

Costing Essential Health Package for Universal Health Coverage in Nepal

**Presentation and Discussion at
Ministry of Health and Population
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Presentation Outline

- Disease Burden Estimates
- Household Access & Expenditure Pattern
- Methodology
- Unit Cost for Core, Basic & Comprehensive Health Package
- Expenditure Break-Up of Unit Costs
- Current Estimates & Future Scenarios for UHC
- Limitations of the Exercise

Patterns in Acute Illness, 2011-12, Nepal

Illness or Injury	Incidence Per 1000 Population			Number of People Ill ('000)		
	Male	Female	Overall	Male	Female	Overall
Diarrhea	29.5	30.7	30.2	4618	5100	9726
Dysentery	3.2	3.3	3.2	504	541	1046
Respiratory	5.2	4.4	4.8	821	725	1540
Malaria	3.2	1.8	2.5	504	303	798
Cold/fever/flu	60.4	59.2	59.7	9436	9831	19260
Other fever	43.6	42.6	43.0	6810	7070	13874
Skin disease	3.4	4.2	3.8	527	693	1226
TB	0.3	0.1	0.2	47	22	67
Measles	0.3	0.4	0.3	47	65	112
Jaundice	1.2	0.9	1.0	188	152	337
Parasites	0.7	0.6	0.7	117	97	214
Injury	12.1	7.8	9.8	1899	1288	3159
Dental	1.7	1.7	1.7	270	282	551
Others	25.5	36.6	31.4	3985	6074	10130
Total	100.4	104.2	102.5	20772	22245	43011

Patterns in Chronic Illness, 2011-12, Nepal

Illness or Injury	Incidence Per 1000 Population			Number of People Ill ('000)		
	Male	Female	Overall	Male	Female	Overall
heart related	5.1	7.8	6.5	66	106	173
respiratory	3.8	3.1	3.5	49	43	91
asthma	12.1	11.0	11.5	156	150	305
epilepsy	1.4	1.5	1.5	18	20	39
cancer	0.1	0.4	0.2	1	5	6
diabetes	8.4	5.9	7.0	108	80	187
kidney/liver diseases	2.0	1.2	1.6	26	17	43
rheumatism related	11.7	20.3	16.3	150	277	432
gynecological problem	0.0	9.1	4.9	0	125	129
occupational illness	0.7	0.3	0.5	9	4	13
high/LBP	12.3	15.4	14.0	158	210	370
gastrointestinal	25.7	35.9	31.2	330	490	826
Other	13.7	16.8	15.3	176	229	407

