Measuring quality & health outcomes in medical schemes: Methodology, Criterion and Technical specification

Research & Monitoring Unit
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Abbreviations

PMBs: Prescribe minimum benefits
CMS: Council for Medical Schemes
CDL: Chronic Disease List
MSA: Medical Schemes Act
DSP: Designated Service Provider
BMI: Body Mass Index
NDoH: National Department of Health
WHO: World Health Organisation
OECD: Organisation for Economic Co-operation and Development
CDCP: Disease Control and Prevention
IQ: Intelligence Quotient
HQA: Health Quality Assessment
NEPAD: New Partnership for Africa’s Development
R&M: Research and Monitoring
MDG: Millennium Development Goals
HIV/Aids: Human Immunodeficiency Virus/Acquired Immune Deficiency
UNICEF: United Nations Children's Fund
NHI: National Health Insurance
1.1 Introduction

There are a number of policy initiatives of the Department of Health that increase the need for some form of independent measurement of the quality of health care received by members of medical schemes. Also medical scheme need to demonstrate their value within private health care including efficient and effective management of patient disease leading to better health care outcomes.

1.2 Conceptual Framework: Quality Health Outcomes

Quality measures cover a large range of indicators, these indicators range from crude measures (such as unadjusted mortality rates) to more refined measures (such as readmission rates or proportion of the population using asthma medications to achieve better asthma control etc.). Although a full range of measures is essential for a complete picture of health care quality afforded to the population, specific process measures are also needed to guide the health care team in improving quality of care.

For example, the number of deaths related to asthma at a hospital can suggest poor quality of treatment at that hospital, but knowing the number of deaths alone does not tell the entire story which is why process measures are as important as outcome measures in determining quality of care.

*Process measures:* often reflect evidence-based guidelines of care for specific conditions. They are generally considered to be within the control of the provider and, therefore, are performance indicators. Also process measures are more likely to reveal actions that can be taken to improve quality. Whilst *outcome measures* frequently relate to patient health status. Better outcomes are the ultimate objective of quality improvement, for example, lowers mortality, lower hospitalization rates, or better test results. The indicators listed in this document combine both process and outcome measures. Please refer to annexure A for the definition and technical specification of the select list of indicators.
1.3 Objectives of measuring Quality Health Outcomes in Medical Schemes

Health quality and outcomes measurement enables proper judgements to be made about the performance of a health system. Quality and health outcome measurements are some of the central components in any attempts to effectively ascertain the contribution made by medical schemes into national health policy objectives. The absence of quality and health outcomes measures creates a gap in understanding the health financing and health care provision roles of medical schemes.

Presenting data on quality and health outcomes achieves the following key objectives:

- Consumers would be better empowered to make comparisons between different medical scheme products and choose appropriately
- Medical schemes and other purchasers of health care services would be able to assess the performance of different providers who serve their members
- Health provider facility managers would have information that would assist in benchmarking performance relative to other similar providers
- It would enable policy makers to monitor performance of the health system and intervene in a timely manner should there be a need to do so.

The absence of measures for quality and health outcomes in the medical schemes environment also implies that there is no mechanism to track the effect of treatments that might have adverse results on beneficiaries. As a result, it may be difficult to monitor medical errors, in-hospital infections, disease outbreaks and other epidemiological trends that may require intervention.

1.4 Legislative requirement

Section 7 (c) of the Medical Schemes Act outlines the function of the Council to also include “…making recommendations to the Minister on criteria for the measurement of quality and outcomes of the relevant health services provided for by medical schemes….” Furthermore Section 7 (e) mandates “collection and dissemination information about performance of private health care”.

