

Actuarial Society of South Africa

MARKING SCHEDULE

21 MAY 2021

**Subject F201- South African Health and Care
Specialist Applications**

QUESTION 1

Question 1 was considered a straightforward question balancing knowledge, application and higher order and was intended to be approachable for all candidates irrespective of their area of focus in the past year, provided that they had shown some interest in the actuarial work on the pandemic.

It appeared that candidates were relatively well versed on the impacts of the pandemic, with better performing candidates being able to answer the questions specifically and with sufficient technical precision to address the key matters asked in the question. Candidates who reverted to generic analyses did not score well as these analyses could have applied to almost any claims investigation (as an example) and therefore did not demonstrate sufficient application capability for this question.

For the contribution relief question, although many candidates followed good exam technique by separating their ideas and giving advantages and disadvantages, content was often somewhat naïve and generalised.

For what were mostly describe questions, candidates should be mindful to elaborate on their points giving clear explanations and reasoning, rather than single worded or short phrase points. In particular the candidate is reminded of the “action words” which indicate the level of detail expected. A number of candidates did not adhere to this and so were unable to earn marks.

1(i) Explain the differences between an epidemic and a pandemic.

[2]

Most candidates scored well for the question giving accurate definitions and noting the key differences. Some candidates gave overly complicated definitions which were not always accurate and detracted from their performance in this question.

Epidemic

An epidemic is a disease that affects a large number of people...

...within a community, population, or region.

Pandemic

A pandemic is an epidemic...

...that's spread over multiple countries or continents.

The difference between a pandemic and epidemic hinges on the size of the geographic region affected. Pandemics usually affect more than one country.

Epidemics usually have higher incidence levels than expected for a given disease in a population restricted to one location.

[Total 2]

- 1(ii) Briefly outline the assumptions that need to be considered by an actuary to project the progression of a pandemic on a sub-population by means of a multi-state model to estimate the financial impact on various health insurance products. [5]**

This question required candidates to go into detail on multi-state modelling for the disease as it would be applied to health insurance products. This was a bookwork question and drew from multi state modelling in the syllabus. Candidates who were able to demonstrate knowledge of modelling performed during the past year received equivalent credit.

The following is a list of the areas that are likely to be considered by the actuary in projecting the impact of a pandemic on a fund as per APN501.

Incidence Assumptions

Source of infection rates, and rating factors used in the basis.

For example age, gender, calendar year, region, impact of interventions.

Adjustments and basis of adjustments to incidence rates to allow for other relevant rating factors e.g. income or occupation.

Adjustments and basis of adjustments to incidence rates using time leads and lags to allow for regional distribution of the population.

Survival and Disability Assumptions

Disease stage model utilised: different stages, transition model (for example, Exponential or Weibull), durations.

Approach to allowing for treatment: any additional stages used, with their durations, setting of parameters, assumed take up or enrolment rates.

Variation in treatment take up or efficacy with rating factors (e.g. income).

Approach adopted in modelling disease-related disability (incidence and duration, if relevant) and variation by disease stages or other key rating factors.

Effects of underlying health conditions such as co-morbidities and how these might impact the incidence rates and survival / disability rates and durations.

Rates of hospitalisation, where relevant, and recovery rates from the disease.

Transition rates between levels of care (e.g. general ward, high care, ICU, etc).

Population or sub-population Movement Assumptions

Other decrements: non-disease-related mortality.

New entrants: method of deriving risk profile/staging of new entrants; rates of entry (or rates of disease onset).

Interaction between entrants or decrements and health status or other key rating factors.

Other Assumptions

Assumptions regarding numbers or profiles of dependants (spouses, children) impacted by the disease.

External factors which influence the durations and likelihoods mentioned above, e.g. lockdowns, closure of international travel and other measures are likely to reduce incidence rates.

Consider the sources of data (for example different countries) and how this might affect the setting of assumptions.

Population behaviours could also be considered.

Financial Assumptions

Any simplifying assumptions made in modelling risk or benefits.

[Total 5]

1(iii) Describe the investigations you would perform to address the request of the board of trustees considering the following aspects:

- | | |
|------------------------------------------------------------------|-------------|
| a. The expected incidence and prevalence of the new virus | [6] |
| b. Claims expenditure | [15] |
| c. Solvency, including investment performance | [4] |

[25]

The overall question 1(iii) asked candidates to describe the impact of the pandemic on the medical scheme concerned, focusing on incidence and prevalence, claims and solvency (including investments).

