

Actuarial Society of South Africa

MARKING SCHEDULE

19 MAY 2023

Subject F201 - South African Health and Care

Specialist Applications

QUESTION 1

The main components of these products can be compared on a high level as follows:

Benefits		Certainty Health Medical Scheme	Certainty Health Emergency Cover	Needs of corporate client
PMB	Emergency	✓	✓	✓
	CDL	✓	✗	✗
	DTP	✓	✗	✗
Other Out-of-hospital benefits		✓ Depends on benefit option	✗	✗
Other in-hospital benefits		✓ Depends on benefit option	✗	✗

The marking schedule for Question 1 relies on the logic included in the above table. Candidates are not expected to construct such a table in the exam. No credit is available for the above table.

1(a) Compare and contrast these two products in terms of the following five themes: [50]

- **Legislation and regulations.**

Candidates were expected to identify that Certainty Health Medical Scheme adheres to the Medical Schemes Act and its associated regulations, whereas Certainty Health Emergency Cover is regulated by the Short-Term Insurance Act and the associated Demarcation Regulations.

Some candidates were time-efficient by defining abbreviations for the two product names and used the abbreviations when referring to the products interchangeably. However, the choice of abbreviations was in some instances unfortunate, for example, abbreviating Certainty Health Medical Scheme as CMS as some explanations referred to CMS the scheme and CMS the regulator in the same paragraph.

*An unfortunate common error was assuming that Certainty Health Emergency Cover is a hospital cash plan with predetermined stated benefits, while the preamble to the question clearly stated that this product is a health insurance policy offering accident and trauma cover that **indemnifies** policyholders against the cost of these.*

Certainty Health Medical Scheme

Certainty Health Medical Scheme is a registered open medical scheme that complies with the Medical Schemes Act and its regulations.

Certainty Health Medical Scheme is a mutual not-for-profit fund with the funds belonging to the members and governed by a board of trustees.

Each benefit option offered by *Certainty Health Medical Scheme* must include Prescribed Minimum Benefits (PMBs).

The Prescribed Minimum Benefits (PMBs) consist of:

- Emergency medical conditions
- A list of some 270 diagnosis and treatment pairs
- Diagnosis, treatment, monitoring and medication according to therapeutic algorithms for 25 defined chronic conditions.

Any benefit option that is offered by a medical scheme must pay in full without co-payment or the use of deductibles, the diagnosis, treatment and care costs of the Prescribed Minimum Benefit conditions (unless the benefit option has a defined list of designated service providers for PMB claims that the covered life voluntarily chooses not to use).

An emergency medical condition is defined in the Regulations to the Medical Schemes Act as the sudden and, at the time, unexpected onset of a health condition that requires immediate medical or surgical treatment...

...where failure to provide medical or surgical treatment would result in serious impairment to bodily functions or serious dysfunction of a bodily organ or part...

...or would place the person's life in serious jeopardy.

A medical scheme can offer various supplementary benefits in addition to PMBs, and this will differ by benefit option to cater for the various target markets and product philosophies.

For example, out-of-hospital (day-to-day) benefits that can be paid from risk or a medical savings account and could be subject to overall annual limits, sub-limits or above-threshold limits expressed in per family or per beneficiary units.

In-hospital benefits that can be subject to overall annual limits, sub-limits, above-threshold limits and/or co-payments as long as the claims are not considered PMBs.

Certainty Health Medical Scheme will be governed by Board of Trustees/Principal officer.

Certainty Health Emergency Cover

Certainty Health Emergency Cover is a health insurance product that can be offered by a for-profit insurance organisation.

Both the Short-term Insurance Act and the Long-term Insurance Act provide for medical emergency products...

However, only the Short-term Insurance Act allows for stand-alone Emergency Cover. Therefore, it is likely that the Long-term Insurance Act does not apply to *Certainty Health Emergency Cover*.

The demarcation regulations to the Short-term Insurance Act allows for the following accident and health policy: Medical emergency contracts...

...a contract in terms of which a person, in return for a premium, undertakes to provide policy benefits if a health event contemplated in the contract as a risk event occurs; and...

...the purpose of which is to cover the costs of or provide emergency evacuation or transport to a medical treatment facility; or...

...cover the cost of emergency medical treatment.

The definition of an emergency is not specified in the Short-term Insurance Act nor in the demarcation regulations to the Short-term Insurance Act, and therefore *Certainty Health Pty Ltd* needs to compile a clear and concise definition for *Certainty Health Emergency Cover*.

Most health insurance providers are likely to align their definition of an emergency to that of medical schemes which is provided in the Regulations to the Medical Schemes Act.

The definition of an emergency should be crafted such that it caters for the following emergencies:

- Burns
- Head injuries, chest injuries and severe fractures caused by a fall
- Poisoning or a serious allergic reaction that may cause death
- Injuries resulting from a crime, sexual assault, a car accident or an injury at work.

Certainty Health Pty Ltd can also define an emergency in terms of ICD-10 diagnosis codes, for example codes starting with the letters 'S' or 'T' designating that the diagnosis relates to injuries, poisoning and certain other consequences of external causes related to single body regions.

Medical emergency contracts, as defined in the demarcation regulations, do not allow for out-of-hospital benefits, chronic medication or non-emergency in-hospital benefits.

Certainty Health Emergency Cover can be governed by shareholders, directors etc.

- **Product design philosophy and the needs the product aims to meet.**

Candidates were expected to appreciate how these two products meet different client needs as each product serve a different purpose and serve different target markets.

Certainty Health Medical Scheme

The main purpose of a medical scheme is to ease or indemnify the medical expenses caused by adverse changes in health due to either sickness or injury.