It is therefore envisaged that the health and quality outcomes framework will enable realisation of the sections mentioned above.
2. **Objectives of the study**

The specific objective of the project is as follows:

- To develop an framework for measuring quality and health outcomes in the medical schemes industry
- To identify a select list of indicators to measure quality and outcomes in medical schemes

3. **Methodology**

3.1 **Literature review and expert consultation**

The study is mainly literature review and expert consultation based on the select list of quality and outcomes indicators. Literature review is be based on bibliographic database search of relevant sources for the selected indicators and thereafter a consultative process to get experts opinion to complement the knowledge of quality and outcomes indicators obtained from the literature review. For the consultative process, a research methodology known as the Delphi Method will be employed (Goodman CM, 1987; Linstone & Turrof, 1975). The Delphi Method requires the formation of an interactive panel of experts. These experts will be selected on the basis of their background in the industry and their willingness to share their expertise and work towards a resolution to select few ideal quality and outcomes indicators. We assume that the process of collecting quality and outcomes indicators for the private sector to be a collaborative, iterative, developmental program for progressing towards a routine collection of consistent set of quality of care and health outcome indicators.

3.2 **Criterion for selecting ideal quality and health outcomes indicators**

This section seeks to address key aspects of selecting quality and health outcomes indicators; the purpose is to use these criterions when selecting the indicators. It is of great importance to conceptualise what is that is being measured. For the purpose of this section we address the following two principles.

- The question of **what** dimension of quality to measure
- The **how** dimension of measuring such indicators

Kelly & Hurst states that the **how** principles of measuring quality should address both the process and outcome measures. They further states that the indicators should address the following three criterions (Kelly and Hurst, 2006):

- The importance of what is being measured
The measure should have an impact of disease or risk on health/expenditure. The measure should also have relevance to policy, i.e. policy makers should be able to make decisions on such measure in order to improve health systems.

- The scientific soundness of the measure
  - Validity: The quality measure should make sense logically and clinically (face validity), it should also correlate well with other measures of the same aspects of the quality of care (construct validity) and lastly should capture meaningful aspects of the quality of care (content validity) (Carmines and Zeller, 1991).
  - Reliability: The measure should produce consistent results when repeated in the same population and settings.
  - Explicitness of the evidence base: There should be a clearly documented scientific foundation for the measure in the literature.

- The feasibility/cost of obtaining the data
  - International comparative measure should exist and characteristics differences between medical schemes/providers should be taken into account international comparative figures

Thus, the select set of quality and outcomes indicators were subject based on the above three criterion.

4. Adjustments for case-mix

In ensuring that the data is comparable, prognostic factors will be identified in relation to the defined standards and indicators. The prognostic factors will be used as underlying factors or explanatory variables to adjust for case-mix. This is critical to evaluate whether the outcome, either favourable or not is due to health systems or due to the mix of diseases and conditions.

5. Limitations of quality and clinical health outcomes indicators

The complexity underlying the process collecting and interpreting quality indicators should not be underestimated. Even apparently simple indicators require in-depth analysis of competing operational definitions and generation of an agreed, detailed operational definition preferably supported by written, clarification and problem-solving guides (Boyce et al., 1997). Clinical outcome indicators can provide insights into quality of care and highlight variations in outcome worthy of further investigation. Limitations thereof are that the information that can be drawn from some indicators does not always include the beneficiary’s views about outcome. Other limitations of clinical outcomes are that they do not necessarily provide definitive proof about
performance or quality of care (Minnion et al., 2001). Outcomes data should be used as a guideline or standards and should also be a relative measure assessing the perceived ill-practice by a provider, they need to be interpreted with cautions as they may be influenced by multi-underlying factors that are not necessarily explained by the data.
6. References


Kane, Robert L. 2005. Understanding health care outcomes research. 2d ed. Sudbury, MA: Jones and Bartlett


Republic of South Africa. Medical Schemes Act (No. 131 of 1998), as amended.


UNICEF, WHO, Low Birth Weight Country, Regional and Global estimates


Natasha D, Anaesthesia for Hip replacement. Update in Anaesthesia


JNC VI (Joint National Committee, 1997)
World Health Organisation - International Society of Hypertension Guidelines for the management of Hypertension (Guidelines Subcommittee, 1999)


www.njrcentre.org.uk

www.nice.org.uk

www.hqip.org.uk

www.ahrq.gov
7. Annexure A
### Obesity prevalence (1)

<table>
<thead>
<tr>
<th>Indicator Name</th>
<th>Prevalence obesity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicator Definition</strong></td>
<td>Obesity is calculated based on self reported weight and height and defined as body mass index (weight [kg] / height [m]²) ≥30.</td>
</tr>
</tbody>
</table>
| **Detailed Description** | Body mass index (BMI) is a measure of weight adjusted for height, and is calculated by dividing weight in kilograms by height in metres squared (kg/m²). For all adults aged 18 years and over, the World Health Organization defines obesity as having a BMI greater than or equal to 30 kg/m² (WHO 2000).