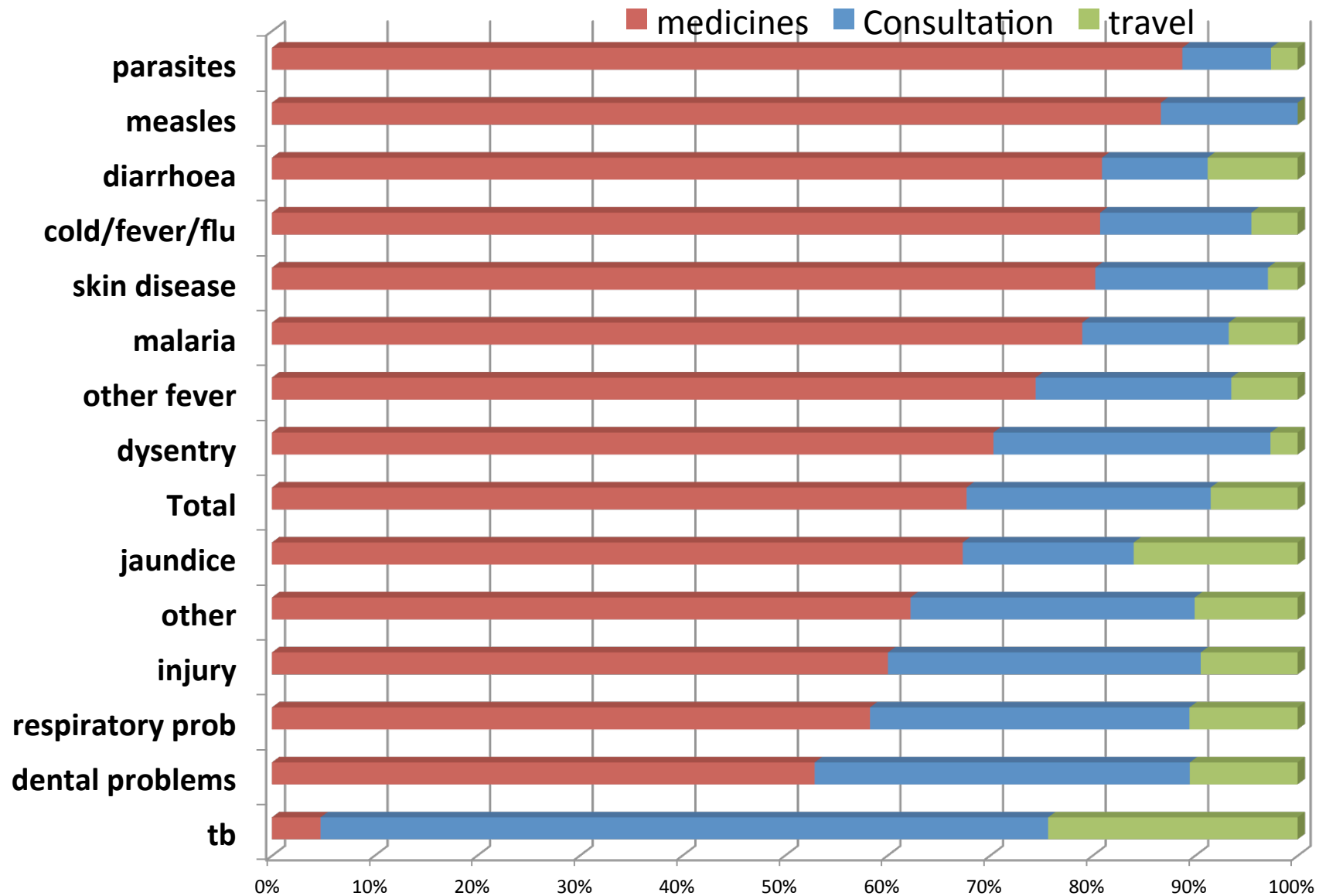
Current Expenditure on Acute Illness

Health Conditions	Per Episode PC Exp (NPR)	Annual Load ('000)	Overall Exp. (NPR In Millions)
Measles	125	4153	519
Cold/fever/flu	450	447	201
Skin disease	510	658	335
Diarrhoea	609	341	208
Other fever	729	8225	6000
Dental problems	734	5925	4351
Dysentery	1165	523	610
Parasites	1430	29	41
Malaria	1443	48	69
Jaundice	2028	144	292
Other	2049	91	187
TB	2108	1349	2843
Respiratory prob	2120	235	499
Injury	4116	4326	17805
Overall			22060

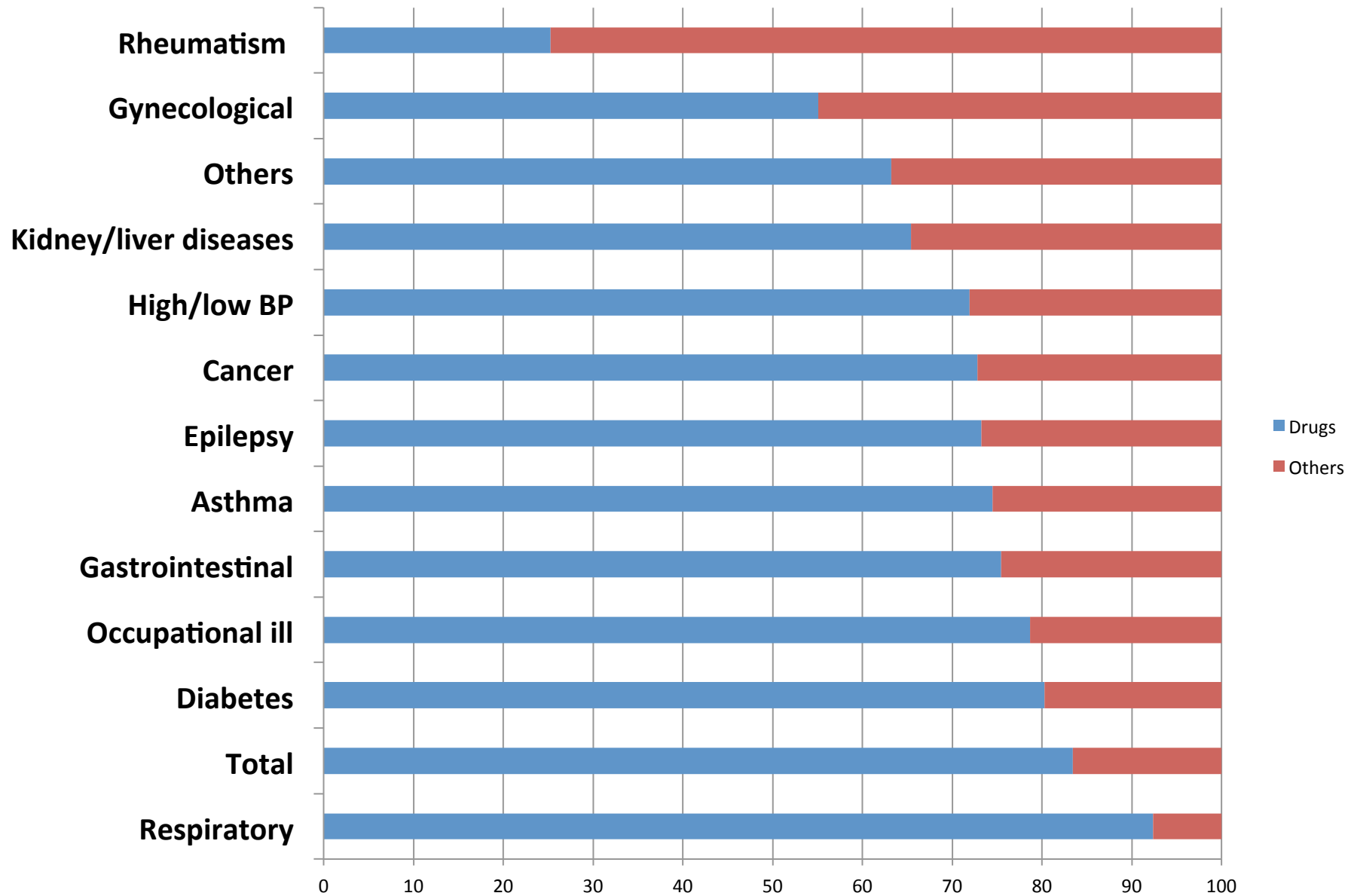
Current Expenditure on Chronic Illness

Health Conditions	Per Episode PC Exp (NPR)	Annual Load	Overall Exp. (NPR In Millions)
Cancer	29065	172810	5023
Respiratory	4727	91488	432
Asthma	8233	304959	2511
Epilepsy	7447	38813	289
Cancer	30114	6469	195
Diabetes	16475	186672	3076
Didney/liver	36269	42509	1542
Rheumatism related	5421	431564	2339
Gynecologicals	11471	129377	1484
Occupational illness	1314	12938	17
High/low BP	8662	369648	3202
Gastrointestinal	4590	826163	3792