The Medical Schemes Act specifically prohibits medical schemes from offering benefits other than those which meet the definition of the business of a medical scheme.

Thus, a medical scheme cannot offer benefits to cover, for example, the income lost as a result of a health event (either directly or the loss of the ability to earn an income in the future) or the costs of lifestyle adjustments.

Medical scheme benefits are based on the medical costs incurred. The extent of coverage will depend on the definition of benefits in the benefit options.

Medical schemes tend to offer several benefit options with members permitted to make an annual option selection. All benefit options are required to offer the Prescribed Minimum Benefits.

Benefits under different benefit options will differ according to:

- the categories included (for example, dental, optometry, specialist consultations)
- the benefit limits per category (which may be defined according to the rand amount or the number of claims)
- overall benefit limits (except on the Prescribed Minimum Benefits)
- deductibles
- co-payments and levies
- provision for member savings
- tariff scale used for reimbursement
- service providers included in the network.

Medical schemes adhere to the principle of social solidarity, which, inter alia, implies that medical schemes are not-for-profit entities...

...which supports the philosophy that healthcare is a basic human right that all should have access to without the need to extract profit.

An underlying principle for *Certainty Health Medical Scheme* is for the Board of Trustees to protect the funds of the members and relies on the principles of open enrolment and there is limited underwriting or risk rating (cross subsidies between young and old, sick and healthy).

Cover is not mandatory, but an employer may decide to make this mandatory for employees and provide subsidies if needed.

Certainty Health Emergency Cover

Generally, health insurance provides coverage for direct income lost, loss of the ability to earn income or a level of income, household expenses such as family care, the costs associated with lifestyle changes, additional unforeseen expenses, the additional burden of debt.

However, *Certainty Health Emergency Cover* is an exception to most health insurance products in that it also aims to ease or indemnify the medical expenses caused by adverse changes in health due to either sickness or injury like a medical scheme – but only in the case of emergencies.

Certainty Health Emergency Cover is an affordable insurance product – much more affordable compared to medical schemes due to a greater ability to underwrite and risk rate as well as due to very limited benefits compared to PMBs.

This product is ideally for those who cannot afford medical scheme coverage, but they are employed with financial capacity to pay less than R800 per month towards emergency cover...

...noting that *Certainty Health Emergency Cover* is not a substitute for medical scheme membership.

Although *Certainty Health Medical Scheme* also provides emergency healthcare coverage (as required by PMB regulations), many additional benefits are covered that go beyond the scope of requirements – the extent of which would depend on the chosen benefit option.

Therefore, *Certainty Health Emergency Cover* does not offer such comprehensive benefits as compared to *Certainty Health Medical Scheme*...

...which enables *Certainty Health Emergency Cover* to better support affordability, making private healthcare more accessible.

It provides clients with the peace of mind that they and their family can access quality private emergency hospital care following an accidental healthcare emergency.

Certainty Health Emergency Cover provides clients with financial security when faced with the significant unforeseen costs of urgent medical care.

Certainty Health Emergency Cover adheres to the principle of mutuality, which inter alia implies this product has a profit requirement...

...which results in a less altruistic product philosophy compared to the not-for-profit nature of *Certainty Health Medical Scheme*.

- **Drivers and nature of claims experience.**

Candidates were expected to appreciate that the two products have one benefit in common (i.e. emergency cases), which would lead to similar claims experience drivers, but medical schemes have various other benefits that would result in a heterogenous collection of claims drivers.

Certainty Health Medical Scheme

Homogeneity

The claims experience of *Certainty Health Medical Scheme* is far more complex compared to that of *Certainty Health Emergency Cover* given that a medical scheme covers far more benefits in addition to emergency cover.

The claims experience can only be truly understood when split by benefit option and benefit type to achieve more homogeneity.

Variability in claim size

The severity of various claim types will be different depending on the claim type. For example, the level of variation in hospital claim severity is different from GP claim severity.

The level of uncertainty will be influenced by the size of the *Certainty Health Medical Scheme* in terms of number of beneficiaries. The larger the risk pool, the less volatile the claims experience is likely to be as random claims fluctuations will be spread among a large group of members.

Internal factors

Claim trends can be influenced by internal factors such as:

- benefit structures, e.g. more comprehensive benefit options may have rich day-to-day benefits driving more frequent claims.
- administrative efficiency, e.g. the use of electronic claims submission by healthcare providers has increased significantly over the past number of years, thereby significantly reducing the delay between the claim service date and the claim payment date.

- contractual arrangements with service providers, e.g. the level of claims uncertainty may also vary depending on whether the scheme is paying claims on a fee-for-service basis or is making use of alternative reimbursement models.
- the characteristics of the population covered, e.g. a risk pool consisting of mostly elderly beneficiaries would lead to a frequent, high-cost claims experience relative to a risk pool consisting of young and healthy beneficiaries.

External factors

Claim trends may also be influenced by external factors such as:

- levels of general inflation
- levels of medical inflation
- currency variations, e.g. certain liabilities such as claims incurred under international travel benefits may be paid in a foreign currency, but should constitute a small proportion of total claims. Equipment, medication and surgical devices may be imported from other countries.
- healthcare provider behaviour, e.g. providers who may be overservicing unnecessarily or submitting fraudulent claims.
- regulatory changes, e.g. medical schemes are no longer required to pay Medical Savings Account interest to members.

Certainty Health Emergency Cover

Homogeneity

Given that this product only covers emergencies that can arise from any accident or trauma events, both the claim amount and frequency of claims are unknown.

However, given that *Certainty Health Emergency Cover* only covers emergencies, the overall claims experience is much more homogenous at product level compared to *Certainty Health Medical Scheme*.