For participants under 18 years, BMI cut-off points developed by the International Taskforce on Obesity (IOTF) have been used to define obesity (Cole et al 2000). The IOTF BMI cut-off points are sex and age-specific, and have been designed to coincide with the WHO BMI cut-off points for overweight and obesity. |
| **Objective** | Determine the prevalence of obesity amongst beneficiaries in the medical scheme industry |
| **Rationale** | Over the past decade, obesity has become recognized as a national health threat and a major public health challenge. WHO estimates that by 2015 the number of overweight people worldwide will increase to 2.3 billion, while more than 700 million will be obese. Obesity is a costly condition that can reduce quality of life and increase the risk for many serious chronic diseases and premature death. Obesity should be addressed through a comprehensive approach across multiple settings and sectors that can change individual nutrition and physical activity behaviours and the environments and policies that affect these behaviours |
| **Technical note¹** | Adjustment data to consider the following factors: - **Age:** studies have shown an increase in BMI in older people than in younger people - **Gender:** In the South African context, black women turn to be more obese than their counterparts, while urban women were found to have significantly higher BMI than their rural counterparts. A different pattern is seen in men were prevalence of |

¹ Note: analysis of data will consider all the factors listed
obesity is highest amongst white men.

- **Environment**: urbanisation is associated with obesity due to the change in dietary intake which is westernised
- **Socioeconomic status (SES)**: level of education, employment status associated with improvements in general health and lower disease incidence
- **Socio-cultural factors**: Cultural diversity can influence the perception of body image. For example in the black community, overweight body symbolizes happiness, beauty, affluence, health and negative HIV/AIDS status (Andriam *et al*, 2008)
- **Genetics**: Studies have shown that approximately 75% of the variation in percent body fat and total fat mass is determined by culture and lifestyle, whereas 25% can be attributed to genetic factors
- **Dietary intake**: High-fat diets promote fat accumulation significantly more than high-carbohydrate diets because of the high energy density, metabolic efficiency, palatability, poor regulation and weak satiating effect of fat
- **Physical activity**: has a high impact on energy expenditure, body composition, and substrate oxidation and metabolism
- **Parity**: is associated with obesity in women
- **Stress**: high levels of stress are associated with increased weight gain

*Risk factors*:
Lack of physical activity, parity, stress, incorrect dietary intake, urbanisation

*Complications*:
Type 2 diabetes, Coronary heart disease, Hypertension, Cancer, Psychological implications, Osteoarthritis, Morbidities in children

*Limitations*:
- BMI cut-offs are intended to identify populations at increased risk of poor health conditions associated with excess body fat, not to measure body fatness as such.

<table>
<thead>
<tr>
<th><strong>Sub-indicators</strong></th>
<th>Type 2 diabetes, CHD, Hypertension, Osteoarthritis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Methodology</strong></td>
<td>Screening of BMI in Medical Aid beneficiaries</td>
</tr>
<tr>
<td><strong>Sources of Data</strong></td>
<td>Medical schemes data</td>
</tr>
<tr>
<td><strong>Reference period</strong></td>
<td>2010-2011 financial year</td>
</tr>
</tbody>
</table>
### Immunisation coverage of children 12-23 months (2)

