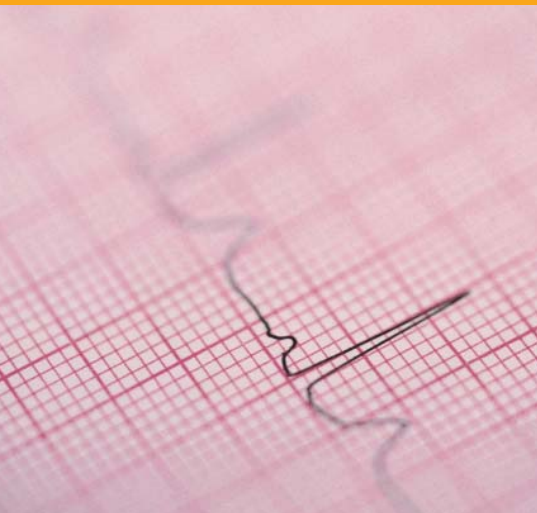


Risk Matters



Dear Reader,

The UK insurance industry developed its first set of standardised critical illness definitions in 1999. This article describes the approach taken by the South African insurance industry when it recently developed its first set of standardised definitions.

South Africa has drawn on the experiences of the UK and other markets in developing its definitions. The UK industry may in turn draw on ideas from the work done in South Africa as definitions continue to evolve.

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Actuary

Standardised Critical Illness Definitions in South Africa

In August 2008, the Life Offices' Association of South Africa (LOA) proposed that South African life insurance companies make use of a standardised disclosure grid to indicate when and how much their critical illness products will pay out. Claims will be paid if either the provider-specific or standard definitions are met which should make advisers and consumers more comfortable with these products. The grid also enables meaningful product comparisons in a complex environment.

Until now South Africa has not used standard critical illness definitions. A number of providers offer tiered benefits whereby different percentages of the sum assured will be paid, depending on the severity of the illness suffered. A more severe form or stage of an illness qualifies for a higher payment. Providers may define these tiers differently.

Structure of the grid

The proposed grid sets out LOA recommended definitions for heart attack, cancer, stroke and coronary artery by-pass graft.¹ These conditions were chosen because they account for 70 - 90% of critical illness claims in South Africa. For each of these conditions, the definitions allow for four severity levels where level A is the most and level D is the least severe. Providers will map their definitions to this grid and indicate what percentage of cover will be paid for each level. The concept is illustrated below for a hypothetical product.

Standard Definition Severity Level	Heart Attack	Cancer	Stroke	Coronary Artery By-pass Graft
A	100%	100%	100%	100%
B	75%	100%	100%	75%
C	50%	100%	25%	50%
D	25%	100%	0%	25%

There is no requirement for specific percentages of the sum assured to apply in any cell. Companies only need to disclose what percentage they will pay and can choose not to cover some of the severity levels at all.

LOA illness definitions underpinning the grid

Medical definitions are set out for each severity level for each condition, plus an explanation in layman's terms. Some of the medical definitions are lengthy so the information presented here is a high-level summary.

Stroke

A stroke is defined as death of brain tissue due to inadequate blood supply or haemorrhage within the skull resulting in neurological deficit lasting longer than 24 hours.

The severity of the stroke is determined with reference to the number of defined basic activities (e.g. grooming and feeding) and advanced activities (e.g. shopping and housework) that the insured can perform. This assessment of abilities must take place at least three months after the stroke incident.

The severity levels are as follows:

- **Level A:** Stroke with severe impairment such that the insured needs constant assistance as he cannot perform three or more basic activities
- **Level B:** Stroke with moderate impairment such that the insured cannot function independently as he cannot perform a significant number of advanced activities.
- **Level C:** Stroke with mild impairment such that the insured can function independently but is still unable to perform some advanced activities
- **Level D:** Stroke with almost full recovery such that the insured can perform all basic and advanced activities

Alternatively the severity of the stroke can be assessed with reference to Whole Person Impairment (WPI) figures which are set out in the American Medical Association Guides to the Evaluation of Permanent Impairment. A WPI of 35% or more would satisfy the definition for Level A while a WPI of up to 10% will apply to Level D strokes.

