality	26%	74%	54%	46%
Factors influencing health status and contact with health services	36%	64%	85%	15%
Totals	64%	36%	62%	38%

RESULTS – DISEASE EXPENDITURE BY ICD-10 CATEGORIES & ETHNICITY 2013/2014

ICD-10	2013			2014		
	FID	Itaukei	Other	FID	Itaukei	Other
Certain infectious and parasitic diseases	26%	68%	6%	32%	65%	4%
Neoplasms	37%	57%	6%	11%	88%	1%
Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	49%	47%	4%	44%	55%	1%
Endocrine, nutritional and metabolic diseases	36%	60%	4%	24%	73%	3%
Mental, Behavioral and Neurodevelopmental disorders	54%	35%	11%	34%	58%	8%
Diseases of the nervous system	37%	58%	6%	34%	64%	2%
Diseases of the eye and adnexa	49%	48%	3%	12%	88%	0%
Diseases of the ear and mastoid process	22%	74%	3%	17%	80%	3%
Diseases of the circulatory system	56%	40%	4%	46%	51%	3%
Diseases of the respiratory system	30%	66%	5%	28%	69%	4%
Diseases of the digestive system	35%	59%	6%	25%	71%	5%
Diseases of the skin and subcutaneous tissue	21%	74%	5%	22%	75%	3%
Diseases of the musculoskeletal system and connective tissue	27%	68%	5%	15%	82%	3%
Diseases of the genitourinary system	38%	56%	5%	28%	68%	4%
Pregnancy, childbirth and the puerperium	16%	47%	37%	23%	76%	2%
Certain conditions originating in the perinatal period	22%	74%	4%	13%	85%	2%
Congenital malformations, deformations and chromosomal abnormalities	32%	65%	3%	12%	38%	50%
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	32%	62%	6%	25%	75%	0%
Injury, poisoning and certain other consequences of external causes	34%	60%	6%	26%	70%	4%
External Causes of Morbidity and Mortality	39%	57%	4%	29%	64%	7%
Factors influencing health status and contact with health services	24%	29%	46%	47%	52%	1%