<table>
<thead>
<tr>
<th><strong>Indicator Name</strong></th>
<th>Immunisation coverage of children aged 12 months -23 months (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicator Definition</strong></td>
<td>Proportion of children aged 12 to 23 months who had received BCG, 3 doses of DTP and polio, and Measles vaccine, but not necessarily Hepatitis B.</td>
</tr>
<tr>
<td><strong>Detailed Description</strong></td>
<td>The indicator is calculated as the total number of children under one year old that have received all their vaccinations up to the first measles, divided by the target population of children under one year old.</td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>To establish baseline data this will be used to monitor health outcomes related to immunisation coverage.</td>
</tr>
<tr>
<td><strong>Rationale</strong></td>
<td>Children below the age of five years are at risk of fatal acute infectious diseases resulting in infant and child mortality. Control of these infectious diseases is important to the reduction of childhood mortality and could make a significant contribution towards the achievement of Millennium Development Goal. In South Africa this goal aims to reduce child mortality by two thirds by the year 2015 and the National DoH target for full immunisation coverage of 90%.</td>
</tr>
</tbody>
</table>
| **Technical note** | This indicator measures the percentage of children under one year old who have received the following immunisations:  
- At birth: TOPV (0), BCG  
- 6 weeks: TOPV (1), DTP-HiB (1), Hep B (1)  
- 10 weeks: TOPV (2), DTP-HiB (2), Hep B (2)  
- 14 weeks: TOPV (3), DTP-HiB (3), Hep B (3)  
- 9 months: Measles (1).  