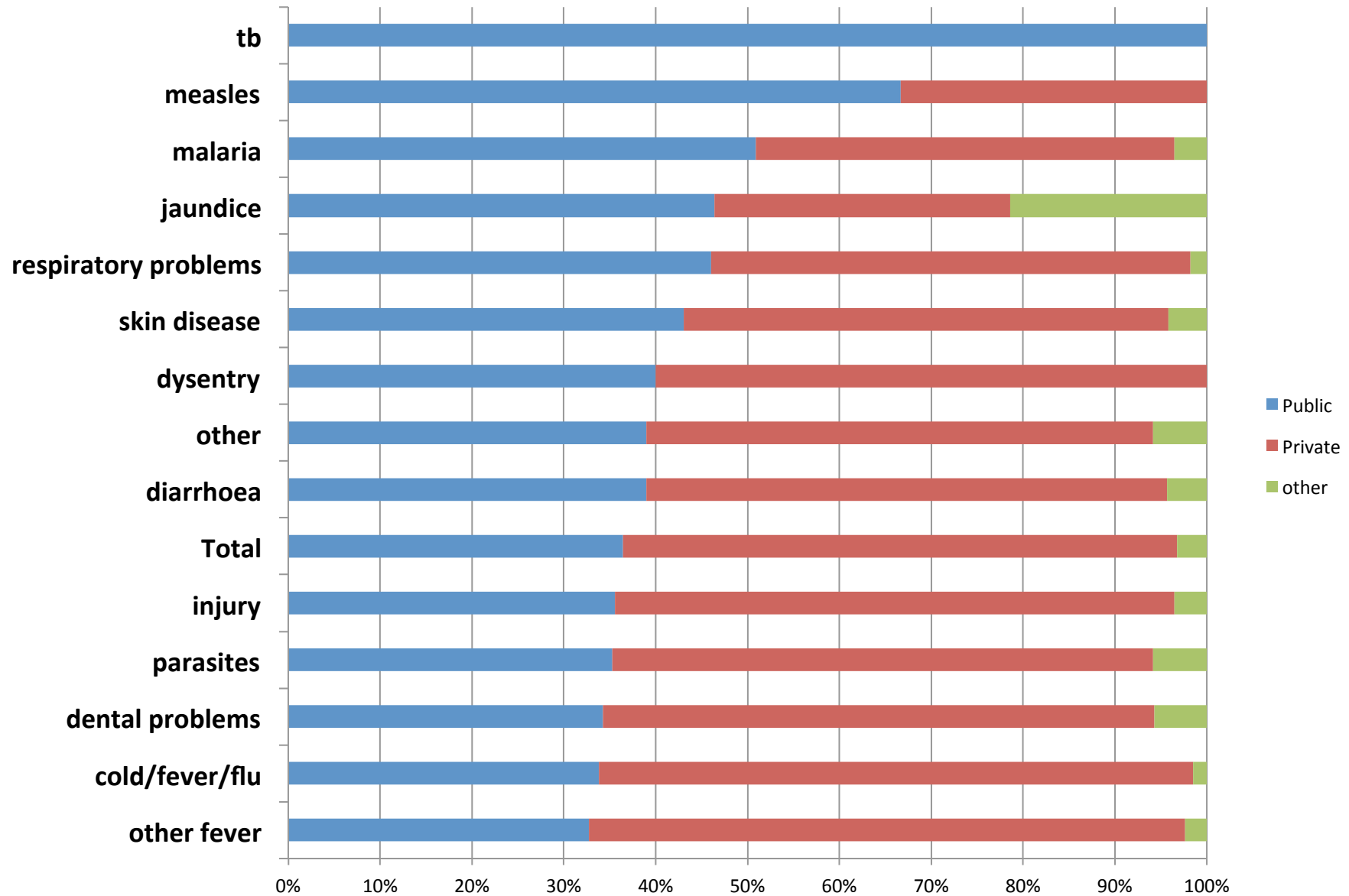
Acute Illness – Expenditure Components



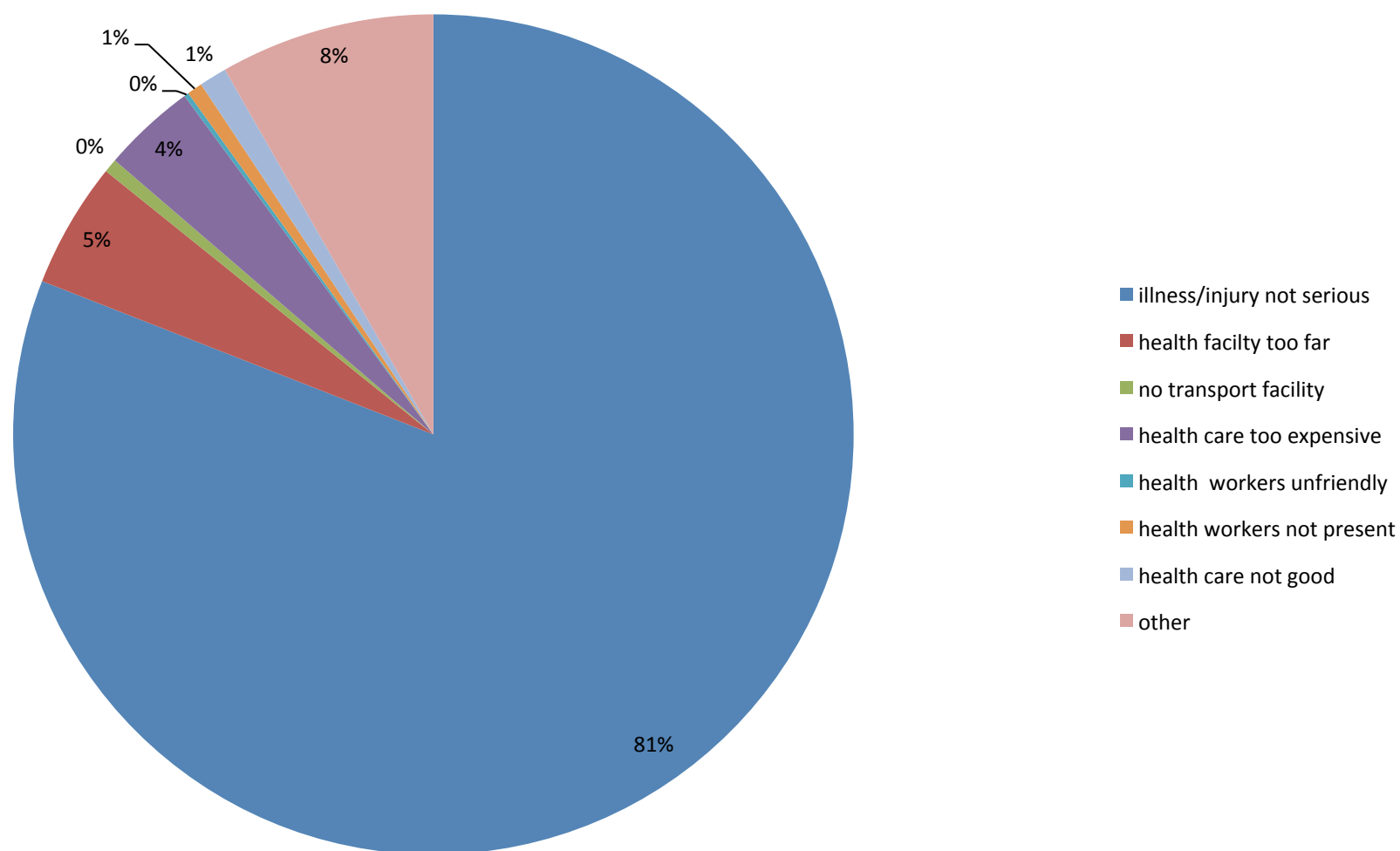
