Methodology to assess the cost impact of PMB benefit definitions

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1 Background

Prescribed Minimum Benefits (PMB) is a set of defined benefits to ensure that all medical scheme members have access to certain minimum health services, regardless of the benefit option they have selected.

PMB's were introduced to avoid incidents where individuals lose their medical scheme cover in the event of serious illness and are put at serious financial risk due to unfunded utilization of medical services. They also aim to encourage improved efficiency in the allocation of private and public health care resources.

The prescribed minimum benefits are paid from a risk pool where a principle of equity is upheld. Members will receive a similar minimum package of care regardless of option they belong to.

Although PMB package of care has been legislated since 2000, there is between and within scheme variation of care associated with these conditions. The Council for Medical Schemes decided to define PMB conditions starting with transplant of solid organs, cancers(gastrointestinal tract, breast and prostate) and cardiac conditions. Whilst it is feared that benefit definitions may increased cost, algorithms for CDL may have actually contributed to a reduction in costs associated with those conditions. When benefits are defined, care is standardised and costs may be contained. Since the proposed benefit definitions have well defined entry criteria, the consumer demand may be reduced. The clinicians will also understand the scope within which benefits are available therefore containing costs associated with investigations and treatment.

2 Aim

To determine costs associated with the proposed recently defined PMB definition and compare the costs with currently existing standards of care and develop frame work for economic evaluation of new technologies/treatments associated with PMB care.

3 Objectives

- To determine the occurrence of particular PMB condition using access to treatment to determine prevalent and estimate incident cases.
- To determine total costs of currently offered under the PMB package
- To determine costs of patients to access health care of **proposed** package of care as defined by the benefit definitions
- To compare costs associated with current and proposed package of care
- To develop frame work for evaluation of new technologies using the baseline cost information (new technologies are defined as interventions (treatment or diagnostic) that were not part of the package of care but are included in the proposed package of care)

4 Methods

This will be a descriptive costing study that will crudely determine costs associated with the current PMB package and estimates cost associated with proposed PMB definition. Cost associated with current PMB condition and treatment will be compared to cost associated with proposed PMB definition. The different aspects of care between the current and previous definition will also be defined.

Medical schemes will be requested to provide aggregated data regarding the cost associated with existing PMB care and estimate costs associated with new package of care. Schemes will however be requested to keep and provide disaggregated work for verification if the analysis of aggregated submissions need further interrogation.

5 Variables for data collection, data analysis and limitations

5.1 Occurrence of disease

Since disease management differs in acute and continuous phases, data collection will be stratified by acute and continuous care. Acute care is a care of incident cases (new cases) diagnosed in the year of interest. It includes all diagnostic, care and follow-up costs incurred in that particular calendar year. Incident cases will include all cases diagnosed later in the year. Chronic care is a care of all prevalent cases diagnosed before the year of interest. Incidence and prevalence rates can be determined from previously existing medical scheme data. To avoid double counting prevalence rate must exclude incident cases. Occurrence of disease will be adjusted for age.

The prevalent cases and incident cases of the existing package should be based on the actual numbers, whilst the number of prevalent and incidence cases of the new package should be estimated using historical prevalence and incidence rate applied on the population size of the scheme.

5.2 Cost determination

A **micro-costing method will be used, as it account for all aspects of care associated with a defined benefit**. This focuses on costing of large items and small items. Medical schemes have billing systems, which reflect actual costs. Although schemes have disaggregated data, the data should be aggregated at medical scheme level and reported under different categories as explained below. Only **direct costs** will be determined. Indirect, marginal and opportunity costs will not be measured.

5.2.1 Total costs associated with current PMB care

Claims data from January 2010-December 2010, or more recent data, may be utilised. Data on expenditure as recorded by medical schemes will be collected irrespective of whether it was paid from day to day or risk pool.

Bottom-up approach should be used to determine costs associated with PMB at scheme level. These costs should be aggregated at scheme level and stratified into various categories for reporting at medical council.

i. **Professional services:** These include cost associated with general practitioners, specialist, and auxiliary services. Auxiliary services include social workers, psychologists,

physiotherapists, occupational therapist, speech and hearing therapists, dieticians, homeopaths and data should be aggregated for

- Outpatients professional services
- In patient professional services

ii. **Hospital admission**: Data collected for hospital admissions will be stratified into 4 categories; namely; Theatre, ICU, General wards, High care and consumables. Consumables should include all in-hospital medication, IV fluids in miscellaneous items used for care such as diapers etc. The cost should however exclude diagnostic tests are they are captured separately as they will be captured under diagnostic

iii. **Diagnostic services**: Data will be collected for 2 categories: pathology tests and imaging including all bedside tests (e.g. Urine dipsticks, ECG etc)

- Pathology tests: Pathology tests will include all pathology related cost such as blood tests, urine testing etc. for diagnosis and monitoring of treatment outcomes.
- Imaging tests: These include costs associated with X-rays, ultrasound, CT scans, PET scans, and MRI for diagnosis and monitoring of treatment.

iv. **Medicines:** This will include all drugs utilised in and out of hospital specific to the condition treated.

v. **Medical appliances and devices**: This will include costs associated with internal and external prosthesis, orthotic appliances, hearing aids etc.