Limitation:-  
Immunisation coverage indicators are dependent on accuracy of the population estimates, which are used in the denominator. It is important to avoid over-counting and under counting of the number immunised children since this can give a misleading conclusion. |
| **Sub indicators** | The framework could only focus on three vaccinations which are crucial in terms of reducing infant mortality. Of the list presented above in the technical note, the clinical committee would have to make a recommendation in terms of important sub-indicators |
|**Methodology** | Population survey |
|**Sources of Data** | Primary data source: Medical schemes data  
Secondary data source: Medical Research Council, HSRC, District Health Barometer & South Africa Demographic and Health Surveys (for comparison purposes) |
<p>|<strong>Reference period</strong> | 2010-2011 financial year |</p>
<table>
<thead>
<tr>
<th><strong>Indicator Name</strong></th>
<th>Infant mortality rate (deaths under 1 year per 1 000 live births)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicator Definition</strong></td>
<td>The number of children less than one year old who die in a year, per 1 000 live births during that year.</td>
</tr>
<tr>
<td><strong>Detailed Description</strong></td>
<td>This indicators outlines the probability of dying before age 1 year</td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>It will be used to establish baseline data which will be used to monitor health outcomes in relation to child health care</td>
</tr>
<tr>
<td><strong>Rationale</strong></td>
<td>One of the most important MDG indicator of health for any developing country is the number of children who die within the first year of life. The infant mortality rate also plays a role in reflecting health status in the general community. Given the wealth disparities within the South African society, monitoring the infant mortality rate is critical to track inequalities in child health.</td>
</tr>
<tr>
<td><strong>Technical note</strong></td>
<td>This indicator is usually calculated for a given year (i.e. on an annual basis), and out of 1,000 live births</td>
</tr>
<tr>
<td><strong>Caution:</strong></td>
<td>Common errors that occur in the collection of retrospective data include omission of births and deaths which then lead to biased estimates (Sullivan, 1990). Such omissions are especially common for infants who die shortly after birth. Other problems may include misreporting of the date of birth and age at death which can distort both the level and trends in child mortality</td>
</tr>
<tr>
<td><strong>Sub indicators</strong></td>
<td>The clinical committee would have to make a recommendation in terms of important sub-indicators</td>
</tr>
<tr>
<td><strong>Methodology</strong></td>
<td>Survey &amp; retrospective review of claims data</td>
</tr>
</tbody>
</table>
| **Sources of Data** | Primary data source :- Medical schemes data  
Secondary data source : Medical Research Council , HSRC, District Health Barometer & South Africa Demographic and Health Surveys (for comparison purposes) |
<p>| <strong>Reference period</strong> | 2010-2011 financial year |</p>
<table>
<thead>
<tr>
<th><strong>Indicator Name</strong></th>
<th>Maternal mortality ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicator Definition</strong></td>
<td>Deaths while pregnant due to pregnancy-related causes</td>
</tr>
<tr>
<td><strong>Detailed Description</strong></td>
<td>Probability of dying as a result of one’s pregnancy</td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>This indicator will be used to establish baseline data which will be used to monitor health outcomes on maternal health care.</td>
</tr>
<tr>
<td><strong>Rationale</strong></td>
<td>This indicator is part of the MDG’s which seeks to encourage individual countries to reduce maternal deaths by 75 percent between 1990 and 2015. Many studies have observed that in South Africa’s maternal mortality ratio has more than quadrupled over the past decade.</td>
</tr>
<tr>
<td><strong>Technical note</strong></td>
<td>This indicator is usually calculated for a given year (i.e. on an annual basis), and out of 100,000 live births.</td>
</tr>
<tr>
<td><strong>Sub indicators</strong></td>
<td>The clinical committee would have to make a recommendation in terms of important sub-indicators</td>
</tr>
<tr>
<td><strong>Methodology</strong></td>
<td>Survey &amp; retrospective review of claims data</td>
</tr>
<tr>
<td><strong>Sources of Data</strong></td>
<td>Primary data source :- Medical schemes data  Secondary data source : Medical Research Council , HSRC, District Health Barometer &amp; South Africa Demographic and Health Surveys (for comparison purposes)</td>
</tr>
<tr>
<td><strong>Reference period</strong></td>
<td>2010-2011 financial year</td>
</tr>
<tr>
<td><strong>Indicator Name</strong></td>
<td>Low birth weight rates</td>
</tr>
<tr>
<td>--------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td><strong>Indicator Definition</strong></td>
<td>Birth weight is the first weight of the foetus or newborn obtained after birth. For live births, birthweight should preferably be measured within the first hour of life, before significant postnatal weight loss has occurred. Low birth weight is defined as less than 2,500 g (up to and including 2,499 g) (WHO, 2004).</td>
</tr>
<tr>
<td><strong>Detailed Description</strong></td>
<td>A baby’s low weight at birth is either the result of preterm birth (before 37 weeks of gestation) or of restricted foetal (intrauterine) growth. Low birth weight is closely associated with foetal and neonatal mortality and morbidity, inhibited growth and cognitive development, and chronic diseases later in life</td>
</tr>
<tr>
<td><strong>Objective</strong></td>
<td>To establish baseline data this will be used to monitor health outcomes and the effectiveness of medical schemes in management of low birth weight amongst newborns.</td>
</tr>
<tr>
<td><strong>Rationale</strong></td>
<td>Low birth weight has long been used as an important public health indicator. Low birth weight is not a proxy for anyone dimensions of either maternal or perinatal health outcomes. Globally, this indicator is a good summary measure of a multifaceted public health problem that includes long-term maternal malnutrition, ill health, hard work and poor pregnancy health care</td>
</tr>
</tbody>
</table>
| **Technical note** | **Data adjustment to consider the following factors:-**  
- Gender, race and region.  
- Income level, level of education, employment status (high risk factors due to poor feeding and inadequate growth)  
**Note for analysis:-**  
- Exclude children not weighed at birth  
- Exclude low birthweight rates Including 2,500 g the digit preference at 2,500 g can give misleading results  
- Low birthweight rates should cover an extended period of time, as rates covering a short period only may be subject to seasonal variations. Seasonal fluctuations are usually due to the availability of food or to disease epidemics |
| **Methodology** | Cross sectional survey |
| **Sources of Data** | Medical schemes data, Medical Research Council & South Africa Demographic and Health Surveys & household surveys |
| **Reference period** | 2010-2011 financial year |
### Hypertension prevalence (per 1,000) (6)