RESULTS – DISEASE EXPENDITURE BY ICD-10 CATEGORIES & ETHNICITY 2013/2014

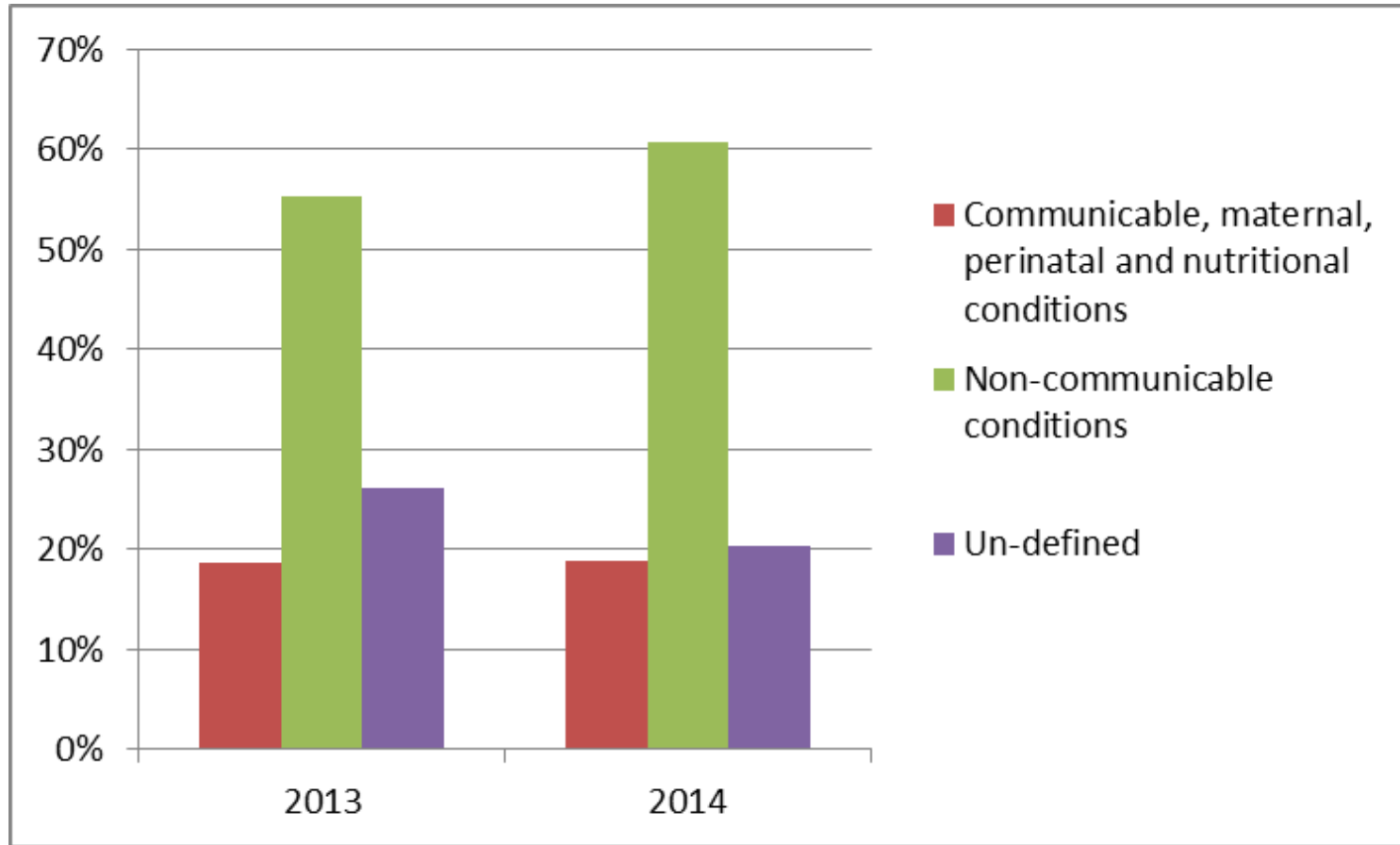
ICD-10	2013			2014		
	FID	Itaukei	Other	FID	Itaukei	Other
Certain infectious and parasitic diseases	8%	10%	3%	21%	18%	23%
Neoplasms	3%	3%	1%	0%	1%	0%
Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	2%	1%	0%	2%	1%	0%
Endocrine, nutritional and metabolic diseases	5%	5%	1%	2%	3%	3%
Mental, Behavioral and Neurodevelopmental disorders	1%	0%	0%	0%	0%	1%
Diseases of the nervous system	2%	1%	0%	1%	1%	1%
Diseases of the eye and adnexa	1%	0%	0%	0%	0%	0%
Diseases of the ear and mastoid process	0%	0%	0%	0%	0%	0%
Diseases of the circulatory system	17%	6%	2%	16%	7%	10%
Diseases of the respiratory system	10%	11%	2%	11%	11%	15%
Diseases of the digestive system	6%	5%	2%	2%	3%	4%
Diseases of the skin and subcutaneous tissue	3%	6%	1%	6%	8%	7%
Diseases of the musculoskeletal system and connective tissue	1%	2%	0%	1%	2%	2%
Diseases of the genitourinary system	7%	5%	1%	3%	3%	4%
Pregnancy, childbirth and the puerperium	19%	30%	76%	26%	35%	20%
Certain conditions originating in the perinatal period	2%	3%	1%	0%	1%	1%
Congenital malformations, deformations and chromosomal abnormalities	1%	1%	0%	0%	0%	3%
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	3%	3%	1%	2%	2%	0%
Injury, poisoning and certain other consequences of external causes	8%	7%	2%	4%	4%	5%
External Causes of Morbidity and Mortality	0%	0%	0%	0%	0%	0%
Factors influencing health status and contact with health services	1%	1%	4%	1%	1%	0%

HOW ABOUT BY GBD?