The first signpost on incidence and prevalence was an application of the question from part (ii) to a medical scheme and for this pandemic. Candidates tended to struggle to apply the modelling fundamentals to this context. Although they clearly understood what incidence and prevalence rates are, there was limited thinking demonstrated on how to consider measuring these items. Candidates were aware that there would be limited data, at least initially, and that various data sources would need to be relied upon.

Marks were available for candidates who went into more detail on the various models that can be used for modelling incidence and prevalence of the virus.

The analysis of claims was generally well handled. Candidates that performed well were able to be specific about benefit categories impacted and the types of analysis required that would be used to determine the potential utilisation and cost impacts. Stronger candidates also spoke about the impact on elective procedures being avoided or postponed.

Candidates showed a good understanding of the potential impact of the above factors on solvency and the effect of the pandemic on investments.

a. The expected incidence and prevalence of the new virus

The likely progression and prevalence of the virus among the medical scheme beneficiaries needs to be modelled...

...either by means of a multiple state model (with states for susceptible, exposed, infected, recovered, removed)...

...or by means of an agent based model,

...or by means of a compartmental model.

Parameters need to be calibrated by using various statistics...

...including South African statistics on the number of tests conducted, number of confirmed cases, number of deaths, number of recoveries over time...

...which would have a small data volume at the time of performing this assessment...

...which necessitates the use of international data and prevailing literature given that three months of data have been collected thus far...

...but these should be used with caution given the significant differences between countries (e.g. population size and density).

Consider specific demographic or geographical differences of the medical scheme's members compared to the general South African population.

Consider type of occupations covered (if the data is available), for example, if cover for health and hospital workers, there might be a higher claims incidence.

Consider incorporating a progression towards an initial wave, and perhaps a second wave if this has been the experience of other countries.

Allow for the potential change in the level of contagiousness of the disease over time (which could perhaps be the case for new variants).

And allow for the potential change in the rates of recovery for those infected as more is known about how to treat patients infected over time.

And allow for the potential changes in the contact rates between people as knowledge and fear of the virus waxes and wanes.

Incorporate the likely time point that the natural herd immunity might be reached which should be followed by a probable decline in the prevalence.

Consult medical advisors and literature regarding the likelihood of an individual being infected more than once by this virus.

Consider scenarios based on different underlying assumptions for the rate of transmission and the severity of the virus.

Allow for different groups of members to become infected in the modelling, such as elderly people versus co-morbid people to assess the impact.

Update the calculations based on daily / weekly published information on the number of cases tested positive, the number of deaths and the number of recoveries.

[Total 6]

b. Claims Expenditure

Utilisation of certain claim categories is expected to increase, either due to panic purchase to prevent being infected by the virus (especially in the absence of a vaccination)...

...or due to the diagnosis and treatment of the virus.

The actuary should check which medical scheme benefits provide benefits related to the virus...

...and if these are lacking, indicate where the scheme's benefit design should be changed to cater for the diagnosis and treatment of those infected with the virus. This may increase short-term costs but will reduce longer term costs associated with hospitalisation and complications from the virus which may last a long time.

The actuary could furthermore give the Board of Trustees comfort that a disease of this major scale is likely to become a Prescribed Minimum Benefit (assuming at the time of the investigations it has not yet been declared as a PMB)...

...which would require all claims related to the virus to be paid in full.

Preventative measures; for example, flu vaccines

The medical scheme can anticipate increased utilisation of preventative healthcare measures such as flu vaccinations as members want to (or perceive this to) reduce the risk of contracting complications from the virus.

Or decreased utilisation as members fear contracting the virus if they go to healthcare facilities.

The estimated utilisation of flu vaccinations could be based on historic flu vaccine utilisation patterns and the unique age-and-chronic profile of each scheme.

In addition, new and more costly flu vaccinations (that can provide additional protection against the influenza viruses) can enter the market.

Similarly, over time, as the efficacy of the flu vaccine is understood, the demand may reduce.

Diagnostic tests

The medical scheme can anticipate a significant utilisation of diagnostic testing for the virus.

The pathology test can be conducted at State laboratories for free...

...or at private laboratories at a cost (via a doctor referral), which members are more likely to prefer.

Each private laboratory could charge a different rate for the diagnostic test and this information needs to be collected.

A GP consultation will be required for the referral of the test to be performed, and the average cost of a GP consultation needs to be taken into account. A screening assessment of symptoms may be required if a GP consultation is not possible.