Coronary artery bypass graft

The LOA definition requires the undergoing of surgery to correct the narrowing of, or blockage to, coronary arteries by means of a by-pass graft. Severity levels are determined by the number of arteries bypassed and are as follows:

- **Level A:** three or more coronary arteries
- **Level B:** two coronary arteries
- **Level C:** the left main coronary artery or proximal left anterior descending coronary artery
- **Level D:** any one coronary artery

Heart attack

Similarly to the Association of British Insurers (ABI)², the LOA defines a heart attack as the death of heart muscle, due to inadequate blood supply as evidenced by:

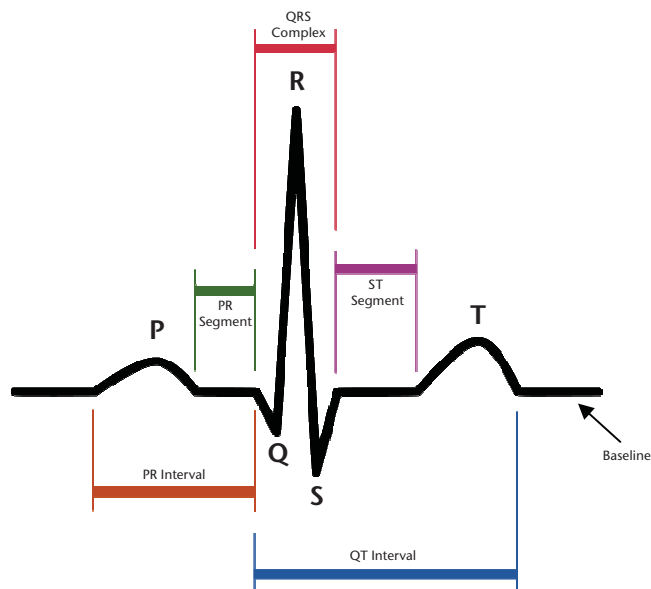
- compatible clinical symptoms (e.g. chest pain, shortness of breath)
- ECG changes characteristic of heart attack
- raised cardiac markers

The definition then goes on to define severity levels as follows:

- **Level A:** Heart attack with severe permanent impairment in function
- **Level B:** Heart attack with mild permanent impairment in function
- **Level C:** Moderate heart attack with full recovery
- **Level D:** Mild heart attack with full recovery

Level A, B and C heart attacks will produce ECG changes and/or cardiac marker level increases that are clearly abnormal. The definition explains that ECG changes are clearly abnormal when Q-waves greater than a certain size are detected by particular leads of an ECG machine. ST segment elevations or depressions relative to the baseline or T-wave abnormalities recorded by particular leads are also considered clearly abnormal when accompanied by significant increases in levels of cardiac markers. Figure 1 is a representation of an ECG image that would be produced for a normal heartbeat and shows the usual position of the Q-wave, ST segment and T-wave.

Figure 1: ECG representation of a normal heartbeat



Source: Wikimedia Commons

Cardiac markers are proteins that get released into the bloodstream when heart muscle dies. Significant increases in cardiac marker levels are:

- Troponin T > 1,0 ng/ml or Troponin I > 0,5 ng/ml, or
- Raised CK-MB mass
 - greater than two times normal values before treatment, or
 - greater than four times normal values after treatment.

Level D heart attacks will produce mildly abnormal ECG changes and cardiac marker level increases and will be accompanied by typical clinical symptoms. The following cardiac marker levels need to be present:

- Troponin T > 0,5 ng/ml or Troponin I > 0,25 ng/ml, or
- Raised CK-MB mass
- Total CPK elevation of up to 2x normal values, with at least 6% being CK-MB.

