

**Actuarial Society of South Africa**

**MARKING SCHEDULE**

17 MAY 2019

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

**Specialist Applications**

## Examiners' General Comments

- *Candidates demonstrated poor exam technique by not adhering to the instruction word (e.g. candidates provided a list where brief explanations were required).*
- *Candidates struggled to demonstrate professional competence (e.g. using terms such as “policy” as opposed to “benefit option”, “premium” vs “contributions”).*
- *Candidates compromised their time management by repeating the information in the preamble as an introduction to their answers. Candidates also referred to aspects that they were specifically directed to ignore, for example regulatory considerations.*
- *In some instances, candidates provided generalised information which either did not apply directly to the scenario or does not necessarily always hold in practice. No credit was given for such statements. Examples of generalised statements in this paper included:*
  - *“all large schemes have more efficient administration” or*
  - *“open schemes do not have or will not have more than x benefit options” or*
  - *“restricted schemes always have a better risk profile compared to open schemes”.*

## QUESTION 1

- (i) **Briefly describe the grounds on which a medical scheme may discriminate and ways it may not unfairly discriminate against members for the purposes of determining contributions according to the Medical Schemes Act. [6]**

*For a bookwork question, candidates generally performed reasonably well on this question. Many candidates wrote lengthy explanations about open enrolment, community rating, risk and income cross subsidies, PMB packages, exclusions and ways in which anti-selection can be managed for example through waiting periods. None of these elements answered the question as these did not address how contributions would be determined.*

*Several candidates merely listed (rather than briefly describing) the factors that can be used / not used to discriminate for contributions, therefore scoring minimal marks as they had not explained how these variables can and cannot be used.*

*Several candidates spent a disproportionate amount of time/effort describing late joiner penalties which was effectively addressing only one discriminating factor: age.*

A Medical Scheme may **not** unfairly discriminate (directly or indirectly) against any person on one or more grounds, including:

**Race:** Medical Scheme contributions may not differ by race. Whether a member is a Black African, White South African, Coloured or Asian, the contribution rate may not differ based on the racial population group.

**Age:** Medical Scheme contributions may not differ by age or age bands...

...Apart from differentiating between adult dependants and children dependants (which is split by an age defined in the Medical Scheme rules, e.g. 18 or 21)...

...And apart from those members who join a Medical Scheme after the age of 35 and face a late-joiner penalty for life.

**Gender:** Medical Scheme contributions may not differ for males and females...

...Apart from differentiating between principal members and adult dependants, which is usually husband and wife and therefore will differ by gender.

**Marital Status:** Medical Scheme contributions may not differ for those who are single, married, divorce or widowed...

...Apart from differentiating between principal members and adult dependants, which is usually husband and wife and therefore will depend on marital status.

**Ethnic or social origin:** Medical Scheme contributions may not differ by any ethnic origin, whether Zulu, Xhosa, Ndebele, Swazi, Sotho, Tswana, Shangaan-Tsonga, Venda, Coloured or Afrikaans.

**Sexual orientation:** Medical Scheme contributions may not differ by a person's sexual identity in relation to the gender to which they are attracted, whether heterosexual, homosexual, or bisexual.

**Pregnancy:** Medical Scheme contributions may not differ for non-pregnant woman and pregnant woman...

...Neither may Medical Scheme contributions differ by trimester for pregnant women.

**Disability:** Medical Scheme contributions may not differ for abled and disabled (whether physical or mental) members.

**State of health:** Medical Scheme contributions may not differ for healthy and sick members (e.g. those members diagnosed with a chronic condition).

**Previous medical history:** Medical Scheme contributions may not differ for those members who have never claimed and for members who have claimed in the past...

...Neither may Medical Scheme contributions differ for those members who have more historic medical scheme claims than another (i.e. claims experience rating may not be applied to contributions).

A Medical Scheme may discriminate (directly or indirectly) against any person, including:

**Family Size and composition:** Medical Scheme contributions may differ by family size of 1, of 2, of 3, etc.

**Beneficiary type:** Medical Scheme contributions may differ by principal member, adult dependant or child dependant.

**Income:** Medical Scheme contributions may differ by income band (the higher the income band, the higher the contribution rate).