Chronic Illness – Expenditure Components



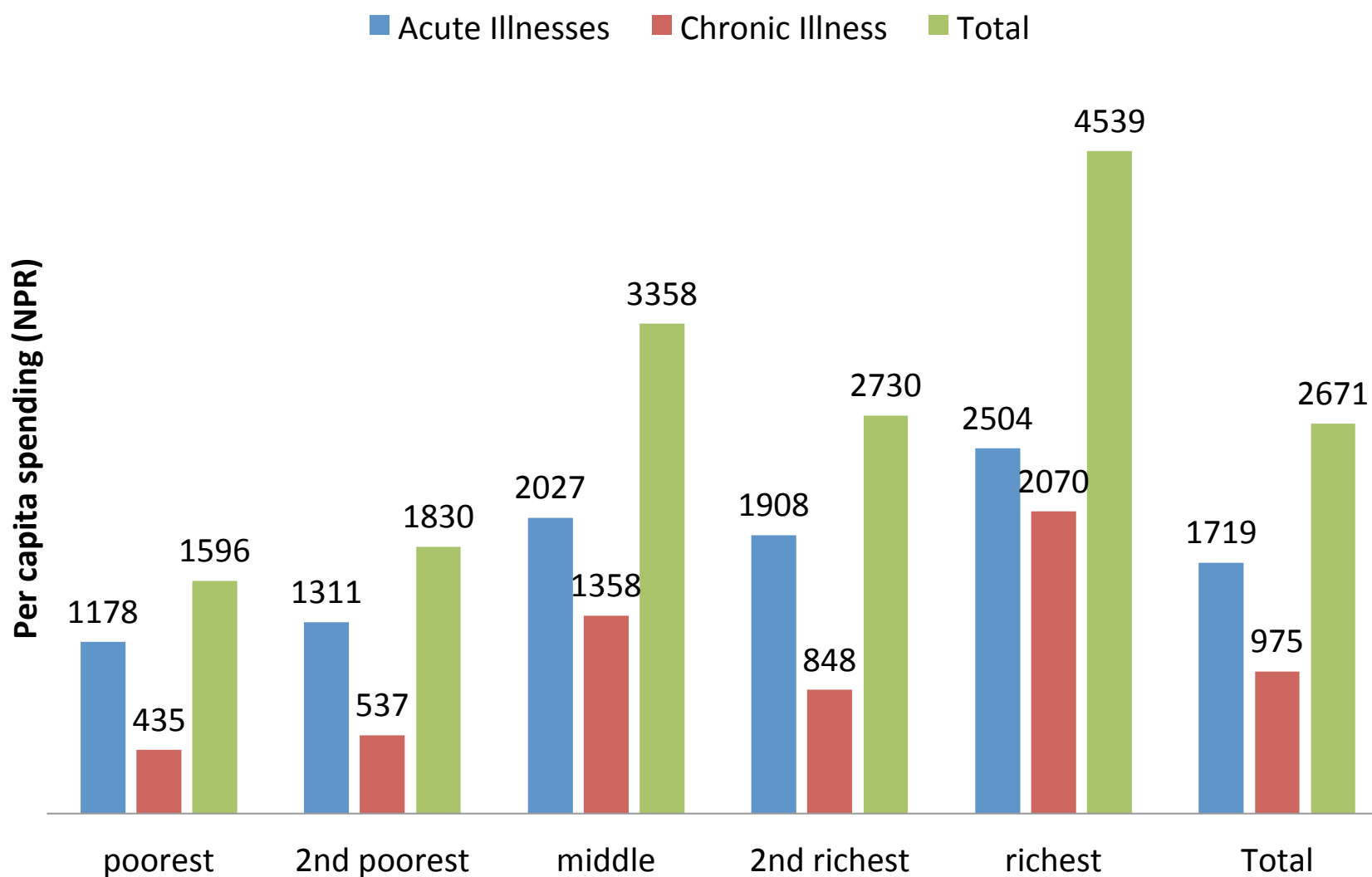
Access to Care in Public and Private Facilities for Acute Illness