The medical scheme has the option to pay for all or some of the diagnostic tests conducted in the private sector.

It is also likely that some testing would be referred to private laboratories due to demand overload in the public sector, especially as new suspected cases start to increase.

An allowance for repeat tests also needs to be allowed for as a protocol could be in place not to release positively tested patients without a confirmed negative test.

Therefore a series of diagnostic tests will apply to patients who initially tested positive: an initial test, a confirmatory test, and a post-symptom test or perhaps even more.

There may also be significant retesting due to suspected false negatives and false positives.

The projection therefore needs to allow for at least three diagnostic tests for every member who tests positive.

Furthermore, Computer Tomography (CT) scans of the chest could be used in assisting with the diagnosis of the virus...

...instead of a specific virus diagnostic test while supply of the tests might be limited, or while the test result is still being processed...

...Or to understand the severity of the infection, which a specific virus diagnostic test cannot provide.

This may typically be required for the elderly with significant lung or cardiovascular compromise.

These scans could also be of use as there is the global shortage of test kits emerging and only one rapid test with limited stock availability.

Unnecessary utilisation is expected to be hindered by the strict eligibility criteria imposed by the National Institute for Communicable Diseases...

...and advice via telephonic consultations which can be offered by government, centres for disease control and prevention, or the World Health Organisation (to advise whether or not medical care is required).

The medical scheme should recommend making use of telephonic consultations or telemedicine to encourage members to obtain the needed information as well as guidance on any of their symptoms and clarity regarding the process that needs to be followed.

The analysis would need to consider the proportion of infections that might be expected to go for tests.

Medication

While there is no cure available for the virus, the medical scheme can anticipate an increased utilisation of over-the-counter and acute medication for preventative measures (such as immune boosters and vitamins)...

...and symptomatic treatment of mild cases.

The actuary needs to engage with clinicians to obtain the applicable basket of medicine for these cases, and the associated cost.

Hospitalisation

The medical scheme can anticipate that some members (specifically high-risk members) who test positive for the virus to be admitted to hospital in a quarantined environment.

Complicated cases may require admission to ICU with ventilation support.

Increased admission rate, ICU level of care and the quarantined environment could contribute to an increase in the overall hospital and related costs.

The actuary can estimate the cost based on the historic hospital cost (and average length-of-stay) associated with pneumonia cases, as well as the unique age-and-chronic profile of the medical scheme.

The actuary can also distinguish between hospital cases without complications, with some complications and with major complications.

An additional allowance can be made for daily isolation fees, which are more expensive than standard ward fees.

Consider the lengths of stay of these cases and the variability of the time in hospital and ICU specifically as this could become a significant cost driver for the medical scheme (if hospitals have capacity to provide care).

Consider the impact of hospitals being shut for elective procedures, and the extent that this positive impact on claims can offset the costs from the virus.

Consider the effects of the virus being once off, seasonal or following other patterns.

Consider the cost of Personal Protective Equipment (PPE) that all healthcare professionals need to wear and bill towards the medical scheme member.

Prescribed Minimum Benefit

Depending on whether the virus is deemed a Prescribed Minimum Benefit, the medical scheme might have to reimburse all diagnosis, treatment and care cost at price.

This could also mean that all diagnostic testing – even if the test result is negative – might have to be paid at price.

Credible statistics need to be sourced of the likely positive result rate... and how this may change over time when cases surge.

Funding the test regardless of result or risk status may be associated with demand driven utilisation.

Virus Vaccination

It is unlikely that a vaccination will be ready during the early stages of the pandemic.

However, the actuary can research the likely cost of a vaccination should it be ready for South Africans. The actuary should also consider the costs associated with administering the vaccination in various settings by various healthcare providers.

The actuary can research whether there will be more than one vaccination available in the market with each pharmaceutical company perhaps charging a different price.

The actuary should monitor CMS communications (or engage them directly) to determine whether the vaccination will be deemed a PMB to be funded at cost.

The actuary should also research whether these vaccinations will be targeted at the ‘not yet infected’ group to reach herd immunity faster, or will it be available for all.

[Total 15]

c. Solvency, including investment performance

The actuary should determine whether the pandemic will have a negative impact on the investment markets to allow for an appropriate reduction in the investment return.

The actuary could urge the medical scheme to engage with their investment consultant to obtain a potential impact on the investment return.

If investment returns are a significant contributor towards income for the Scheme, the future financial position of the Scheme should take a likely reduction in this income into account.