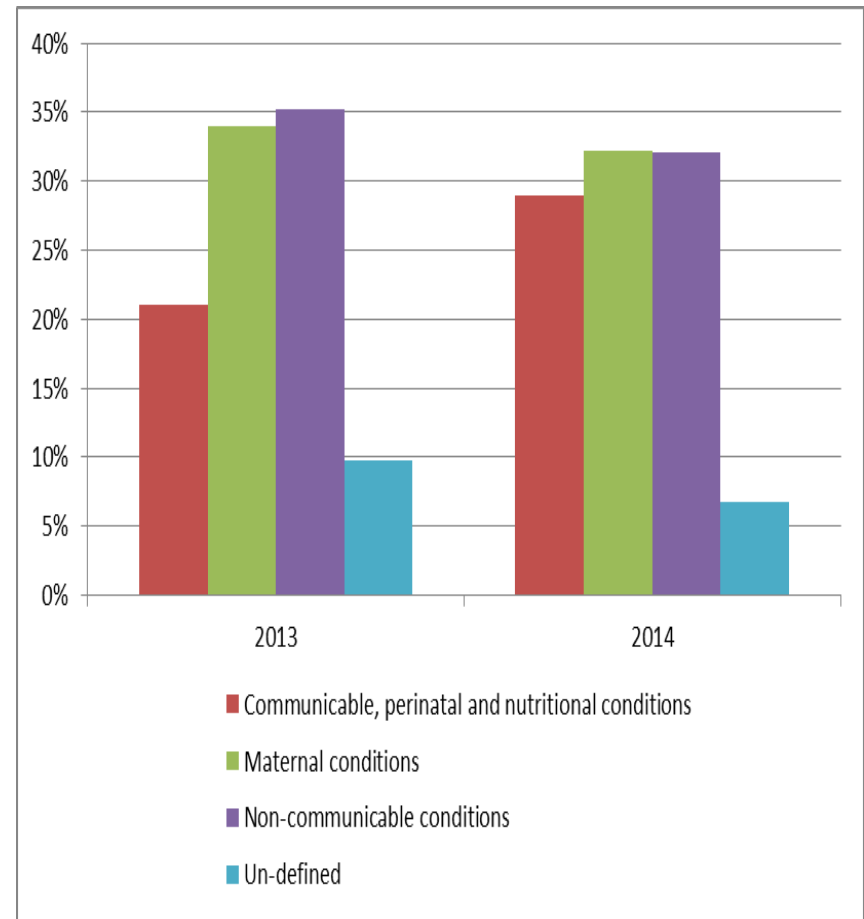
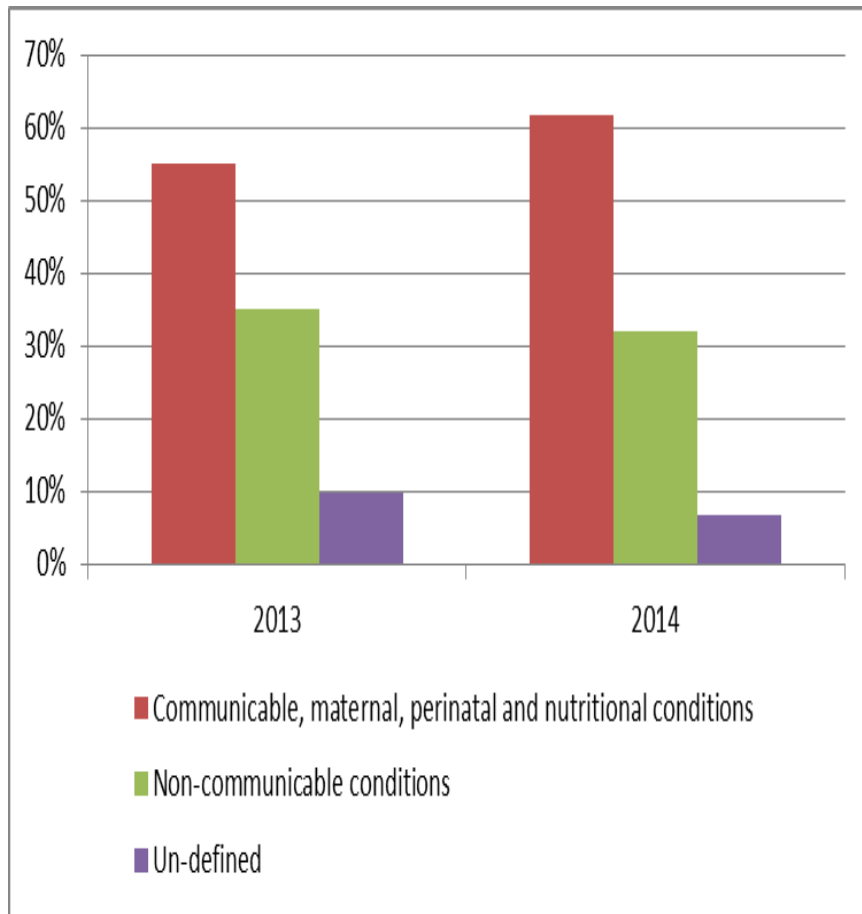
Table 10.1. Classification of disease/condition by Global Burden of Disease (GBD) category