Variability in claim size

The emergency nature introduces a wide variety of possible claim sizes, which will depend on the severity of the event, injuries and required care.

The claim size is also dependent on the definition of an emergency, which is not stipulated in demarcation regulations, and is therefore up to the health insurer to determine.

Internal factors

Claim trends can be influenced by internal factors such as:

- definition of an emergency for claiming purposes.
- benefit structures, e.g. the claim amount can be limited if the product has any overall benefit limits or sub-limits in place.

For example, the product could include a monetary limit per event per individual per annum, or include a monetary sub-limit for prosthesis per annum.

- administrative efficiency, e.g. making use of a case manager to check that the treatment plan is in line with the relevant clinical protocols and cost benchmarks, and assist in negotiating reduced costs with service providers.
- contractual arrangements with service providers, e.g. the tariffs for the emergency transportation services can be agreed upfront.
- the characteristics of the population covered, e.g. a risk pool consisting of many motorbike drivers will result in many high cost claims of motorbike accidents compared to a risk pool of mostly office-based personnel.

External factors

Claim trends may also be influenced by external factors such as:

- levels of general inflation
- levels of medical inflation
- currency variations, which should not be applicable for this product as cover is only valid for emergency cases that occur in South Africa.
- healthcare provider behaviour, e.g. providers submitting fraudulent claims.
- regulatory changes, e.g. changes to the benefit structures such as limits not being allowed for emergency cases.
- fraud – by members and/or healthcare providers.

- **Underwriting and pricing.**

This question is mostly bookwork where additional credit is available for answers being tailored to this specific scenario. The top performing candidates were able to focus their response to corporate-related underwriting factors, and refrain from retail-related underwriting factors.

Certainty Health Medical Scheme

Candidates were tempted to focus too much on medical scheme underwriting given that the course notes present significant detail on this topic and given that this topic has been examined frequently in the past.

The top performing candidates were able to plan their answers, striking a balance between the two products, and therefore arriving at the conclusion that a summary of medical scheme underwriting should be sufficient for this question.

Medical schemes are required to accept anyone who applies for membership (open enrolment).

Furthermore, all medical schemes are required to charge members the same contribution amount regardless of age or state of health (community rating).

Contributions can only differ by number and type of dependants and/or income.

Regardless of the broker pitching *Certainty Health Medical Scheme* to a corporate client (as a group scheme), the contributions would not differ to that of a retail (individual) client.

To protect schemes against potential adverse selection that could occur as a result of guaranteed acceptance and community rating...

...schemes may impose one or both of the following waiting periods on new members in certain circumstances:

A general waiting period of three months, during which no benefits are payable.

A condition specific waiting period for a maximum of twelve months, during which no benefits are payable for a condition for which medical advice, diagnosis, care or treatment was

recommended or received within a twelve month period prior to the date of application for membership.

However, the risk of anti-selection is reduced in the case of a corporate client...

...and therefore *Certainty Health Medical Scheme* may waive these waiting periods in reaction to the reduced risk of anti-selection.

A late joiner penalty may be applied to the portion of a member's contributions related to the principal member or a dependant who joins a medical scheme after the age of 35.

Such penalties may continue to be applied following the transfer of a member to another medical scheme.

The Healthcare Actuary and the broker need to refer to the underwriting policy of *Certainty Health Medical Scheme*, which is likely to stipulate the conditions of underwriting waivers.

The regulations as it pertains to underwriting represent the maximum and can therefore be selectively applied.

The *Certainty Health Medical Scheme* should also take into account what competitors would do in terms of underwriting when they generate a quotation for a corporate client.

Certainty Health Emergency Cover

Full medical underwriting is permitted in the insurance environment.

Although industry agreements apply to some areas of underwriting such as HIV testing.

Insurance premiums can be differentiated by factors such as age, gender and health status – but this mostly applies to the retail market. For a corporate client, it will be customary to quote a single premium per employee per month...

...as is typically done in group business due to reduced risks of anti-selection and the ability to price on a group basis.

Some applicants may be declined cover either due to age (e.g. those older than 65) or due to their profession (e.g. professional sport).

The group rate can be priced using many rating factors including its past experience.

Health insurance policies covered by the demarcation regulations may not be subject to individual risk-rating based on health, age, gender, etc.

Effectively, the policies must be group risk-rated.

This is generally applied based on age at entry and some caps on the maximum age of cover exist.

Insurers are also limited in their ability to include pre-existing condition exclusions and to cancel cover in respect of these policies.

An important feature of any rating structure is that risks should be separated into broadly homogeneous sub-groups so that premium rates are appropriate to the experience of each risk group, and hence are broadly equitable between the policyholders in different risk groups.

The choice of rating factors is heavily constrained by the rating factors currently used in the market and the reliability of data to support alternative rating factors.

However, new rating structures will be required from time to time. These may be based purely on subjective views on the possible rating factors or follow a detailed analysis after a period of collecting data on such factors.

In general, underwriting differs by health insurance product, and it is unclear whether *Certainty Health Emergency Cover* has a more lenient or strict underwriting policy.

In a group scheme setting (or corporate client industry), it would be beneficial to have a less stringent underwriting policy – especially if this will be weighed up relative to *Certainty Health Medical Scheme*, which has a more lenient approach to underwriting...

...to appear more appealing relative to *Certainty Health Medical Scheme*, and to appear more competitive relative to other potential health insurance offers.

- **Reinsurance.**

This question examined the candidates' understanding of:

- *The reinsurance limitations in the medical scheme environment from a regulatory and principle point of view – even though there might be scope for risk-sharing arrangements; whereas*
- *The health insurance environment is more prone to reinsurance arrangements from a regulatory and principle point of view, but this particular product has less scope for risk-sharing given the limited range of benefits.*

Certainty Health Medical Scheme

There were some instances in the late 1990's where individual insurers made increasing use of reinsurance which resulted in profits being extracted from medical schemes.