Reason for No Treatment in Nepal, 2011-12



OOP by quintile groups



Catastrophic payments

(as % of hh Consumption Expenditure)

	Catastrophy (as % of HH CE)	Rural	Urban	Total
Acute	10%	8.4	7.1	8.2
	25%	4.8	3.8	4.6
Chronic	10%	4.8	4.0	4.6
	25%	4.8	4.0	2.5
Medicines	10%	4.7	3.8	4.6
	25%	2.6	2.0	2.5
Total	10%	12.6	10.5	12.2
	25%	7.2	5.6	6.9

Catastrophic payments: quintile groups

	Catastrophe (as % of HH CE)	2nd poorest	2nd poorest	middle	2nd richest	richest	Total
Acute	10%	8.9	8.7	8.5	8.0	6.1	8.2
	25%	5.6	5.3	4.4	4.2	3.0	4.6
Chronic	10%	3.7	4.5	5.6	4.8	4.8	4.6
	25%	2.3	2.4	3.1	2.2	2.6	2.5
Medicines	10%	3.7	4.4	5.6	4.8	4.6	4.6
	25%	2.6	2.4	3.0	2.4	2.0	2.5
Total	10%	12.1	12.4	13.5	12.1	10.6	12.2
	25%	7.6	7.5	7.2	6.4	5.5	6.9

Medical Impoverishment

Regions	% of people impoverished			Impoverishment ('000)
	Urban	Rural	Total	
eastern	3.5	5.1	4.7	270.8
central	2.4	4.7	3.6	344.3
western	2.7	3.8	3.5	173.8
mid-western	5.3	4.4	4.6	161.5
far-western	3.9	2.7	3.0	75.5
Total	2.9	4.3	3.9	1024.8

Methodology

- The costs were estimated under five heads:
 - Manpower cost
 - Cost of equipment
 - Cost of laboratory investigations
 - Cost of drugs
 - Systems cost
- These costs are based on managing diseases / health conditions only upto the District Hospital level, *i.e.*, at health posts, at PHCs, at sub-Districts and at District Hospitals.
- The basis of all costs is the information provided from Standard Treatment Guidelines and by clinicians/experts in different clinical specialties.

Methodology

Health Workforce Cost

- ❑ This was estimated based on time of health care providers (directly linked with providing health care) required for managing a case (one episode in case of acute disease, annually for chronic diseases and per child for immunization and per pregnant mother for ANC, *etc.*). Time taken for managing a disease / health condition was obtained from experts/clinicians.
- ❑ Since there is a whole spectrum of severity of illness, the lower limit of time range provided by clinicians was taken for estimating manpower cost. *E.g.*, for managing a case of birth asphyxia at a CHC, the clinician suggested inpatient treatment for 1-2 days, specialist's time of 1 hr / day and nurses' time of 2 hr / day.
- ❑ In this case, taking the lower limit of inpatient management, *i.e.*, 1 day, it was estimated that a specialist would spend $1 \times 60 = 60$ min and a nurse would spend $1 \times 120 = 120$ min per case.
- ❑ Similarly, for managing a case of low birth weight baby with weight 1500-1800 g at CHC, the clinician suggested inpatient care for 3-5 days and specialist's time of $\frac{1}{2}$ hr, the manpower time of specialist was taken as $3 \times \frac{1}{2} \text{ hr} = 90$ min.

Methodology

Health Workforce Cost

□ For estimating the manpower cost, the entry level pay scales in Nepal were considered. Gross salary is obtained as the ceiling. 24 working days per month and 6 hrs of work per day were taken into account for estimating the manpower cost per minute. Manpower salary for different categories was apportioned as per the time recommended by clinicians for managing a case.