With an expected increased claims burden and a likely poor investment performance, the net surplus position is highly likely to reduce – perhaps even become negative...

...which could reduce the accumulated funds of the medical scheme...

...and reduce the solvency level of the medical scheme...

However the net effect will depend on the relativities of the increased spend on the virus and the drop in other areas of spend.

...but the reduction in the accumulated funds could be offset with any reduction in membership due to virus-related mortality or by the reduction in elective surgery...

... and those who die from the virus may be more likely to have higher claims, on average, as older or with co-morbidities.

...which would prevent significant changes in the solvency ratio.

Given that the medical scheme’s solvency position is strong, it can reasonably be expected that the scheme’s solvency position would be able to withstand the impact of the virus.

However, the reduction in elective hospital procedures could significantly reduce claim costs in the short-term resulting in an increase in solvency. The future increase in elective procedures

and additional claims due to more severe conditions as members avoid care needs to be taken into account for a longer term projection of solvency together with the careful planning of contribution increases.

These factors should all be tested and demonstrated by means of sensitivity and scenario testing.

Consider likely future contribution increases that would be feasible in the context of the expected claims experience and the economic performance of the country.

And consider the possible long term effects of the virus on future claims.

Consider the need to use reserves to fund claims expenditure and the duration for which this may be required.

[Total 4]

1(iv) Identify and evaluate various relief solutions available to the medical scheme during the lockdown period. [18]

This was a higher order question requiring candidates to think about how the contributions could be managed under such a scenario, drawing on knowledge about how medical scheme contributions could be collected where there are no regulatory restrictions (as each deviation from current practice / regulation would need to be approved by the Council for Medical Schemes).

Too many candidates spoke about relief solutions that could be financially disastrous for the scheme without adequate consideration for the short term and long term effects, such as contribution holidays and contribution waivers – without noting that this debt would need to be collected at a future point in time (with far less than 100% recovery!) and by when. Furthermore, the question was focussed on the Scheme whereas a number of candidates discussed subsidy policies and employer actions which was not applicable to the question.

Again, too many candidates spoke about ‘happy’ members as a result of these (potentially disastrous) relief solutions which showed a superficial understanding of managing income.

Candidates generally correctly identified the approach of using medical savings accounts and the implications thereof, as well as of freezing contribution increases for a period.

Some candidates spoke about extreme benefit changes that could be implemented, for example, cancelling all benefits other than for the pandemic and emergency services which missed the point of the question.

The medical scheme should investigate all disruptions to member contributions on a case-by-case basis and determine the merits thereof, prior to termination.

However, the Trustees have a fiduciary duty to manage and administer the medical scheme in such a manner as to ensure its sustainability and continued capacity to conduct the business of a medical scheme in accordance with legislation and the rules of the scheme.

Part of this is to ensure that contributions and claims are paid within the requirements of the Act and maintain financially sound experience.

Trustees must also act with due care, diligence and in good faith and act with impartiality in respect of all beneficiaries to ensure equitable treatment.

Take no action

Take no action – especially if the members are expected to only suffer a minimal impact.

However, this could lead to membership terminations due to affordability constraints.

In this period it would be potentially very detrimental for a member to have to exit the medical scheme at a time when they may need access to emergency medical care.

This is even more relevant in instances where members have positive savings balances and/or the medical scheme has adequate reserves.

Use Personal Medical Savings Account for contribution relief

Fund contributions from the positive balances in the member's savings account.

However, this is not allowable by the Medical Schemes Act.

The Medical Schemes Act states that medical savings accounts may not be used to offset contributions but it may be used to off-set debt owed by the member at the date of termination of the membership or refunded to a member on termination.

The medical scheme would have to apply for exemption from the relevant provision...

...with the basis being exceptional circumstances.

It can reasonably be assumed that this pandemic, and the resulting lockdown, could be considered as an exceptional circumstance in which CMS is entitled to provide exemptions from complying with any provision of the Act, as per provision 8(h).

However, this only applies to the medical scheme benefit options that have a medical savings account.

Allow Downgrades

Medical schemes generally allow members to downgrade to a more affordable benefit option during the year, in order to pay a more affordable contribution.

Although this could reduce the likelihood of a membership termination...

...this does mean lower contributions for members with the "same risk of claiming"...

...which could drive up the claims ratio.

Medical schemes could extend this to allow for opt-outs of network arrangements (which would normally increase the contribution)

Medical schemes can also allow for upgrades to higher costing options if the current out-of-pocket healthcare expenses are contributing more to the affordability of contributions than the contribution level.