The Registrar instituted onerous information requirements and has accepted a limited number of reinsurance contracts in recent years and rejected most on the grounds of sufficient scheme reserves to protect the members from adverse experience.

Some of the onerous requirements are stipulated in the Standards of Actuarial Practice note, SAP302, such as:

- The agreement is in the interests of the medical scheme and its members.
- The agreement is appropriately priced.
- The terms of the agreement are such that the agreement operates as intended.

The volume of reinsurance in the South African medical scheme environment has since decreased substantially. There is practically no reinsurance market for medical schemes as the limited number of approved contracts has made it unviable for the reinsurers to operate in this market.

It is therefore unlikely that *Certainty Health Medical Scheme* has a reinsurance treaty in place.

However, it is not to say that *Certainty Health Medical Scheme* has no scope for reinsurance opportunities, which would be driven by areas of excessive claims volatility and/or areas lacking credible claim predictability.

There are a limited number of medical schemes that are large enough such that claims volatility is likely to tend to claim predictability...

...but given that *Certainty Health Medical Scheme* is one of the largest open medical schemes in South Africa, claims volatility should be minimal.

The Medical Schemes Act currently defines solvency levels in terms of gross contributions, with no allowance for reinsurance. There is therefore no solvency benefit if reinsurance is obtained.

Certainty Health Emergency Cover

The Long-term and Short-term Insurance Acts allow reinsurance to reduce the solvency requirements of the insurance company, *Certainty Health Pty Ltd*, should reinsurance be obtained.

This means that reinsurance can be employed for the purposes of reducing new-business strain, improving the statutory solvency position and facilitating business growth...

...which is ideal for *Certainty Health Emergency Cover* as this product has gained significant market share over the last few years, thereby still in a growing phase faced with significant new business strain and excessive claims volatility.

There are some features of the health insurer market that leads to a greater reliance on reinsurers to help to develop and price these products, such as:

- New product designs and definitions
- Products tend to be more differentiated and unique to the client's needs
- They are sold in smaller volumes
- Limited pricing data is available for these products

As *Certainty Health Emergency Cover* is exposed to hospital claims while in a growing phase, there is scope for reinsurance given that hospital claims can vary considerably by number and size relative to other forms of healthcare.

Certainty Health Pty Ltd could use claims data from the *Certainty Health Medical Scheme* to assist with pricing and reduce the need for reinsurer expertise.

In addition, a reinsurer may provide valuable pricing assistance at the early stages of the product, but may follow the fortunes of *Certainty Health Pty Ltd* when the product has stabilised and started to produce consistent profit margins.

Types of reinsurance that could be appropriate:

- *Certainty Health Pty Ltd* may choose to purchase **quota share** reinsurance for *Certainty Health Emergency Cover* in order to protect itself from uncertainty that may be inherent in the start-up of a relatively new product.
- **Excess of loss** treaties could cover all hospital claims in excess of a rand amount, and up to a maximum limit. This would be subject to an overall maximum for the year. Such an arrangement would reduce claims fluctuations and limit the effect of catastrophes.
- **Aggregate excess of loss** would be attractive to *Certainty Health Pty Ltd*, but the product is rarely if ever available in South Africa. Such an arrangement would reduce claims fluctuations and limit the effect of catastrophes.

Certainty Health Emergency Cover only offers one benefit that can be reinsured, which implies any reinsurance treaty would result in the whole product being reinsured...

...whereas other products, like *Certainty Health Medical Scheme*, offer an array of benefit categories of which some or all can be reinsured – depending where the need, risk or claims fluctuation arise.

[Total 50]

1(b) Discuss what you would respond to the broker.**[10]**

Candidates generally answered this question well by identifying the factors to consider and discussing each of these within the context of the products and potential client needs.

The response would address the following factors:

- Affordability;
- Participation;
- The expressed need vs true need of the client;
- Regulatory landscape;
- Advice vs recommendation.

Affordability

While healthcare is a basic requirement, the South African population is diverse in its affordability levels such that not all South Africans can afford to access the private healthcare industry.

This gives rise to a primary level of healthcare demand from those with lower affordability levels - with additional private healthcare services demanded by those with higher affordability levels.

This particular corporate client currently has uncovered employees, which likely means that these employees have affordability constraints that prevented them from obtaining medical scheme coverage thus far and are likely to rely on the public healthcare sector for their current healthcare needs.

These employees are, therefore, likely to have primary levels of healthcare demand, which should be satisfied by the *Certainty Health Emergency Cover*.

The value of healthcare cover for the employees will depend on how the cover will be funded.

If this particular corporate client intends to fund the regular premiums or contributions for the employees (in full or in part) as an employee benefit, the employees will have a significant improvement in cover from public to private at no or little cost.

However, as companies have moved to a cost to company approach over time, it is rare that an employer would fund medical scheme contributions (in full or in part) given the high contribution levels.

But given that a product such as *Certainty Health Emergency Cover* is more affordable compared to a medical scheme, there is a higher likelihood that the corporate client may consider funding the premiums (in full or in part).

Participation

The final recommendation needs to take account of the participation of the corporate client's uncovered employees as this could impact the premium charged for the *Certainty Health Emergency Cover*, as well as the underwriting measures applied by either option.

For example, if the corporate client's uncovered employee base is larger than, say, 50 employees, and they intend to take-up *Certainty Health Emergency Cover* on a compulsory basis, *Certainty Health Pty Ltd* may elect to discount the premium (to an extent that is commensurate with the anti-selection risk reduction) and/or waive underwriting in full or in part.