□ For ICU / for chemotherapy for cancers, clinicians recommended 24-hrs nurses' time. For apportioning this time, three shifts of nurses per day and one nurse for three beds was considered.

Cost of Equipments

- Cost of different equipments was obtained from the market. There is a wide range in rates and specifications of same equipment. In most cases, the opinion of clinicians was taken for the specification.
- *E.g.*, a labour table is available for NPR 3500 (enamel coated), NPR 10000 (stainless steel) and NPR 150000 (with advanced features). The clinician recommended we take the cost of stainless steel labour table because of its intermediate cost and longer life.
- Similar information on costs, maintenance and life of equipments was obtained from other institutions of repute.

Cost of Equipments

- ❑ The clinicians were consulted for knowing the life of equipment (in years or in terms of number of procedures). The cost of equipments was depreciated accordingly and annual costs apportioned to one case to arrive at unit cost of equipments.
- ❑ Diagnostic equipments were not taken into account as the cost of laboratory tests were taken as such as explained below.
- ❑ Cost of equipments required in specific clinical specialities was apportioned to management of a case of a disease. Cost of equipments that were used by many departments were not apportioned here, and were included as part of systems cost. *E.g.*, Operating table, Boyle's apparatus, weighing machine, Blood Pressure instrument, *etc.* are used by many departments and costs of these were included in systems cost.

Cost of Lab Investigation

- Arriving at the cost of one sputum examination took almost 5 working hours. This appeared to be not feasible and it was decided that some other mechanism would be followed.
- These days many hospitals in Nepal charge user fees from clients for various investigations. The costs of laboratory investigations charged by Patan Hospital were taken into consideration for costing purpose.

Medicines Cost

- The treatment regimen (drug, dosage and duration) provided by clinicians was considered for arriving at the cost of drugs.
- This was based on the bare minimum required for managing a case of a particular disease / health condition.
- Thus, for the management of a case of diabetes only the cost of the drugs Metformin and Glibenclamide for managing uncomplicated diabetes were considered (and costs of Aspirin, Atorvastatin and Enalapril for managing complicated diabetes were not considered for the purpose of our costings).
- Initially, the retail cost of drugs was considered for arriving at the cost of drugs. For this, the retail cost of different drugs available from Paten Hospital– was considered.
- A different scenario were worked out, using the tender rates of Nepal Drug Supply Dept. (if they were available for the particular drug).
- As regards vaccines for immunization, the purchase prices of Government of Nepal were considered.

System Cost

- The salaries of ward boys, sweepers, clerks, and administrative staff were taken into account for managing the case;
- The costs of building, equipment for general use (that had not been included in costs for managing a case of diseases / health conditions under consideration) and salary of staff were included as systems cost – available from other studies.
- The systems cost were estimated separately for OPD (at all levels), IPD (at PHC, CHC and District Hospital) and OT (at CHC and District Hospital).
- Systems costs were estimated per case for OPD, per inpatient day for IPD and per operation for OT.
- In addition to attending to patients, medical (doctors) and paramedical staff (nurses, ANMs, *etc.*) are also involved in administrative work. 25% of salaries of doctors and 50% of salaries of paramedical staff were apportioned for administrative work and were included in systems cost.

Overall Cost

- The system costs thus derived were then added to care of individual cases based on number of OPD visits, or number of days of inpatient stay, *etc.* to arrive at the total cost of managing a case of a disease / health condition.

Data Sources

- NLSS, 2011-12
- NHSP, 2012
- DHS, 2011
- Cost Estimates – HR Salary, Drugs & Equipment (Drug Dept., Patan Hospital, and other hospitals, etc.)
- STGs and expert opinions

Cost Comparison for Maternal Services

Health Condition	WHO Package 2001	Alban et al 2004 NPR	Borghini et al 2004 NPR	NCMH 2005 NPR	NCMH for 2012 NPR
Normal Delivery (Health Facility)	1,499 (20)	765 (10.38)	759 (10.3)	815	1650
Normal Delivery (Home Based)		765 (10.38)	840 (11.4)		
Obstructed Labour	4,947 (66)	6,453 (87.6)	3,956 (53.7)	3507	7095
Sepsis	2,743 (36.6)	-	2,402 (32.6)	2235	4523
Haemorrhage	4,188 (55.88)	-	5,385 (73.1)	7451	11459
Eclampsia	12,067 (161)	-	6,100 (82.8)	13060	26419
Caesarean Section	-	-	6,954 (94.4)		

Core package

Maternal and Child Health, Family Planning	NHPs	Other Illnesses and conditions
<p>Immunization</p> <p>Diarrhoea (inc severe dehydration)</p> <p>Dysentery</p> <p>ARI- Pneumonia</p> <p>ANC</p> <p>Normal delivery (85%)</p> <p>Family Planning (MTP, IUD, Oral Contra, Condoms)</p>	<p>TB</p> <p>Leprosy</p> <p>Malaria</p> <p>Kala azar</p> <p>Japanese encephalitis</p> <p>HIV& AIDS</p>	<p>Minor injuries including falls</p> <p>Snake bite</p> <p>Other minor ailments (like aches, scabies, worms, boils)</p> <p>RTIs / STIs</p> <p>Health education, information & counselling</p>