To differentiate between severity levels A, B and C the extent of permanent impairment is measured six weeks after the heart attack has taken place. Heart function may be measured directly (e.g. Left Ventricle Ejection Fraction) or via an assessment of physical abilities and symptoms (e.g. METS or New York Heart Association classification). More weight is given to measures such as ejection fraction as they are more objective.

A level A heart attack corresponds to an ejection fraction of less than 30%. In terms of physical ability the insured would usually be bed bound.

A level B heart attack corresponds to an ejection fraction of 30 - 50%. The insured may experience mild to marked symptoms (e.g. varying degrees of shortness of breath). As a point of reference, an ejection fraction of 55% - 70% is considered normal.

Cancer

The LOA cancer definition is essentially the same as the ABI definition before splitting the definition up into severity levels. The LOA defines cancer as a malignant tumour positively diagnosed with histological confirmation and characterised by the uncontrolled growth of malignant cells and invasion of tissue. The definition includes leukaemia, lymphoma and sarcoma. Cancers in situ, pre-malignant conditions, early cancer of the prostate and all skin cancers, other than malignant melanoma that has been caused invasion beyond the epidermis, are excluded.

For all cancers except prostate cancer, lymphoma and leukaemia the severity levels are correlated with the general classifications used by the American Joint Committee for Cancer. The tiering is as follows:

- **Level A:** Stage IV Cancers
- **Level B:** Stage III Cancers
- **Level C:** Stage II Cancers
- **Level D:** Stage I Cancers

Prostate cancer, leukaemia and lymphoma are classified differently in clinical practice and have been mapped to the severity levels using the relevant scales.

The most commonly used staging method for prostate cancer is the Tumour, Nodes, Metastasis (TNM) system where "T" denotes the four stages of tumour growth and "N" denotes whether the surrounding lymph nodes contain cancer. Under this cancer definition prostate cancers with any lymph node involvement will qualify for a Level A payment. Tumour sizes 2, 3 and 4 qualify for level D, C and B payments respectively if there is no lymph node involvement.

Lymphomas (Hodgkins and non-Hodgkins) are tiered according to the Ann Arbor classification system with stages IV, III, II and I mapping to severity levels A, B, C and D respectively.

Severity level mappings are stated explicitly for each type of leukaemia. This mapping is described only briefly in this article.

All acute leukaemias in adults qualify for level A payments. The severity of Chronic Myeloid Leukaemia is determined by whether a bone marrow transplant is required. Chronic Lymphocytic Leukaemia (CLL) is tiered according to the Rai Staging System in terms of which stages 0 and I qualify for a Level D payment.

Multiple myelomas are classified according to the Durie-Salmon scale.

Hairy cell leukaemia qualifies for a level D payment.

Comparison with ABI definitions

For stroke, the ABI definition requires permanent neurological deficit with persisting clinical symptoms. There may be cases where clinical symptoms do not affect the insured's ability to perform the activities used in the LOA definition so the ABI definition may correspond to LOA level C or D.

For coronary artery-bypass, a policy adopting the ABI definition will pay out at all of the LOA severity levels.

For heart attack, a policy adopting the ABI definition will pay out from LOA severity level C as the required increase in cardiac marker in the ABI definition is Troponin T > 1,0 ng/ml or Troponin I > 0,5 ng/ml. The ABI definition requires more evidence than is the case for Level C heart attacks under the LOA definition, but no measures of permanent impairment are required.

For cancer all conditions that qualify for a payment under the ABI definition will qualify under the LOA definition. As there is no differentiation by payment amount in the ABI definition there is no need for further classification. The ABI has an exclusion for CLL which has not progressed to at least Binet Stage A. This stage maps to Rai Classifications 0, I and II.³ The minimum payment levels in terms of the ABI and LOA definitions are therefore equivalent.

References

- 1 LOA SCIDEP Committee (2008) Untitled document
- 2 Association of British Insurers (2006) Statement of Best Practice for Critical Illness Cover
- 3 US National Cancer Institute website (www.cancer.gov updated as at 10/03/2008) Stage Information for Chronic Lymphocytic Leukemia