However, participation does not affect the contribution level of the chosen benefit option offered by *Certainty Health Medical Scheme*, but it could affect underwriting.

For example, if the corporate client's uncovered employee base is larger than, say, 50 employees, and they intend to join the *Certainty Health Medical Scheme* on a compulsory basis, the scheme may elect to waive underwriting in full or in part, with no changes in contribution levels.

The expressed need vs true need of the client

The employer indicated that only emergency healthcare coverage is required, which *Certainty Health Emergency Cover* meets exactly.

Although *Certainty Health Medical Scheme* also provides emergency healthcare coverage (as required by PMB regulations), many additional benefits are covered that goes beyond the scope of requirements – the extent of which would depend on the chosen benefit option.

The expressed need of the client might not be the same as the true need of the client as the decisionmakers of the employer might not be healthcare experts to understand the true need of their employees.

In general, a high level of consumer education is necessary and this might apply to the decisionmakers of the corporate client, and also certainly applies to the uncovered employees who most likely have not accessed the private healthcare market before.

The true healthcare needs of the employees will depend on the industry in which the corporate client operates (e.g. mine workers would require more comprehensive healthcare compared to office-based employees).

The true healthcare needs of the employees will depend on the demographic profile of the employees (and whether their dependents would be covered as well). For example, the healthcare needs are significantly different from an employee group that mostly consists of females in their 20's, compared to a group that mostly consist of males in their 50's.

Regulatory landscape

The future lifespan of health insurance products, such as *Certainty Health Emergency Cover*, are uncertain given the pending Low-Cost Benefit Option (LCBO) regulations.

It can reasonably be expected that once the Council for Medical Schemes (CMS) approve the LCBO regulations, that health insurance products, such as *Certainty Health Emergency Cover*, would have to be phased out and cease to exist.

At such a time the *Certainty Health Medical Scheme* can introduce a LCBO, which should offer more benefits compared to *Certainty Health Emergency Cover*, but fewer benefits compared to the least comprehensive benefit option of *Certainty Health Medical Scheme* at an affordable price...

...which would grant an opportunity to move the employees as policyholders of *Certainty Health Emergency Cover* (if the corporate client opted for this product) to members of the *Certainty Health Medical Scheme's LCBO* to avoid any break in cover.

Advice vs recommendation

Actuaries may not give advice, and may only provide information to assist with decision making in the form of researched and modelled forecasts with alternatives considered and weighed up against each other.

The main factor that influences a client's decision on healthcare funding is the advice of the broker, which they are allowed and accredited to do according to the Financial Advisory and Intermediary Services Act.

The role of the actuary is to assist the broker to understand the relative advantages and disadvantages of the two products for this particular client...

...while the broker is ultimately responsible to give sound advice based on research of facts.

[Total 10]

QUESTION 2

2(a) Define and briefly explain each of the following terms referenced in the figures above:

2(a)(i) Average Consumer Price Index

[2]

The candidates generally displayed a satisfactory understanding of the Consumer Price Index. While there were notable instances of insightful responses, some common mistakes related to the calculation process and the components of the CPI basket were identified. It is recommended that candidates further enhance their understanding of these areas to ensure more accurate and comprehensive responses in the future.

The average price level of all those goods and services bought by a typical consumer or household.

It is an index that measures the average increase in the prices of a predefined basket of goods and services over a specific period. The basket of goods typically includes essential items that are representative of the average consumer's purchases, such as food, healthcare expenses, and other common consumer goods.

CPI reflects changes in the prices of goods and services and is commonly used as an indicator of inflation within a country.

The “average” contemplated in the Average Consumer Price Index refers to the average change in the Consumer Price Index year-on-year (while the index is typically recorded on a monthly basis).

The average is an unweighted (or “straight”) average, where the price index in each month is given equal weight.

Healthcare Actuaries often start their assumption-setting process with a consideration of the historic changes in the Consumer Price Index and published forecasts of the future Consumer Price Index to serve as the best proxy for the historic and future levels of General Inflation.

The publication of CPI data is typically done by relevant statistical agencies (such as Stats SA), making it accessible to the public and serving as a valuable tool for monitoring and analysing economic trends.

Interest rates can have an influence on CPI. For example, lower interest rates may stimulate consumer spending, potentially leading to increased demand for goods and services and driving inflation upward.

2(a)(ii) Average Medical Inflation

[2]

The candidates demonstrated varying degrees of understanding regarding medical inflation. While there were candidates who provided accurate and insightful responses, there were also common mistakes made, such as:

- *the incorrect link to medical scheme inflation (medical inflation pertains to the broader healthcare industry, while medical scheme inflation refers specifically to increases in medical scheme contributions) and*
- *imprecise definitions (some candidates provided vague or incomplete definitions of medical inflation, failing to highlight the specific components or factors involved in its calculation).*

Medical inflation refers to the increase in the cost of healthcare goods and services over time.

South Africa does not have an official and/or reliable medical price index – at least not one that is a relevant benchmark for the South African medical scheme industry.

Although StatsSA publishes various medical-related inflation metrics, including medical products inflation, medical services inflation and inflation for insurance connected with health...

...the medical component of Consumer Price Index, as published by StatsSA, is not necessarily a good indicator of cost increases for medical schemes.

It consists of a basket of medical services which includes the price increases of medical schemes themselves.

The basket reflects pre-paid and out-of-pocket expenditure by the population according to income levels.

It also includes user fees in hospitals and the use of traditional healers.

The average change in the cost of a basket of healthcare goods and services over a specific period represents the average medical inflation for that period.