**Provider choice:** Assuming the Scheme is able to obtain exemption to offer an Efficiency Discount Option, Medical Scheme contributions may differ for those members who choose to have access to any provider as opposed to a network of providers.

**Benefit level choice:** Assuming the Medical Scheme offers more than one benefit option, Medical Scheme contributions may differ by benefit option (the more comprehensive the benefit package, the higher the contribution rate).

(ii) **Outline the most common contribution table structures used by medical schemes** [6]

*This question was well answered. Several candidates provided lengthy explanations about generalised differences between contribution tables in open and restricted schemes which were often not well substantiated.*

*No credit was awarded for illustrations of various contribution table structures.*

The most common contribution table structures are:

**M, M+1, M+2 Structure**

Rates varying by number of beneficiaries only.

There will be a rate for a single member (often referred to as “M0”), a rate for a member with one dependent (“M1”), a rate for a member with two dependents etc.

There is often a maximum to the number of dependents which are taken into account, for example, four.

This structure does not recognise the dependent type, i.e. whether the dependent is adult or child.

Nowadays, not many schemes use this structure.

**MAC Structure**

Rates varying by the number of adult beneficiaries and the number of child beneficiaries.

Separate rates are typically set for the main member (“M”), for each additional adult beneficiary (“A”) and for each child beneficiary (“C”).

The total contribution rate for a family with a member, two additional adult beneficiaries and two child beneficiaries will then be  $M + 2*A + 2*C$ .

There is often a limit to the number of child dependents that are charged for.

**Income Level**

It is also fairly common, especially among restricted membership schemes...

...for contribution rates to vary by income level of the main member.

In general, a higher contribution rate will apply for higher income levels.

This will typically be applied in conjunction with one of the abovementioned structures.

The number of levels and the extent of the variation in contribution rate will depend on the objectives of the scheme.

### **Efficiency discounted option**

A contribution table can differ if a parent option has an efficiency discounted option counterpart.

An efficiency discounted option requires exemption from Section 29(1)(n) of the amended Medical Schemes Act 131 of 1998, which states that contributions may differ on the basis of income or the number of dependants or both the income and the number of dependants...

...and shall not provide for any other grounds, including age, sex, past or present state of health, of the applicant or one or more of the applicant's dependants, the frequency of rendering of relevant health services to an applicant.

The Efficiency Discount Options are catered for members who are willing to choose restricted access to hospitals, and pharmacies for chronic medicine in exchange for a more affordable contribution rate.

### **Medical Savings Account**

A contribution table could differentiate between risk and savings contributions, which add up to gross contributions, if the particular benefit option is designed to have a personal medical savings account.

### **Combination**

Contribution tables can also be a combination of the above.

- (iii) **Briefly outline the professional guidance framework(s) you would rely on for such an actuarial valuation.** [5]

*This question was poorly answered. Candidates demonstrated very little to no knowledge of the suite of professional guidance notes available for healthcare practicing actuaries and for broader actuarial purposes and how these may apply in a non standard valuation assignment.*

This valuation is a non-standard actuarial valuation...

...and there is no specific professional guidance note that directly applies to this valuation.

The Consulting Healthcare Actuary could rely on the standard Healthcare Actuarial Practice Notes for general guidance on the minimum actuarial requirements and/or adequate information for disclosure purposes...

For example, APN 301 (Post-Employment Health Care Benefit Plans) could be leveraged for guidance on the general approach to project and discount future contributions.

For example, APN 303 (Advice To South African Medical Schemes On Adequacy Of Contributions) could be leveraged for guidance on the relevant sources of internal and external data that can be used.

For example, APN 304 (IBNR Liability Valuations Of South African Medical Schemes) could be leveraged for guidance on reasonability check on claims.

Furthermore, various other professional guidance notes could be consulted to ensure this actuarial valuation is carried out professionally and with due care...

...such as professional guidance notes from other practice fields...

...for example the Delictual and Other Legal Matters field (APN701)

...or general professional guidance notes issued by the Actuarial Society of South Africa ...

...for example SAP901, entitled "General Actuarial Practice"...

...or the Code of Professional Conduct.

Professional guidance notes from other international Actuarial professions could be researched for guidance.

CMS circulars often provide professional guidance which can be referred to.