5.2.2 Total costs associated with new PMB definitions:

The draft guidelines for PMB definitions, including diagnosis and care, with procedure and diagnosis codes will be provided to medical schemes to assist in their costing. A draft template for data collection is available on the CMS website[1].

Schemes are requested to determine the costs of the PMB definition based on the draft benefit definitions and aggregate it into categories (Professional services, hospital services, diagnostic services, medicines and appliances) discussed above. It is very important that the scheme narrate on difference between the proposed and current packages, as this will explain variation in cost.

Incident cases: This should be based on historical incidence rate, unless PMB is expected to change the incidence of disease (e.g. when entry level into care differs from the previous one). Prevalent cases: This should be based on historical prevalence of the disease in the scheme

5.3 Comparison of costs

Costs associated with previous and current package will be compared. All monetary value will be discounted to convert to present value using inflation index (2010). Council will provide inflation value to be used for discounting.

[1] Data collection sheet for BDs, available at http://www.medicalschemes.com/Publications.aspx?id=43&category=PMB Definition Project

5.4 Data analysis and results presentation

Council will apply quantitative and qualitative analysis of aggregated data. Crude Average costs will be determined at an industry level. Where possible, ICER will be determined at both medical scheme level and industry level.

Qualitative analysis will include analyses of the narrative to understand reasons for variation in cost between the current and proposed PMB definitions.

A combination of report and presentation will be used to disseminate the findings.

5.5 Challenges with data collection

- There may be large inter-scheme variation and CMS will not be able to explain the variation as data is collected aggregated at a scheme level.
- The central measure of tendency (Average costs) may be biased as distribution of disaggregated data may vary from scheme to scheme.

5.6 Biases in costing

1. **Selection bias:** Response rate may be low. Usually response is related to size of the scheme and ability to extract and analyse data. . The findings may then not be transferred to schemes not responding especially those who may have different burden of disease and higher costs per capita
2. **Inter-observer variation**: Due to the large number of medical schemes, inter-observer variation may be high.
3. **Costing methods bias:** Inclusion of non-relevant and exclusion of relevant items: the draft data collection tool made available for comments will assist in getting the consensus from the industry on which relevancy of items for exclusion and inclusion.
4. **Reporting bias**: Reporter perception may result in biased results. Schemes are supposed to give narratives to explain the difference in costs. This will assist in objectively assessing the true cost drivers. It is very important that the schemes indicate which aspect of care is actually a cost driver.
5. **Data quality**: quality of data may vary from medical scheme to medical scheme. Use of aggregate data may result in loss of objective quality assessment of data.

6. Economic evaluation

If there is a proposed new (that is, a technology or tests that were not included in the previous PMB care) technology/treatment of concern, a decision to adopt such an intervention will be based on proven effectiveness, cost-effectiveness and affordability or value for money.

Department of Health has developed draft guidelines of Pharmaco-economic evaluation. In order to avoid duplication of work CMS will be utilising the DOH's recommendations. CMS will continue with evaluation of non-Medical procedure.

a. Procedure

All affected stake-holders will be invited to participate in the decision making process. The best approach for an intervention/test or medicines in question will be defined by approach.

CMS will define the question for search strategy by defining the population of interest, intervention, comparator and outcome.

The affected stakeholders will be given an opportunity to submit studies of interest

The affected stakeholder will have an opportunity to select the representative to the panel of reviewers. The representative should have skills in literature review and appraisal.

Using University of Oxford centre of evidence based medicine tools available at www.cebm.net ; the reviewers will appraise and select best studies to include for conclusion on effectiveness or cost-effectiveness select studies.

b. Evidence –based

In order to determine if intervention is evidence-based; a thorough literature review will need to be conducted. All the affected stakeholders will be invited to define the process of literature search. In order to minimise drawer-bias affected groups will have an opportunity to submit literature. CMS will define the question to be used in reviewing the literature. Submission by all affected stakeholders will ensure there is no drawer's bias.

Preferable, a representative team consisting of the provider, CMS, Medical scheme and manufacturers should be selected by the affected stakeholders to review and appraisal literature. The aim of having all stakeholder representatives is to ensure transparency. The selected team members must be experienced in reviewing literature however backgrounds in epidemiology will be advantageous to the team. A community-member do not necessarily have to have an epidemiology background however if there is a can be considered if they have skills in literature review or epidemiology. Each and every sector will be responsible for nominating a member who can best represent their industry.