Use Reserves for contribution relief

Utilise Scheme reserves to fund the contributions (in full or in part)...

...provided the solvency position is strong enough to withstand such depletion.

"Strong enough" solvency could imply that the medical scheme should still have a solvency ratio in excess of 25% after the contribution relief is provided.

This solution would require a rule change (stipulating how the contributions will be reduced) that CMS needs to approve. This is effectively a contribution reduction where the excess claims will be funded from reserves followed by a contribution increase at a later stage to continue to meet claims incurred and halt the reduction in reserves.

The medical scheme would have to apply for exemption from the relevant provision...

...with the basis being exceptional circumstances.

It can reasonably be assumed that the pandemic, and the resulting lockdown, could be considered as an exceptional circumstance in which CMS is entitled to provide exemptions from complying with any provision of the Act, as per provision 8(h).

The medical scheme should be aware of the risk: it could take years for the medical scheme to revert back to the same solvency position.

In addition, this option would create an expectation of further relief should the lockdown be extended.

Allow temporary contribution relief by means of a debt solution

Consider a structured debt solution (payment plan) where the member can fund the unpaid contribution at a later stage.

The Medical Schemes Act makes some provision for the medical scheme to make a loan available to the members “to meet commitments in regard to any matter specified in the definition of business of a medical scheme”.

There may be a large burden of debt should the members remain unable to pay.

A number of companies and SME’s were under pressure before this period so the Trustees would need to consider the possibility of a default in the recovery in the deferred contributions; which may impact on the sustainability of the Scheme.

The extent of this risk will vary based on the length of the deferment and the impact of the lockdown on the industries where the members operate – e.g. a franchise of a food company is required to be closed in this period. And the ability to recover the debt from the medical savings account balances

Waive contribution increases

The medical scheme could consider providing relief to its members by not implementing an annual contribution increase.

This should only be possible if the medical scheme has a strong solvency position...

...as this relief solution is similar to using reserves for contribution relief.

Although it may be actuarially justifiable if the claims experience has changed over the period due to people avoiding / missing / postponing medical consultations and services such that an increase is not required.

But the actuary needs to consider the potentially rapid increase in utilisation after the pandemic and whether contributions would need to catch up with claims inflation in subsequent years which could lead to large contribution increases.

Ex-gratia payments to offset contributions

Medical schemes can also use ex-gratia payment to financially assist their members.

Ex-gratia payments are essential, in that they are used to ensure that members meet their obligations in order to receive healthcare services. Claims that would not normally be covered by the scheme could be paid on an ex-gratia basis to limit the out-of-pocket expenses a member faces and increase the likelihood they could continue to pay the medical scheme contributions. This does, however, need to be done in an equitable way and in line with regulations. This will be more likely in a restricted medical scheme.

Moreover, the definition of a business of a medical scheme does not cover ex-gratia payments by medical schemes to offset contributions.

[Total 18]

QUESTION 2

This question was considered to be relatively difficult given the unusual nature of the benefits and the micro-insurance element, implying a need to pivot thinking into resource constrained environments for customers who want some improved level of access to health insurance in a simple and cost effective transaction which was through purchasing airtime.

Candidates applied themselves reasonably well, with many showing a decent grasp of the overall product structure and working their way through the product development processes for each solution.

Many candidates applied traditional insurance risk management mechanisms which may not necessarily work well in these contexts, such as full medical underwriting. Candidates were expected to think more broadly about the context and use their knowledge about health and care products to come up with other ways to manage risk that would be more suitable for this situation.

It is noted that there was some impressive thinking around systems and technology for Question two - it is encouraging to see awareness and application to this important practical area of healthcare practice.

2(i) Describe how you as the consulting actuary to the joint venture would establish the viability of this solution.

Your answer should address the value of benefits, cost of implementation, and overall financial viability. [15]

Part (i) asked candidates to focus on 3 aspects of assessing the viability of the first product – many candidates did not use the signposting given in the question and therefore did not cover all the aspects (or spoke about aspects that were not relevant to the question). A few did not understand that the benefit is an accumulation to a voucher, so users spend a predetermined amount of money, not a fee for service arrangement (nor can they spend more than the accumulated amount).

Answers were generally light on the assessment or value of benefits, while some candidates focused on the regulatory environment which was not asked for by the question. Some candidates gave general discussions about the features of micro health insurance products, but not the specifics of this product.