Basic package

Child Health	Maternal Health and Family Planning	Other diseases / health conditions
ARI - severe pneumonia	Antepartum hemorrhage	Cataract surgery operations
	Postpartum hemorrhage	Chronic Obstructive Pulmonary Disease
Birth asphyxia	Eclampsia	Asthma
Neonatal sepsis	Puerperal sepsis	Chronic otitis media
Low birth weight	Septic abortion	Dental caries
1500-1800 g	Obstructed labour	Periodontal diseases
1800-2500 g	Severe anemia	Dentures - Partial
Malnutrition	Sterilization	Dentures - Complete
	Vasectomy	Counselling for FP, tobacco, alcohol, HIV etc. & screening

Comprehensive package

Cardio-vascular diseases	Neurological & Mental Illnesses	Other Illnesses & injuries
<p>Hypertension</p> <p>Coronary Artery Disease Rheumatic Heart Disease Acute Hypertensive Stroke</p>	<p>Schizophrenia</p> <p>Mood / bipolar disorders</p>	<p>Diabetes mellitus</p> <p>Geriatric problems including dementia</p> <p>Major injuries</p> <p>Dengue fever</p>
<p>Cancers</p> <p>Breast Cancer Cancer cervix Lung cancer Stomach cancer</p>	<p>Alcohol & Drug abuse</p> <p>Common Mental disorders</p> <p>Child & adolescent psychiatric disorders</p> <p>Epilepsy</p>	<p>Dengue hemorrhagic fever</p> <p>Other common surgeries (like appendicectomy, hernia, hydrocele, etc.)</p> <p>Counselling for FP, tobacco, alcohol, HIV etc.</p>

Estimated Unit Cost of Essential Health Packages

Packages	Unit Cost– Govt (NPR)	Unit Cost - Pvt (NPR)
1. Core Packages	844	902
2. Basic Packages	281	414
3. Comprehensive Packages	1122	1810
3.1 Catastrophic Illness (CVD, Diabetes, Cancer, COPD)	825	1281
4. Overall Cost	2247	3126

Unit cost estimates: Key components

Packages	Govt (NPR)	Pvt (NPR)
Human Resources	239	236
Equipment	20	19
Test	387	402
Drugs	640	698
System Cost	229	816
Admin Costs	449	434