Therefore, it is not representative of the inflationary increases underlying medical scheme contribution increases which comprise underlying price inflation, utilisation increases and demographic impacts on claim costs such as ageing and increasing levels of chronicity of the population.

Medical inflation is typically higher than consumer price inflation (CPI) by around 1-3%. The trend of medical inflation being higher than CPI changed in 2021 due to the impact of the COVID-19 pandemic, which led to decreased healthcare demand and lower medical inflation rates in 2021 and 2022.

The “average” contemplated in the Average Medical Inflation refers to the average change in the cost of medical products, medical services and/or health insurance premiums year-on-year (while the index is typically recorded on a monthly basis).

2(a)(iii) Single Exit Price Adjustment

[2]

The candidates' performance on this question was varied. While there were candidates who demonstrated a solid understanding of the concept and provided accurate explanations, others had misconceptions and inaccuracies in their responses, e.g. incorrectly stating that the SEP includes dispensing fees or that pharmacies can charge above the SEP for medication. The overall performance of the candidates was moderate, indicating room for improvement in understanding the SEP and its intricacies.

The Single Exit Price Adjustment (SEPA) refers to price increase of medicines and scheduled substances. The Single Exit Price (SEP) increase is therefore the inflation of medicine prices.

The SEP and SEPA are regulated by the government (in terms of the Regulations relating to a Transparent Pricing System for Medicines and Scheduled Substances published in terms of the Medicines and Related Substances Act) and published by the Minister of Health.

SEP can be thought of as the price at which a pharmacy buys medicines from the wholesaler. A medicine may not be sold by a wholesaler at less than the published SEP.

Government allows for an annual increase in SEP.

The SEP adjustment takes into account various factors, such as currency fluctuations for imported medicines, changes in demand, and the cost of providing the medication.

SEPA only applies to the private sector and not the public.

SEPA represents a maximum increase, while in practice medicine prices can be increased at a rate less than SEPA.

2(a)(iv) Average Medical Scheme Contribution Rate Increase**[2]**

Candidates generally demonstrated a satisfactory understanding of the average medical scheme contribution rate increase. They grasped the concept and recognised the factors driving the increases. Notable aspects included insights into the consideration of individual benefit options, the likely different increases seen in the open vs restricted medical scheme market, and the impact of external factors on contribution adjustments (such as the COVID-19 pandemic that introduced the trend of deferred increases). However, some candidates fell short in providing specific explanations.

The average medical scheme contribution rate increase refers to the year-on-year price escalation of gross contribution amounts on a per life per month basis...

...and was typically above the Consumer Price Index and tariff inflation prior to the COVID-19 pandemic...

...and recently below Consumer Price Index and tariff inflation after the COVID-19 pandemic as scheme reserves are utilised to fund the contribution increase in part.

Average Medical Scheme Contribution Rate Increase comprise of several key elements; namely:

- General inflation
- Medical inflation
- Single Exit Price adjustment
- Tariff increases
- increased utilisation resulting from growing awareness of benefits available
- ageing
- new technology
- adjustments to address long-term sustainability needs.

The Council for Medical Schemes (CMS) provides guidelines for contribution increases, and schemes must submit their proposed increases for approval.

This metric could be weighted by scheme size (allocating significant weight to the increase implemented by the Discovery Health Medical Scheme and GEMS) or unweighted (allocating equal weight to each scheme).

Often this metric is incorrectly referred to as ‘medical inflation’.

2(a)(v) Average Tariff Increase

[2]

The candidates exhibited a commendable level of knowledge and comprehension regarding the average tariff increase in healthcare. In addition, some candidates demonstrated an understanding of the negotiation process between medical schemes and providers and how this impacts the tariff increase.

Tariffs are the fees and prices charged by healthcare service providers for medical goods and services which are generally reviewed in South Africa on an annual basis with new prices effective from the start of the calendar year.

The “average” represents a single figure across all medical schemes and all benefit options.

In addition, the average tariff increase represents the average annual increase in tariffs across different healthcare service providers.

Such a figure is typically not publicly available, but is internally available to each medical scheme.

Healthcare providers increase their rates annually due to rising expenses and overhead costs driven by inflation.

Tariff increases can be negotiated by medical schemes, resulting in increases that are often less than the average medical inflation increases.

The tariff increases may differ by scheme and by benefit option and by discipline.

[Total 10]

- 2(b) Explain how you would rely on each of the metrics referenced in the above figures to set financial assumptions for short to medium term forecasting purposes, and how you might go about setting the assumptions. Your explanation should include how these metrics relate to each other. [10]**

The candidates demonstrated some understanding of the metrics involved in setting financial assumptions for short to medium term forecasting in the medical scheme industry. Their responses reflected a good grasp of the interrelationships between the metrics and their significance for accurate forecasting.

However, some candidates did not consider the impact of pre-COVID experience, relying solely on recent years' data, while others did not appreciate the impact of provider negotiations. A common mistake observed among candidates was providing vague descriptions of the relationships between the different metrics, lacking specificity in explaining the mathematical relationships that can be expressed with formulae.

General

A guidance circular is published by the Council for Medical Schemes each year prior to the assumptions having to be set – these provide industry-specific considerations, guidelines and maximum increases allowed.

Assumption-setting must comply with the requirements of the Advisory Practice Note (APN303), on the adequacy of contribution increases, published by the Actuarial Society of South Africa (ASSA).

The purpose for setting these financial assumptions is to perform a multi-year forecast of *Clarity Medical Scheme's* financial position, but the Healthcare Actuary should be aware of the increasing funnel of doubt when performing such a forecast over the long term...

...given the short-term nature of medical schemes and the various external factors than can influence the financial assumptions, and by implication, the forecast.