On the costs side, better candidates identified that there were no underwriting and other onboarding complexities (and hence costs) associated with a traditional insurance product.

Value of benefits

We would need to establish the cost of the treatments that are likely to be used

Use existing data from Melas to approximate the mix of utilisation of various providers across different countries where there is already a solution

Since this is aimed at primary care providers one would focus on GP consultations, acute medication, optometry, dentistry, etc

For each market you can estimate the cost per life per month for each benefit and then the basket of goods

The range of baskets based on the existing footprint can then be compared to establish if there is any commonality across regions

Further one would need to consider the likely needs of the people of the countries of interest to establish the likely specific mix for the target market

For example, there may be a propensity for more optometry benefits which come at a higher average cost than GP benefits

Which affects the likely minimum voucher cost that would be demanded by the target market, which affects the viability /utilisation

One would need to consider making suitable adjustments for the unique profile of the countries

In order to do this one may reference external data from sources such as the WHO, Country specific reports and other suitable references...

... which are appropriate to the market segment under review

... now that the likely voucher cost has been established.

Cost of implementation (expenses)

There would likely be some systems development to be able to link the mobile contract to the benefit.

This would include the mechanism to generate the voucher which would likely rely on a unique voucher code / QR code.

And the mechanism for the providers to redeem the voucher with RisaCom.

This may require the development of a linkage between RisaCom and the banks of the providers.

Development would be required to track and monitor the usage of the benefits to refine the benefit basket and allow for future refinement...

... and the build up of the benefit and redemption of vouchers against this accrual

One may consider using existing Alastria/RisaCom systems thus minimising the costs

It is likely that the activity per user is already being monitored so this would not be an issue; it would be trivial to record the duration of the contract

Further there would be a cost associated with the launch of the solution and ongoing administration

Here the JV would want to consider minimising these costs by making the administration almost fully digital

However, there would be a need for some level of human intervention and thus a call centre – which would be an ongoing cost and not once off

In addition there would be an ongoing cost for the development and maintenance of the solutions including finance, actuarial and clerical staff, for example

In order to establish these costs one could leverage off the existing costs of the various departments and make the appropriate allocations

...now that one has the expense base.

Financial viability

Since the solution would be embedded into the existing contracts one would need to establish what margin is available to fund the additional benefits

This is not fully available for funding the benefit, but a proportion would be allocated over time to fund the benefit while the member is active on the contract

This is a percentage of the credit loaded on to the contract

Consideration needs to be given to the following:

The time to build up a suitable balance to buy a voucher that would meet the needs of the consumer

And the likely demand for multiple vouchers to meet the needs of the consumer

However, this may not be of too much concern as this is a “free” benefit so should not be material

Unless the time between the start of the benefit and the accrual of the benefit is too long

The average duration of the consumer on contract currently

If there would be a change in the duration of the contract if the benefit was added

And if this would then affect the margin that the contract would generate

You would thus need to model a number of scenarios in order to establish the correct balance of margin utilisation to benefit generation duration to establish the profitability and so the viability of the solution

In addition to this you would need to consider any additional volumes of contracts (i.e. increased market share) or credits loaded to the contract

...which could generate margins elsewhere in the contract that could cross-subsidise the benefits

[Total 15]

- 2(ii) Describe in detail the process you would undertake to develop the product to launch into the market. Consideration should be given to the following aspects:**
- a. the legal or regulatory environments** [5]
 - b. benefits and underwriting** [4]
 - c. systems and claims processes** [8]
 - d. claims costing and rates to charge** [10]
 - e. other cost implications.** [2]
- [29]**

Part (ii) asked about the second product, under several headings for the product development assessment to be done. Candidates generally handled the regulatory considerations well, although missing more 'obvious' points about insurance specific requirements such as solvency.

Candidates struggled to deal with specifics not given about the product, for example if the benefit was paid directly to the policyholder or the service provider - better candidates could identify each possibility and discuss these under the relevant headings.

Many candidates missed that there is very limited scope to do underwriting given the nature of the product, referring to conventional underwriting options such as full medical underwriting, medical questionnaires, and age rating which are not possible with this product structure and mode of purchase.

Candidates tackled the systems part of the question quite well, identifying relevant system requirements and considerations given the product structure and joint venture.

On the claims costing, candidates could have gone into more detail about the various underlying benefit costs and how these might vary, as well as how to cost for them.

a) Legal or regulatory environments

A critical starting point would be to ensure that a solution of this nature would be legal in the region of the target market

We are only told that the insurer is based in a country that has an established health insurance environment.