<table>
<thead>
<tr>
<th>Indicator Name</th>
<th>Hypertension prevalence (per 1,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator Definition</td>
<td>Number of people with hypertension per 1,000 people in the medical schemes beneficiary population</td>
</tr>
</tbody>
</table>
| Detailed Description | The prevalence of hypertension reported can be classified as follows:  
- Moderate and severe hypertension: BP equal to or above 160/95 mmHg or taking hypertension medication  
- Any hypertension: BP equal to or above 140/90 mmHg or taking hypertension medication |
| Objective            | To establish baseline data which will be used to monitor health outcomes and the effectiveness of medical schemes in management of hypertension |
| Rationale            | The impact of untreated hypertension on the health of people is a major contributor to the overall burden of adult diseases in any population that does not actively work towards improving the early detection and cost-effective management of the condition. Burden of disease linked to hypertension includes: strokes (cerebrovascular diseases), heart attack (myocardial infarction), kidney disease or failure as well as heart enlargement due to left ventricular hypertrophy, which could predispose to congestive heart failure (Guidelines Subcommittee, 1999). |
| Technical note2      | This indicator includes the number of people being treated for hypertension. |
|                      | Require disaggregated data classified by:  
- Age: hypertension is most common amongst adults in the working group  
- Gender: more men than women are prone to hypertension which can be exacerbated by alcohol intake.  
- Race: in the South African context hypertension is most common amongst the white population  
- Region: urban/rural differences exist regarding sources of dietary Na  
- Socio-economic status: hypertension is an emerging risk factors with increasing wealth  
- Dietary intake: increased salt intake and the decrease in fruit and vegetables, higher intake of alcohol products together with other risk factors like obesity may result in high blood pressure |

2 Note: analysis of data will consider all the factors listed  
*Results from SAHDS
Define the inclusion and exclusion criteria:
As part of independent variables researchers need to define parameters leading to a compliance score

**Risk factors**
Important to correlate body mass index (BMI) /lifestyle
Cholesterol levels

**Complication**
Heart attacks, stroke, left ventricular hypertrophy, renal disease, blindness
Cardiovascular disease risks are often classified according to low, medium, high and very high risk.
Each range of the risk is determined by severity and the number of risk factors.

**Co-morbidity**
Diabetes, obesity

**Note:**
Standard treatment guidelines are important so as to establish whether or not appropriate treatment was afforded to the patient.

**Caution:**
Poor fieldwork measurement of BP can result in low/high estimates

| Sub indicators | Hospitalisation rate - due to inadequate management hypertension  
| Source | Medical schemes data , Medical Research Council & South Africa Demographic and Health Surveys  
<p>| Reference period | 2010-2011 financial year |</p>
<table>
<thead>
<tr>
<th>Indicator Name</th>
<th>Total number of asthma cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator Definition</td>
<td>Total number of asthma cases in the medical schemes beneficiary population</td>
</tr>
<tr>
<td>Detailed Description</td>
<td>Asthma is a chronic obstructive lung disease caused by inflammation and increased reaction of the airways to various triggers. Symptoms can include wheezing, coughing, chest tightness and shortness of breath. Asthma can be a life-threatening disease if not managed properly. Indoor environments and poor indoor air quality (IAQ) appear to play a key role in the development and/or exacerbation of this disease</td>
</tr>
<tr>
<td>Objective</td>
<td>To establish baseline data which will be used to monitor health outcomes and the effectiveness of medical schemes in management of asthma cases</td>
</tr>
<tr>
<td>Rationale</td>
<td>In South Africa, asthma is one of the most common chronic respiratory diseases. This disease is recorded as being responsible for one percent of DALYs lost (comparable to diabetes) and 0.4% of all deaths. Within the medical schemes population, asthma is ranked as the 4th most prevalent chronic condition</td>
</tr>
</tbody>
</table>
| Technical note      | Collect baseline data to include:  
|                     | - Age  
|                     | - Gender  
|                     | - Race  
|                     | - Educational status  
|                     | - Income  
|                     | - Geographic location  

*Risk factors*  
Smoking, Environmental tobacco smoke, depression etc  

*Complication*  
An adequate assessment of severity is a key in determining appropriate management and treatment plans for patients with asthma. Each indicator should be linked to the standards of care and treatment of patients.  

