Methods for the Development and Adjustment of HBP:
Case Study: Reviewing the Health Benefits Package in Nebesa[1]

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Although most of the Nebesa population has access to health facilities and services, this does not always translate into utilization of high-impact interventions. A recent study of the utilization and efficiencies of health services in Nebesa showed evidence of inequities in access to beds and quality of hospital services, and unwarranted variations in utilization patterns. The report suggests that these factors could be attributed to factors such as shortages of staff in more remote regions, lack of equipment, variations in management skills, ineffective referral systems, and a lack of information amongst the general population about how best to use services.

In 2015, the Nebesa government spent roughly 13 percent of its budget on health services, and receives only a small amount of overseas development aid for health (about 4% of the budget). The country has a high burden of infectious diseases, including HIV (31% of total disability-adjusted life years (DALYs) lost in Nebesa in 2015), lower respiratory disease (3.8%), tuberculosis (5,2%), and diarrheal disease (3.7%). However, it also has a growing burden of non-communicable diseases, including ischaemic heart disease (2.5%), diabetes (3.6%) and COPD and asthma (together 3.4%). Life expectancy at birth is 63 for males and 68 for females. The country has an annual *per capita* income of approximately $3,400.

The government of Nebesa is seeking to provide high-quality, accessible, and affordable health services, and has the ambition of providing universal coverage of a high-quality package of essential health services for the entire population. As part of its five-year Strategic Plan, the government therefore introduced in 2012 a Health Benefits Package (HBP) to be funded from public finances and made available free of charge to the entire population. The primary purpose of the HBP is to make the most cost-effective allocation of scarce resources addressing the country's disease burden, whilst recognizing the limits to available financial resources and the need to promote equity of access to services. It has a particular emphasis on primary care services. The two key objectives are:

[1] The fictitional country of Nebesa has been created purely for the purposes of this exercise. It is based on an amalgam of real countries in Sub-Saharan Africa. However, no inferences whatsoever should be drawn about actual policies in such countries, and neither should any of the data be used for any real-world application. The name Nebesa derives from the Slovenian word for 'heaven' and any other connotation, whether fortunate or unfortunate, is entirely unintended and accidental.

- To provide a standard package of basic services that forms the core of service delivery in all healthcare facilities.
- To promote equitable access, especially in underserved areas.

An outline of the highest spending elements of the current (2016) HBP is given in the Annex. It is based on eight broad programmes, as summarized in Table 1.

Table 1: Costs Disaggregated by Program Area for 2016, in US$ millions

Maternal, newborn and reproductive health	72.1
Child health	2.8
Immunization	38.3
Malaria	117.5
TB	285.0
HIV/AIDS	572.3
Non-communicable diseases	301.9
Mental, Neurological, and Substance Abuse Disorders	2.9
Total costs (all program areas)	**1392.8**

Approximate public spending by sector is given in Table 2.

Table 2: Costs by Levels of Healthcare Delivery 2016, in US$ million

Community	166.4
Clinic	209.5
District and primary hospital	653.2
Tertiary hospital	363.7
Total	**1392.8**

The government has appointed a high-level committee, coordinated by the Ministry, to oversee the development and review of the HBP, and to make annual recommendations for changes to the Minister of Health. The committee is advised by a Health Technology Assessment (HTA) Bureau within the ministry's Department of Planning, which undertakes relevant technical analysis and assists the committee in appraising the evidence and forming its recommendations. For 2017, the following issues have been raised.

1. Newbivir appears to be a cost-effective intervention. Estimated incremental cost-effectiveness ratio is estimated to be approximately $215 per DALY. However, because of the high prevalence of HIV/AIDS in the country, and the high unit cost, the intervention consumes $72 million per annum, or 5.7% of the public budget. This disproportionate use of the budget is considered unsustainable, especially consideration of the shortage of doctors needed to deliver the treatment. This

precludes the introduction of some other cost-effective interventions into the HBP. Therefore, the Committee asks the HTA Bureau to conduct some further analysis to assess the impact of including the intervention in the HBP.

2. WHO has introduced new guidelines on the treatment of patients with chronic hepatitis B infection. The limited evidence available so far suggests that the recommended management approach is cost-effective in many settings, and may even be cost-reducing. However, the recommendations entail lifetime treatment, and the antiviral drugs alone may cost $1,500 per annum. It is estimated that there may be up to 7,500 people who qualify for treatment, so introduction of the guidelines would have a major impact on the public budget. The Committee asks the HTA Bureau to conduct some further analysis about adoption of the guidelines.