Therefore, one would need to investigate the in country legal frameworks for this solution for each country

This includes the details of the insurance and health insurance legislation.

Here it would be important to ensure that the correct legislation is adhered to and the correct licence is used

Similarly, one would need to know and conform to any Financial Condition Requirements

As there is likely to be a minimum solvency requirement:

- Such as a percentage of premium income,
- A risk based capital assessment or,
- A defined Solvency Capital framework subject to a level of Minimum Capital Requirements

Furthermore, given the distinction between health and the mode of airtime sales there may be some tax implications.

For example, there may be zero rated tax on health solutions as this can be deemed an essential service

But a relevant tax on the sales and distribution such as tax on premiums, sales commission, and mobile linked tax.

There is a slight extra step here since the solution would be sold as a micro-insurance solution and linked to the payment of a loading in a mobile operator platform; one would need to not only check any (health) insurance requirements but also the mobile operator laws/regulations.

Furthermore, one would need to check with the regulator in Alastria's own country as to the legality of offering such cover under their existing license and whether there are any restrictions for them offering more than one kind of health insurance product.

Potentially there may be more requirements as to the capital adequacy requirements given the new countries that are being considered

[Total 5]

b) Benefits and underwriting

This is a fixed benefit solution in relation to the SI selected. However the length of stay is unknown which introduces some risk on the benefit amount to be paid.

Consideration needs to be given to the restrictions on the access to the benefit to prevent anti-selection

A waiting period before the claim becomes valid is important. For example, there should be a minimum number of days of hospitalisation (for example 2 days) to occur before the benefit becomes payable

There will be no underwriting at policy initiation so a waiting period from initiation to ability to claim would be important to ensure the reduction of anti-selection.

There is no indication that there needs to be a specific condition for the admission but should be included in the terms and conditions when initiating the contract. These may be linked to the reimbursement by another health insurance product such as a medical scheme which would reduce the costs of monitoring admissions and assessing the legitimacy of pay-outs.

Consideration may be given to any increase in the benefit over time.

Would this need to be factored into the base rate or the percentage of the credit loaded over time...

... potentially this could be a function of the base credit cost linked to the cost of the “call/data” charge

[Total 4]

c) Systems and claims processes

An administration system is required to enrol the contract (which can be bought, modified, developed, etc)

Claims payment systems would need to be considered –one could leverage off the systems from Alastria

One would need to consider the claims adjudication methods – verification of claims validity and levels of cost to be paid (e.g. agreed tariff)

Similarly, the payment of the claims to the contract would need to be developed

Would this revert to a notional payment as a credit to the contract?

Perhaps not, since the normal rationale for this type of solution would be to pay for other expenses such as day to day costs normally incurred which would not be covered while the person is hospitalised and unable to work

Hence there would need to be a mechanism for the contract holder to encash the benefit

This may result in additional development to integrate into the banking system

Consideration may be given to the nature of the market

Here the solution is a micro-insurance solution and by its nature targets a lower income population, depending on the sum insured selected, that may not have formal banking solution

Hence RisaCom may need to leverage other existing solutions, or develop their own, where local vendors could encash the benefit

There would be a need to validate the person’s eligibility for the benefit

- Here one would expect that at application for the cover, the identities of those covered are registered
- The contract holder would be required to send notification of the admission for the covered life to the insurer at admission

And validate the person’s hospitalisation:

- At claim stage the insurer would need to validate the person hospitalised
- Via a claims statement from the hospital
- This could be done via electronic means from the hospital discharge sheet
- Processes would need to be put in place to be able to validate the authenticity of the hospital and those authorised to produce these certificates

- Alternatively a system could be put in place with the hospital to validate electronically
- For example, the hospital could send notification to the insurer of the discharge, a One Time Pin could be sent to the contract holder by the insurer and then confirmed by the hospital

The hospital may need some payment for facilitating this.

[Total 8]

d) Claims costing and rates to charge

The determination of the incidence of claims would need to be established

The actuary should investigate the available sources of data to enable this, such as national statistics

In particular there would need to be an understanding of the duration of admissions so as to accurately determine the incidence rates for different trigger points and the average sum insured paid out

One can look at the number of admissions per 1,000 covered lives for all admissions, admission over one, two, three or more days as required

This would assist in determining the most viable and so affordable trigger points for the cover while balancing the ability to provide suitable benefits for the target market

Data from other regions with established experience can be used (from the existing insurer)

Consideration should be given to any specific differences in the target market

There may be demographic differences such as age, gender chronic, etc.