The Healthcare Actuary should therefore focus efforts on a short-term forecast (i.e. with respect to the following calendar/benefit year), while showcasing long-term forecasts separately noting the reduced credibility.

Average Consumer Price Index

General Inflation serves as a base for setting other financial assumptions, for example Average Medical Scheme Contribution Rate Increase = General Inflation + Utilisation increases + Margin.

The best estimate of the future Consumer Price Index assumption is calculated as the difference between the nominal and real yield curve at the point corresponding to the duration of the liability. This difference is then adjusted by an inflation risk premium to make appropriate allowance for the current economic environment—this could range between 0% and 0,5%.

It is preferable to base these assumptions on best estimates of future experience. There is always an element of uncertainty regarding this and it may be prudent to make explicit provision for the possibility that future experience is worse than assumed in the pricing.

The size of the contingency margin will be influenced by the extent of the uncertainty, by the size of the option and the scheme, and by the current solvency levels of the scheme.

The patterns of inflation should be taken into account.

The Consumer Price Index assumption would typically be applied to non-healthcare expenditure to increase expenses appropriately.

Average Medical Inflation

South Africa does not have an official medical price index, and therefore the consumer price index is used to estimate price increases in the healthcare sector.

Although medical inflation metrics are published by reputable statistical bureaus like StatsSA, these are not reliable in the medical scheme industry.

Medical cost inflation rates are high and variable, and most of the drivers are completely outside the control of the medical scheme.

New developments in medical technology and medicine emerge continuously and have a direct impact on the price at which medical care is delivered.

Single Exit Price Adjustment

The Single Exit Price Adjustment will be used to estimate the changes in prices of medicines.

Historic Single Exit Price Adjustments need to be investigated and benchmarked relative to the consumer price index...

...as the margin between the Single Exit Price Adjustment and the consumer price index might be more stable and predictable than the magnitude of the Single Exit Price Adjustment itself.

As the pharmaceutical industry are more exposed to other currencies, the exchange rate relative to the consumer price index needs to be taken into account...

...for example, rising inflation while the exchange rate is weak would necessitate a higher Single Exit Price Adjustment.

However, the demands of the pharmaceutical industry are not always heard by the government's medicine Pricing Committee, introducing a subjective and unpredictable component in the Single Exit Price Adjustment.

Average Medical Scheme Contribution Rate Increase

While annual contribution increase has consistently surpassed Consumer Price Index, the actual average contribution increase rate for the 2021 and 2022 benefit years are below the average Consumer Price Index rate.

This is due to the industry implementing contribution increases below Consumer Price Index.

The lower than Consumer Price Index contribution increases is mainly due to a concerted effort of the industry aimed at providing financial relief to members grappling with the adverse economic effects induced by the COVID-19 pandemic...

...and shedding excess reserves due to claim utilisation (and therefore total costs) being lower than expected or lower than budgeted for.

As South Africa does not have an official and reliable medical price index, the Consumer Price Index is used as a proxy measure for affordability of contribution increases.

Utilisation has increased steadily for many years and may be driven by factors such as:

- increasing awareness regarding access to benefits
- changes in referral patterns by doctors
- changes in the definition of diseases
- underlying ageing among the membership
- increasing chronic disease burden among the membership above that implied by ageing
- anti-selection

- increased prevalence of high-cost conditions.

Changes made to the benefit structure for the new benefit year will have an impact on expected claims experience for that year.

Owing to community rating, the financial performance of a benefit option is sensitive to any change in the risk profile of beneficiaries that was not anticipated in the pricing. Careful consideration therefore needs to be given to possible changes in the risk profile at the start of, or during, the benefit year. The two most important risk factors to consider are usually the age profile and the proportion of beneficiaries suffering from chronic conditions.

Claims costs are expected to increase by between 1,5% and 3,0% for the same set of benefits per year of age. Therefore, if a scheme has a membership base whose average age increases each year, claims can also be expected to increase further as a result of this ageing.

Therefore, estimating the contribution rate increase for a single medical scheme requires a detailed actuarial model...

...but to estimate the contribution increases of more than one medical scheme (let alone the entire industry) for a competitive benchmark is a difficult task to perform accurately.

Average Tariff Increase

In recent years, the reviewed prices have normally not been finalised in time for incorporation in pricing and the new prices therefore must be estimated for the pricing exercise.

Typically, the estimation for the increases taking effect on 1 January is performed during July and September of each preceding calendar year, requiring an estimation of general inflation movements for the remainder of the year, as well as the anticipated tariff increases.

However, with many schemes opting to delay their contribution increases a few months after January, the reliance on? estimation has reduced in these cases.

The estimation of the new prices will use current prices as a base and take into account all relevant available information such as recent consumer price inflation, exchange rate movements, and any preliminary indication provided by the bodies responsible for setting these prices.

The tariff increase negotiations with healthcare providers also take place toward the end of each calendar year...

...the outcome of which also needs to be estimated if the contribution increase is not delayed by a few months after January.

Depending on the negotiation strength of the medical scheme, the tariff increase could be lower than Average Consumer Price Index – typically in exchange for channelling more patients to them.

[Total 10]

- 2(c) In response to the Board of Trustees' request, discuss why there might be differences between the actual and expected parameter values for the financial assumptions. [10]**

Candidates are prepared for questions of this nature in earlier subjects such as the A311 (Actuarial Risk Management) subject. For this question candidates are expected to think along the same lines as in the earlier subjects for such a question, but to ensure the answers are not generic, but specific to the scenario sketched in the preamble, while demonstrating a deep understanding of the South African medical scheme market.

General

Assumptions will never be perfect and will need to have actuarial judgement applied.