*Co-morbidity*  
Depression, diabetes, cardiac disease, hypertension, cerebrovascular disease, musculoskeletal disorders, malignancies etc.
| Sub-indicators | Hospitalisation rate - due to inadequate management asthma  
|               | Mortality rate - due to inadequate management of hypertension asthma |
| Methodology   | Depending on the selected indicators. Cross-sectional and prospective/Retrospective survey |
| Sources of Data | Medical schemes data, Medical Research Council & South Africa Demographic and Health Surveys |
| Reference period | 2010-2011 financial year |
## Total number of type 1 and Type 2 Diabetes cases (8)

<table>
<thead>
<tr>
<th>Indicator Name</th>
<th>Total number of type 1 and Type 2 Diabetes cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator Definition</td>
<td>Total number of type 1 and Type 2 Diabetes cases in the medical schemes beneficiary population</td>
</tr>
<tr>
<td>Detailed Description</td>
<td>Diabetes is caused by a failure of the pancreas to produce insulin (type 1) or to produce enough adequately functioning insulin (type 2) to enable the glucose from food to enter the body cells and be used as a source of energy. As a result, in both types the glucose level in the blood remains too high. Good glycemic control of diabetes prevents micro-vascular complications and reduces the risk of macro-vascular disease</td>
</tr>
<tr>
<td>Objective</td>
<td>To establish baseline data which will be used to monitor health outcomes and the effectiveness of medical schemes in management of diabetes</td>
</tr>
<tr>
<td>Rationale</td>
<td>Over 12 million people in sub-Saharan Africa are estimated to have diabetes, and 330,000 people will die from diabetes-related conditions. Type 2 diabetes accounts for well over 90-95% of diabetes in Sub-Saharan Africa.</td>
</tr>
</tbody>
</table>
| Technical note | Collect base line data such as the following variables so as to understand the characteristics of the population being studied. Population dynamics have an impact on analysis and interpretation of data: - Age : type 1 diabetes often common amongst children under age of 15, whilst type 2 diabetes is common amongst adults) - Gender : sometimes high admission rate in males may be attributed to uncontrolled blood pressures or differences in health seeking behaviour between males and females) - Race : In Sub –Sahara Africa, the highest diabetes prevalence is in people of Indian origin, followed by native Africans - Educational status - Income - Geographic location Define the inclusion and exclusion criteria. This criterion will inform sampling of the participants in the study. - Examples of inclusion criteria: - patients, who have been diagnosed with diabetes on the basis of blood
- Exclusion criteria: Type 1 diabetes requiring continuous treatment or hospital admission > 1 week (linked to the analytic horizon)

As part of independent variables, researchers need to define parameters leading to a compliance score. Variables such as testing of blood glucose, eye examination, electrocardiogram; visits to health facility (linked to the analytic horizon of the study), taking SMBG, taking OHA’s and insulin etc could be included in the compliance score. The decision to include or exclude variables in the compliance score should also be informed by the treatment care pathways/protocols/guidelines.

**Risk factors**
Identify risk factors such as obesity, lack of physical activity, smoking, and alcohol use.

**Complications:**
People with diabetes are already at a significantly increased risk of developing one or more of the complications of diabetes such as heart attack, stroke, blindness, kidney failure, and neural problems that often lead to amputation. A number of these complications develop, usually after a number of years and particularly if diabetes is not managed or treated properly.

**Co-morbidity data**
Co-morbidity data is required in-order to properly assess health outcomes. This data is available from patient’s health record.

Appropriate care for complications can also affect health outcomes. Treatment sometimes includes medication, kidney dialysis, transplant, eye surgery, and lower-limb amputation. To look at diabetes health outcomes, it is ideal to correlate diabetes rates to complications and how far do patients receive recommended care as per care pathway.

**Sub-indicators**

**Hospital admission:** Due to inadequate management of diabetes.
A study undertaken in Canada showed that patients who consulted specialists had worse health outcomes compared to GP consultations. This conclusion drawn in cognisance of the fact those specialists also see serious health problems compared to GP’s. Severity of illness and other patient characteristics can also be linked to specialist’s consultations/admission to the hospitals.
**Mortality / Case fatality rate**: proportion of patients with a primary diagnosis of diabetes mellitus who die within 30 days of their admission.

**Reduced risk of complications**: this sub-indicator relates to risk factors associated with the development of complications, metabolic control markers of late complications & symptoms.

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