**(iv) Describe the data you would require to perform such an actuarial valuation. [7]**

*Candidates that scored well in this question were able to list and explain the data requirements at a granular level and made reference to relevant data.*

*Many candidates included irrelevant data items such as investment returns, competitor scheme information, broker agreements etc that had no bearing on the situation.*

*Some candidates assumed that data would not be available given the relatively long time period for the investigation thereby limiting their responses, rather than providing the detail of the data that would be required (ideally) and citing data availability as a potential issue. Other candidates specified summarised data rather than raw data, therefore also limiting their responses.*

*In a few cases, candidates went into detail about how the data would be used to perform the valuation which was the subject of the next question.*

Data required for all beneficiaries exposed over the last 10+ years...

...reflecting the period before the decision was made and subsequent to that.

1. Detailed membership data

Line-level detail membership data from the administrator's data warehouse

- Member/policy Number
- Dependant Code
- Benefit option
- Date of Birth
- ID Number to track dependants that take out their own policies
- Join Date of Beneficiary
- Resign Date of Beneficiary
- Reason for resignation including death
- Beneficiary Type with effective dates
- Income Category with effective dates
- Contributions received with effective dates
- Late Joiner Penalty Amount (if applicable)
- Gender
- Chronic disease registration status

Information should enable option level movement analysis over time.

2. Claims data

Line-level detail claims experience data from the administrator's data warehouse

- Member Number
- Dependant Code
- Benefit option
- Claim Date
- Claim Amount Billed
- Risk Benefit paid.

3. All contribution tables over the last 10 years

4. Administration and managed care fees, and other non healthcare costs

5. Historic Actuarial Reports for the Medical Scheme.

(v) Explain how you would perform such an actuarial valuation.

[10]

*Many candidates could identify that the valuation involved calculating the difference between actual contribution income received and what the scheme would have received had the decision not been implemented. Candidates generally struggled to provide a well thought out approach to the valuation at a contribution level and to set the assumption for the contribution experience had the decision not been implemented.*

*Those candidates who scored relatively well in this question were able to demonstrate understanding of the cohort analysis for the contribution impact, and link this in with related implications including claims behaviour, family sizes, and other related factors explained in the solution.*

The approach to quantify this impact can be to calculate the total contribution income the Scheme **actually received**...

...and compare this to the total contribution income the Scheme **would have received** had this strategic approach not been implemented.

The difference of the two scenarios is therefore the impact of the strategic approach to undercharge these young members.

The impact is interpreted as follows:

- A positive impact implies the Scheme was negatively affected by the strategic approach...

...i.e. the Medical Scheme effectively experienced a financial loss

- A negative impact implies the strategic approach resulted in a saving to the Scheme...

...i.e. the Medical Scheme effectively experienced a financial gain

A significant dependency of this valuation is the exact quantification and understanding of “undercharged contributions”...

...The undercharged contributions must either be provided exactly in the data provided by the administrator...

...or the definition must be provided, e.g. an “undercharged contribution” is simply the child dependant contribution rate where an adult dependant contribution rate should have applied...

...which will depend on the contribution table structure (as outlined in Question 1(ii)) that the Medical Scheme has in place.

The detailed approach to estimate the impact is as follows:

The Membership data can be split into 2 groups:

Cohort 1: Beneficiaries who were undercharged.

Cohort 2: Beneficiaries who were not undercharged (specifically those prior to the decision being made 10 years ago).

After identifying these groups, the contribution and lapse experience post 21<sup>st</sup> birthday can be calculated for each...

...using an appropriate methodology...

...such as either the Kaplan-Meier or Nelson-Aalen methodology.

...or from first principles

...where the probability of lapse is determined crudely (i.e. number of lapses in a certain period as a proportion of the beneficiaries at risk of lapsing)...

...at each duration (e.g. by month) since the life's 21<sup>st</sup> birthday...

An advantage of using an established methodology, such as the Kaplan-Meier (or Nelson-Aalen) methodology is that it allows for censoring.

A life can be considered to be censored on the date he/she leaves the membership for reasons other than lapse (i.e. termination or resignation).

Lives who are censored are removed from observation at the duration at which censoring takes place, persons who are censored at a duration where terminations also take place are assumed to be censored immediately after the events have taken place (so that they are still at risk at that duration).