3. Arthrimumab paediatric TB therapy is currently included in the HBP package. However, it is estimated that only 27% of the relevant patient group secure access to the treatment, in obvious breach of the principle of universal health coverage and the objectives of the HBP. It appears that the main access difficulties arise in the remote rural areas in the south-west of the country, where it is particularly difficult to persuade health care professionals to work. The Committee asks the HTA Bureau to examine the consequences of trying to improve access to the treatment.

4. Inbatofen, a diabetes control medicine, is currently not included in the HBP, because of an absence of cost-effectiveness evidence. A recent study has suggested that the incremental cost-effectiveness ratio (ICER) may in fact be approximately $313 per DALY. However, that study was undertaken on a limited sample of patients in Tanzania, aged under 50, with no comorbidities, and there is a high degree of uncertainty in the estimate. The Committee asks the HTA Bureau to assess the applicability of existing analyses to the context in Nebesa and to examine how to implement the treatment.

5. Cetamaxid deworming treatment is currently included in the HBP, because estimates suggested an ICER of $176 per DALY. However, a recent large study from a neighbouring country has estimated an ICER closer to $810 per DALY. If this is the case, it may suggest that inclusion of the treatment in the HBP should be reconsidered. The Committee asks the HTA Bureau to conduct some analysis on the implications of removing the treatment from the HBP.

6. The manufacturers of P-1050, a vaccine that was added to the routine childhood vaccine schedule 5 years ago, have advised that from next year, the unit price per vial is going to increase from US$1.50 to US$12 as Nebesa will no longer be eligible for coordinated country procurement. The Committee asks the HTA Bureau to assess the cost effectiveness of P-1050 at the new price.

Assignment

1. For each of the above, assess the information needed to inform the recommendations for the committee, and the extent to which consideration of issues other than cost-effectiveness may require analysis.
2. Beyond simple cost-effectiveness, what do you consider to be the principal evaluation criteria that the Bureau should apply when developing its recommendations?
3. More generally, what would you consider to be the main priorities for the HTA Bureau to improve its impact on the choice of the HBP?

Annex 1: Major elements of the Nebesa Health Benefits Package 2016

Note: the major elements of each programme in the package are reported in order to introduce some realism into the exercise, but this annex is not meant to be studied in detail. Each category starts with the treatments contributing the highest percentage of spending in the disease area, but note that considerably more treatments are included in the complete package. Some fictional cost-effectiveness ratios are included, where available, to offer context.

	Approx % of spending in disease area	Unit cost $	Cost/DALY $
Maternal ($72.1million)			
Pre-referral management of labour complications	50	55	47
Condom	29	140	
Management of obstructed labour	8	21300	
Treatment of postpartum haemorrhage	4	985	
Cervical cancer screening			
Feeding counselling and support for low-birth-weight infants			
Children ($2.8million)			
Oral Rehydration	32	56	113
Zinc (diarrhoea treatment)	26	109	73
Pneumonia treatment (children)	13	70	
Deworming (children)	11	46	60
Treatment of severe diarrhoea	7	213	
Antibiotics for treatment of dysentery			
Treatment of severe pneumonia			
Immunization ($38.3million)			
HPV vaccine	56	2798	130
Pneumococcal vaccine	23	590	79
Yellow Fever	8	70	
Pentavalent vaccine	5	54	
Measles vaccine	2	180	33

Malaria ($117.5million)

Diagnosis	71	578	
Larval Control	18	353	
Indoor residual spraying	6	369	153
Malaria treatment (adults)			

Tuberculosis ($285.0million)

First-line TB drugs for Category I & III patients (adults)	54	105000	72
Extra Pulmonary TB	42	128000	132
First-line TB drugs for Category II patients	2	103000	72
MDR-TB notification in children	2	150000	522
First-line TB treatment for children			
MDR-TB notification among new patients			

HIV/AIDS ($572.3million)

Management of opportunistic infections associated with HIV/AIDS	50	16045	
Diagnostics/lab costs for HIV+ in care	18	1487	
ART (First-Line Treatment) for women	10	1850	307
ART (First-Line Treatment) for men	8	1850	307

Non-communicable diseases ($301.9million)

Treatment of cases with Type I diabetes (with insulin)	65	22800	948
Treatment for Type II diabetes	23	9980	948
Chronic Obstructive Pulmonary Disease			

Mental, Neurological, and Substance Abuse Disorders ($2.9million)

Methylphenidate medication	18	1802	
Management of non-opioid/other drug withdrawal	16	8667	
Management of opioid withdrawal	16	8667	
Basic psychosocial support and anti-psychotic medication	12	256	
Basic psychosocial treatment and ADM	11	179	