Consideration for specific conditions in the country may be considered, such as any prevalent disease such as malaria that may cause more admissions than in the reference country

Consideration could be given to any vaccination programme or government intervention to mitigate this in one area compared to other areas

The definition of an admission should be considered to avoid ambiguity and issues at claim stage, such as it may only be if the patient incurs a surgical procedure or minimal medication costs and not merely in hospital for “observation”

Or facilities where the national government would be used and the policy may only cover private facilities

The hospital system may only admit people for 2 days and then send the patient to a step-down facility so as to minimise costs – but then the cover may be payable since the “hospital” portion is cut short

Developing the base rates

The cost per unit covered is then established in relation to the SI to obtain a rate per unit of the credit being recharged

The costs over the term of the contract will need to be modelled over a longer term since the costs are incurred at different times and one would need to ensure that these are accounted for – e.g., development of the systems are incurred before any sales and thus need to be funded from capital until the business can support the sunk cost.

Similarly, the duration of the contracts would need to be considered since there is the potential that the contract becomes inactive before a claim is incurred and the release of the accrued liability would be used to cross-subsidise the base rate.

In addition, there may be a different pattern that develops between the different SI, for example someone with a high SI may only claim a smaller proportion of the benefit compared to someone with a lower SI that would reach their benefit limit sooner.

Hence the different cashflows would need to be modelled in detail.

A model income statement may be used to consolidate these components to allow for one to assess the viability of the solutions

The result of this would need to be compared to the margin on the contract – i.e. the proportion of the recharge credit that would be made available to fund the solution

As before one would want to test the impact of this solution on the sales that RisaCom want to achieve - will it help in growing its market share

If there is evidence in other markets this could be used as a basis for the assessment

One would need to make some assumptions on the competitiveness of the solution

Since this seems to be a new solution in the countries it would be beneficial to research the target market's understanding and need for a solution of this nature

If this is not a new solution a comparison to competitor rates would be necessary so as not to over- or under-price the solution

[Total 10]

e) Other cost implications

Consideration should be given to the other costs such as maintenance of the systems, support services (such as call centres & finance functions)

Development costs (such as product development) and marketing

Since there may be a delay between the initiation of the contract and the availability of the benefits there may be some offsetting cost as some of the cash is invested before being needed to be used

[Total 2]

[Total 29]

2(iii) Consider alternative ways of protecting against anti-selection [6]

Part (iii) was a continuation of part (ii) asking candidates to explore the concepts of anti-selective enrolments and how this could be managed other than by waiting periods. This was also a higher order question which required candidates to show how to manage risk through alternative mechanisms that were aligned with the nature of the product and market. Many candidates spoke about complex and expensive methods that would not be cost effective nor achieve the desired outcome, rather than alternative benefit or product structures.

Proportional increase in the SI

Instead of making the full SI available one could allow this to accumulate over a period of time

For example only 1 month's proportion of the SI will build up each month

This may be seen as too slow so one may need to consider a shorter period commensurate with the original waiting period

This still may not meet the consumer's expectations and hence a minimum level may be needed – say equivalent to one day's income based on the country's minimum hourly rate

This method would need to be explained well since there could be cases where the consumer does not understand this and complains to the regulators, or social media, that they did not get the benefit that they expected

Buy back the waiting period

The contract owner may be allowed to pay in extra contributions to buy-back the waiting period

This however opens up the solution to anti-selection where the contract owner just buys cover when needed

The contract holder may mis-understand this mechanism and believe that they have bought a higher cover level resulting in dissatisfaction

Accident only

In order to offset the waiting period, the cover could allow for a payment in the case of admissions for accidents for the initial period of the contract

This does eliminate some of the anti-selection, but does not eliminate the potential threat of a purchase of cover should someone be in the emergency room anticipating an admission or some similar scenario

One could still impose a short waiting period of 48 hours before the cover is activated

There is a dependency on the admitting hospital to be the validator of the admission and discharge to avoid any potential fraud

There would also need to be a clear understanding of an accident

Reference to the WHO ICD-10 coding may be used since these are reasonably well defined

The proliferation of this coding structure in the target countries may be limited so might not be a solution, hence another solution may be needed

This could be fairly simple such as a clear indication of a fracture or the need for immediate surgery

[Total 6]