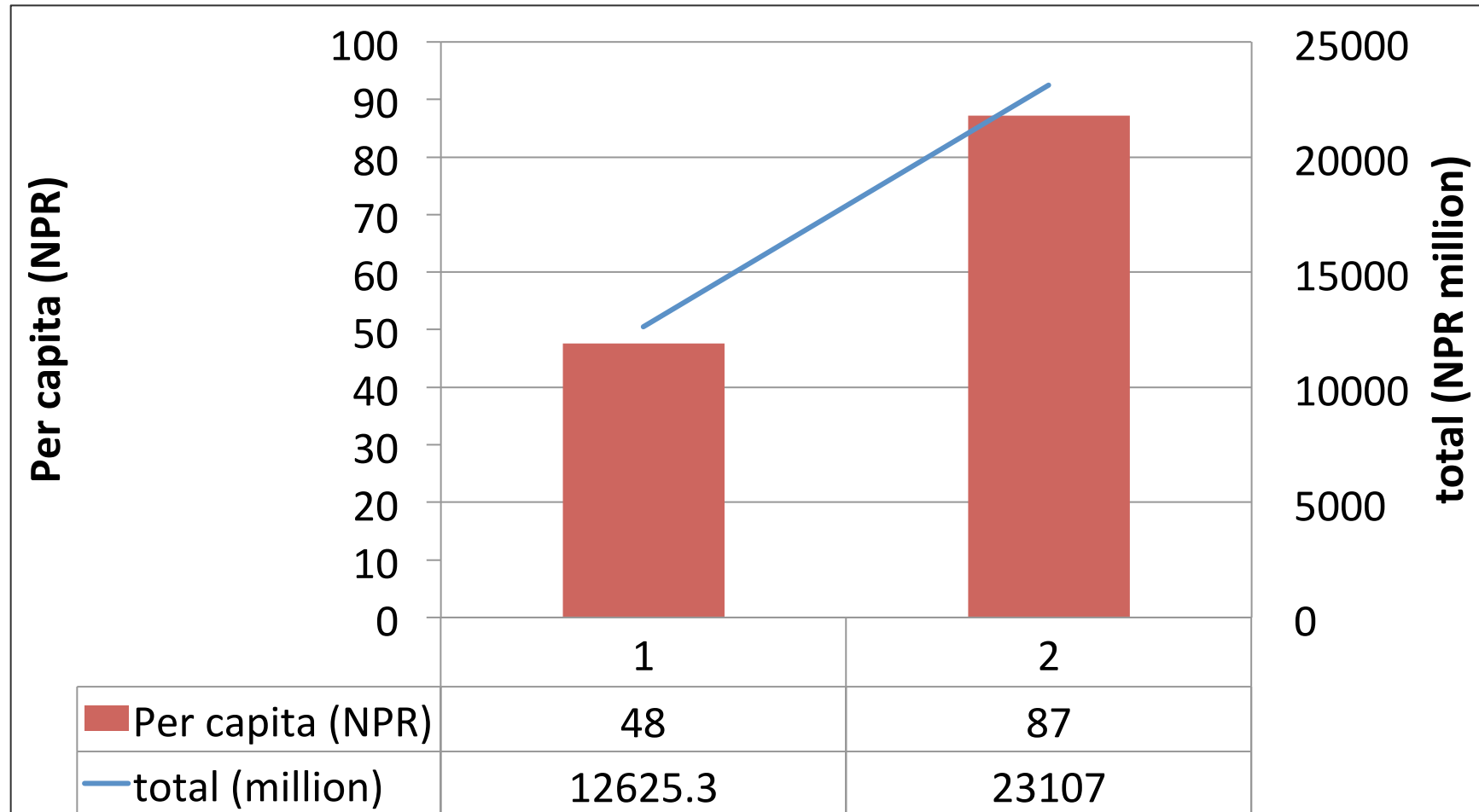
Potential Funding Required for EHP

Packages	Overall Funding – Govt. (NPR million)	Overall Funding - Private (NPR million)
1. Core Packages	22,358	23,885
2. Basic Packages	7,439	10,960
3. Comprehensive Packages	29,739	47,959
3.1 Catastrophic Illness (CVD, Diabetes, Cancer, Kidney, COPD)		
4. Overall Cost	59,536	82,804

The Cost of Universalising Health Care

Macro Indicators	Current Govt. spending	Estimated Govt. Funding	Estimated Private Funding	Potential Cost Savings
Overall Funds Required (NPR)	27,275	59,536	82,804	23,268
PC Exp. (NPR)	1030	2384	3126	742
As % of GDP	1.8	3.9	5.4	1.5
As % of Recurrent Exp.	11.2	25.9	34.0	8.1

Free care: Current spending and EHP estimates



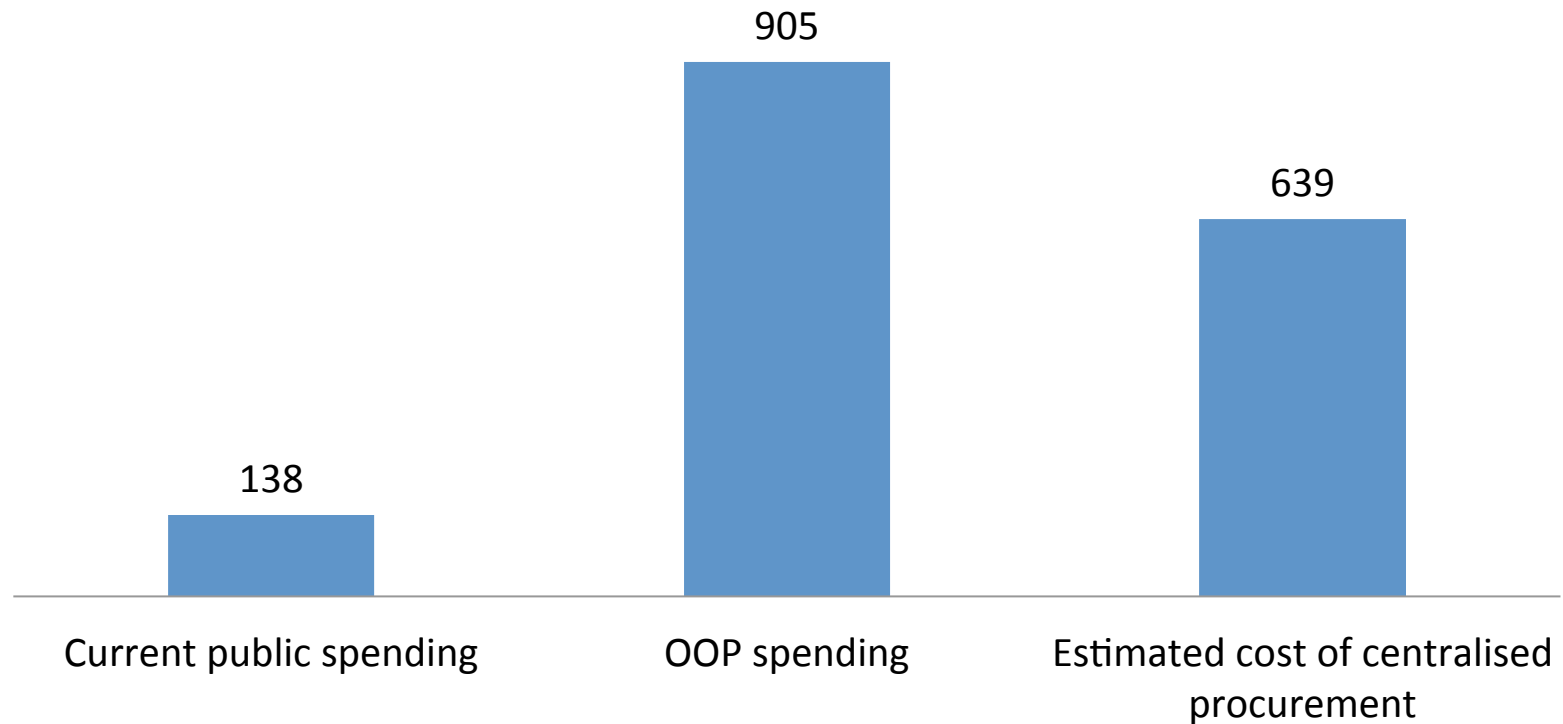
Govt. Spending on key Items

Functional Categories	Current Spending	Estimated cost	Additional resource requirements
Human Resources	4,461	6,327	1,866
Medicines	3,668	16,926	13,258
Office and other expenses	6,064	16,823	10,759
Total*	14,193	40,077	25,883

** Does not include administrative and capital costs*

Spending on medicines: Significant potential for efficiency gains

Per capita spending on medicines



Comparison of OOP and cost estimates