The assumptions could have been set to be overly prudent or overly optimistic.

The assumptions could have been set using out-of-date data.

The assumptions could have been set using incorrect data.

The assumptions could have been set based on an erroneous calculation.

The quantum of the differences and the impact on the scheme will help with how much explanation to give (if these are small, less explanation is required).

Average Consumer Price Index

Sampling error: The Consumer Price Index measures price changes based on a representative sample of items (goods and services), so the published indexes differ from estimates based on actual records of all retail purchases by everyone in the index population.

The Consumer Price Index has been criticised for having both an upward bias (overstating inflation) and a downward bias (understating inflation) due to Consumer Price Index estimation omitting consumer substitution, not fully accounting for quality change, and failing to properly reflect the addition of new goods.

There could be changes in the Consumer Price Index baskets which were not taken into account when estimating the Consumer Price Index.

Unexpected events that impact the economy, e.g. COVID-19.

Average Medical Inflation

Given that medical inflation is often confused with tariff inflation or medical scheme contribution rate inflation, the variance can be attributed to using incorrect data to inform medical inflation.

Medical inflation is highly variable, and it can be difficult to predict accurately.

The extent of new medical technology and medicine may have been over- or understated.

There could have been changes in how the medical inflation is measured by StatsSA, e.g. changing the components of basket of the medical services.

Single Exit Price Adjustment

Given the link to Consumer Price Index, if the Consumer Price Index was estimated incorrectly, the Single Exit Price Adjustment would be estimated incorrectly.

Given the correlation to the exchange rate, if estimates regarding the exchange rate were incorrect, the Single Exit Price Adjustment would be estimated incorrectly.

The subjectivity involved by the government's pricing committee could have been a reason for the variance.

Other dynamics not taken into account that influenced the actual Single Exit Price Adjustment, for example:

- Medicines being withdrawn from the South African market.
- The introduction of new medication.
- Changes in the mix of generic vs branded medication in the South African market.

Average Medical Scheme Contribution Rate Increase

The reserve-shedding strategy of the scheme could have been incorporated incorrectly.

The scheme's benefit enhancements were not estimated or incorporated correctly.

The scheme's changes in demographic profile could have been estimated incorrectly such that the change necessitated contribution increases higher/lower than in the past.

Some metrics are impossible to estimate accurately (and will therefore always produce an actual-vs-expected variance) given the complexity of the various internal and external influences.

Average Tariff Increase

Provider negotiations could have concluded at tariff increases below or above expectations.

The estimated Consumer Price Index that informed the tariff increase assumption might have been lower or higher in reality, which implies the mandate for the tariff increase was under- or overestimated before the provider negotiations started.

Not all providers are willing to negotiate, and simply opt for an inflationary increase...

...which might be based on a different economic source.

[Total 10]

2(d) Describe how you would perform this exercise.**[10]**

The Healthcare Actuary would require a forecasting model capable of performing **financial projections**, which would be used to perform an **analysis of change in assumptions**.

Financial projections

The actuary should include at least an annual forecast for each benefit option and combine into an aggregate forecast.

The forecast should include contributions, claims (adjusted for seasonal variation, if modelled monthly) and other expenses.

Claims and other expenses could be sub-divided into subcategories. For example, claims could be sub-divided into in-hospitalisation, chronic medication and other day-to-day medical expenses.

Each sub-category could be further sub-divided, for example, in-hospitalisation costs could be subdivided into hospital costs, professional costs etc.

Each sub-category could also be divided into claims falling within or outside of the Prescribed Minimum Benefits.

Expenses could be sub-divided in a similar manner.

The forecast should make appropriate allowance for membership.

The forecast should make suitable allowance for outstanding and incurred but not reported claims.

The forecast should include a projection of the solvency ratio of the scheme.

The forecast should include a projection of total investment income.

The actuary should further recommend that a pricing review is conducted in the event of significant deviation in experience from the assumptions. This might occur during the first quarter after the implementation of new contributions tables.

Analysis of change in assumptions

The analysis of change in assumptions would represent a similar piece of work such as an analysis of surplus/solvency.

This would involve incremental or step-by-step updates from the assumed values to the actual values, recording the model output at every step.

The number of steps in the analysis of change would depend on the extent that the parameters are dynamically linked.

For example, if the CPI parameter is updated, the Medical Scheme Contribution Rate Increase assumption could update automatically. This would depend on how the forecasting model was developed.

The starting point is to use the base model, which was used to produce the initial set of results. This set of results would be considered the base set of results.

Create a copy of the base model, update the Consumer Price Index with the actual value, and record the updated projected result as a first step.

Create a copy of the first step model (which already contains the actual Consumer Price Index value), update the Single Exit Price Adjustment with the actual value, and record the updated projected result as a second step.

Create a copy of the second step model (which already contains the actual Consumer Price Index and Single Exit Price Adjustment values), update the Medical Scheme Contribution Rate Increase with the actual value, and record the updated projected result as a third step.

Create a copy of the third step model (which already contains the actual Consumer Price Index, Single Exit Price Adjustment and Medical Scheme Contribution Rate Increase values), update the Average Tariff Increase with the actual value, and record the updated projected result as a fourth step.

Continue in this fashion until all the assumptions have been updated with the actual value.

Take the difference of the results (for example, the solvency ratio) of each subsequent step from the base model to assess the impact of the assumptions being updated with the actual values.

The analysis can be expressed in terms of the gross healthcare result, net healthcare result and/or solvency ratio.

To assist the Board of Trustees in understanding the result of the analysis (and taking into account that the trustees might not be a technical audience), visually depict the result in a waterfall graph.

[Total 10]

END OF MARKING SCHEDULE