Although selection of a team may result in excluding some other selected parties, the process will ensure that the review and consideration of literature are of good quality. The team needs to be representative yet not too big to for logistics purposes. A team can consist of 6-10 people.

Selection of the literature

The intervention of interest should be compared with the current standard of practice. (The patients, intervention, comparator and outcomes will be defined prior to the literature search.

Patients' selection: This will be a particular group of patients that will benefit from therapy, demographic and disease profile will be defined

***Interventions*:** this will be intervention of interest (surgical; diagnostic; devices etc)

Comparator: The best choice of a comparator will be an existing cost-effective comparator or the existing standard of practice (interpreted within the shortfall)

Outcomes: Preferable studies with long-term outcomes such as mortality, morbidity, survival rates, events free survival rates or quality of life indicators should be evaluated. Intermediate measures

will generally be accepted if outcome data is unavailable; however, this outcomes should be scientifically associated with final outcome.

The types of studies to be included will be determined by the intervention being considered and availability of material. E.g. Whilst RCT are best at evaluating effectiveness, observational studies are best in evaluating harm as they are normally conducted in operational setting. Also non-medical interventions such as types of procedures and diagnostic tools are best evaluated by observational studies. Study designs for evaluation will be clarified depending on the intervention being evaluated. All parties affected will have an opportunity to submit evidence

Evidence will be appraised and discussed by affected stakeholders.

Should the intervention be found not to be effective, then there is no need to continue with cost-effectiveness and affordability analysis.

If the intervention is effective, the team will review cost-effectiveness studies.

Review of the literature should define entry criteria for uptake of such treatment.

c. Cost-effectiveness

Instead of conducting economic evaluation (due to resource limitations), international literature will be reviewed to determine cost-effectiveness of interventions. If cost-input including cost of new interventions are similar, the studies maybe replicable in South Africa. However, there may be instances were international studies are not replicable in South African setting.

New interventions for diagnosis and management of PMB conditions will be subject to economic evaluation if:

i. Interventions (diagnostic, medicines, radiotherapy etc) are costly
ii. New Technologies have potentially better outcomes as compared to current practice
iii. Technologies have increased impact on health expenditure; therefore resulting in deviation between the current practice and new BD

Some conditions, due to health impact or cost impact will be subject to evaluation on per required basis, especially if the interventions have significant health impacts, are costly with no clear value.

d. Affordability/ Decision making criteria/Cost-effectiveness threshold

Once the intervention has been found to be effective and cost-effective, affordability will be analysed.

The recent rapid growth of effective health care has led to appoint where no country (not even richest) can afford to carry out all the potential beneficial procedures that are now available, on all the people who might possibly benefit from them. Priority setting is often seen as a means of rationing interventions when the resources are scarce.

A PMB package of care includes 27 CDL and 270 Diagnosis treatment pairs. When determining affordability, one needs to consider the incremental cost of such intervention on a total PMB package.

Determining affordability will require both qualitative and quantitative assessment.

Quantitative assessment to determine affordability will include

i. Impact of cost of intervention on the PMB package cost especially if there are no disinvestments or replacements within the definition or package.
ii. Impact of cost on beneficiary contributions as a % of average income-(using the 2007 Household survey it was estimated that if contributions exceed 16% of monthly income they become unaffordable. With every Household survey % of monthly income determining affordability will be estimated)
iii. Cost-effectiveness threshold: In economic evaluation, the results of a CE analysis are summarized by the CE ratio. This compares the incremental cost of an intervention with the corresponding incremental health improvement. The health improvements typically are measured in QALYs gained, so the CE ratio usually is expressed as a cost per QALY gained. Treatments with a relatively lower CE ratio are considered most cost-effective. Essentially, CE ratios indicate which health technologies will provide health improvements most efficiently (Garber, 2000). South Africa has no experience in CE threshold and therefore selection of technology will not be based on CE threshold until a standard threshold is defined.

Qualitative assessment considers the following:

i. Prioritisation of medical condition: (severity, occurrence, morbidity and mortality)
ii. Burden of disease
iii. Overall PMB package especially timing of uptake of new technologies- if 2 new technologies are introduced in the market, and both considered to be cost-effective, implementing both of them at the same time may result in unaffordable increase of contribution necessity (e.g. disease burden and severity)
iv. Public health impact
v. Availability of alternative treatments
vi. Equity
vii. Projected product utilization
viii. Innovation of product (e.g. pharmacological characteristics, ease of use)
ix. Affordability

A full economic analysis should have funder's perspective however societal benefits/costs should be considered. Decision making should also consider the country specific health goals, ethical and equity principle.
A funder's perspective is adopted because of easy access to direct costs, sometimes indirect costs are difficult to measure