GBD code	Cause	ICD-10 code
GBD.1	Communicable, maternal, perinatal and nutritional conditions	A00-B99, C00-C04, N70-N73, J00-J06, J10-J18, J20-J22, H65-H66, O00-O09, P00-P96, E00-E02, E40-E46, E50, E53-E53, E64.0, E51-E54
GBD.1.1 ¹	Infectious and parasitic diseases	A00-B99, G00, G03-G04, N70-N73
GBD.1.2	Respiratory infections	J00-J06, J10-J18, J20-J22, H65-H66
GBD.1.3	Maternal conditions	O00-O09
GBD.1.4	Perinatal conditions	P00-P96
GBD.1.5	Nutritional deficiencies	E00-E02, E40-E46, E50, E53-E53, E64.0, E51-E54
GBD.1.9	All other communicable, maternal, perinatal and nutritional conditions	
GBD.2	Non-communicable conditions	C00-C37, C00-C48, D65-D64 (minus D 64.0) D65-D80, E03-E07, E10-E16, E20-E24, E25-E28, F01-F09, G00-G08, H00-H01, H20-H22, I00-I09, J00-J06, K00-K32, M00-M04, N70-N98, L00-L98, M00-M99, Q00-Q99
GBD.2.1	Malignant neoplasms	C00-C37
GBD.2.2	Other neoplasms	C00-C48
GBD.2.3	Diabetes mellitus	E10-E14
GBD.2.4	Endocrinal disorders	D65-D64 (minus D64.0), D65-D80, E03-E07, E15-E16, E20-E24, E25-E28
GBD.2.5	Neuropsychiatric disorders	F01-F09, G00-G08
GBD.2.6	Sense organ disorders	H00-H01, H20-H22
GBD.2.7	Cardiovascular diseases	I00-I09
GBD.2.8	Respiratory diseases	J00-J06
GBD.2.9	Digestive diseases	K00-K32
GBD.2.10	Diseases of the genitourinary system	M00-M04, N70-N98
GBD.2.11	Skin disorders	L00-L98
GBD.2.12	Musculoskeletal diseases	M00-M99
GBD.2.13	Congenital anomalies	Q00-Q99
GBD.2.14	Oral diseases	K00-K14
GBD.2.99	All other non-communicable conditions	
GBD.3	Injuries	V01-Y89
GBD.3.1	Unintentional	V01-Y89, Y40-Y86, Y88, Y89
GBD.3.2	Intentional	X00-Y09, Y35-Y36, Y870, Y871
GBD.3.9	All other injury conditions	
GBD.unk.	Unspecified abnormal clinical and laboratory findings and other ill-defined conditions and contacts with health services, factors influencing health status and contacts with health services	R00-R99, Z00-Z99
Reporting items		
GBD.R1.1	Injuries to the head	S00-S09
GBD.R1.2	Injuries to the neck	S10-S19
GBD.R1.3	Injuries to the thorax, injuries to the abdomen, lower back, lumbar spine and pelvis	S20-S29
GBD.R1.4	Injuries to the shoulder and upper arm, injuries to the elbow and forearm, injuries to the wrist and hand	S40-S49
GBD.R1.5	Injuries to the hip and thigh, injuries to the knee and lower leg, injuries to the ankle and foot	S70-S99
GBD.R1.6	Injuries involving multiple body regions, injuries to unspecified part of trunk, limb or body region	T00-T14

OUTPATIENT BY GBD



INPATIENT BY GBD



SOME LIMITATIONS

- **Data quality**
 - Incorrect coding of disease
 - Missing data
 - Multiple data sources - not all facilities on PATIS/PHIS
- **Patients with multiple conditions**
- **Method limitation**
 - Allocation keys...how realistic are they?
 - Need better resource costing weights
- **No data from private sector on diseases**

CONCLUSION

- **National Health Accounts (NHA) can be a very useful tool for reporting health expenditure by diseases**
- **NCDs account for an annual average of 28% of curative health expenditure in Fiji over the period 2011 to 2014**
- **DO not ignore CDs in the plight of trying to tackle the NCD crisis**
- **Need improvement in health information systems**

THANK YOU