In other words, if any of the individuals are observed to be censored at the same time as one of the terminations, the convention is to treat the censoring as if it happened shortly afterwards, i.e. the terminations are assumed to have occurred first.

The contribution and lapse experience of Cohort 2 can then be applied to Cohort 1 to calculate the contributions for the fictitious scenario allowing for expected lapses.

The fictitious scenario simulates and quantifies the expected experience assuming the correct contributions were paid had the undercharging strategy not been implemented together with a higher expected lapse rate.

The fictitious and actual contributions experience should then be estimated in the form a series of cashflows over the valuation period...

...Followed by calculating a present value as at a valuation date at an appropriate discount rate.

The impact can then be calculated as the fictitious contributions experience less the actual contributions experience of Cohort 1.

A sensitivity test can then be performed...

For example, assuming the lapse experience applied in the fictitious scenario is worse or better than experienced by the young members prior to this decision being implemented.

The above method allows to quantify the financial loss or gain of the contributions. A subsequent step would be to quantify the claims experience following a similar approach, and then assess how the claims ratio was impacted.

*Candidates were instructed to ignore the legality of the matter (i.e. to prove whether the contributions were deliberately undercharged or negligently collected, or which party is at fault). However, it should be noted that the first step in this process would be to determine whether the outcome of this actuarial valuation is a financial gain to the Elite Care Medical Scheme, in which case there is no need for any lawsuit to proceed. However, if the result is a financial loss, the subsequent step is likely to determine who is responsible for the financial loss incurred. No marks were awarded for discussions of this nature.*

## QUESTION 2

- (i) **Briefly explain what would need to be provided to the Boards of Trustees and to the Council for Medical Schemes (CMS) for the consideration of an amalgamation of two medical schemes.** [8]

*Those candidates that performed well in this question were able to generate sufficiently distinct and relevant points...*

*Many candidates differentiated between information to provide to Trustees and to the CMS, with the latter focusing on the exposition document. The question was expecting candidates to consider the content of the documents rather than the type of document each party would receive and approve.*

*Points relating to the process of approving the amalgamation were not requested but many candidates focused on these items. Voting outcomes were often raised which only occurs at the end of the process... The process for approval of the amalgamation was often referred to, however this was not asked for.*

The actuary would need to document the reasons and rationale for the merger.

The report would need to detail the pertinent characteristics of both schemes involved in the amalgamation.

This information should include the following for each scheme:

- Names, type and date of registration
- Details of the nature of the scheme's contractual arrangements with third parties (or internally) to deliver healthcare and non healthcare services to members for example administration, managed care services.
- Summary information including number of beneficiaries, average age, pensioner ratio, chronic ratio etc.
- Financial information related to the scheme such as reserves, annual financial statements, over a period sufficiently long to establish an understanding of the financial performance and related risks, issues, etc.
- Details of the Schemes such as plans, benefits, contribution tables, income bands, etc.
- Method of assessing the financial position of the amalgamated scheme
- Intended benefit design of the final merged Scheme

An analysis of the effect of the proposed amalgamation on members to assess how members are affected, including contribution increases, benefit reductions, benefit option defaults and a mapping of options across the scheme.

An estimated consolidated income statement and balance sheet would need to provided...

...including the derived solvency position and sustainability over 5 years, say

SWOT analysis must be provided (strengths and weaknesses)

This would include the positioning of the final structure with respect to benefits and contributions

And similarly, how it meets the needs of the beneficiaries.

A market analysis on how the combined scheme is competitively positioned in the market relative to other open medical schemes

An independent review would be required as to the appropriateness and financial forecasts of the merged scheme.

**(ii) Describe how you would assess the opportunity for Big Consumer Medical Scheme and Drink Corp Medical Scheme to amalgamate. [20]**

*Candidates performed relatively well in this question. The candidates who differentiated themselves were able to generate a wide variety of relevant points with sufficient descriptions of each, and making references to the detail in the preamble.*

*A few candidates made the assumption that the benefit options of the Drink Corp Medical Scheme would not be retained within the amalgamated scheme given the relative sizes of the schemes. The question required candidates to think through these possibilities and discuss them rather than assume and conclude.*

*The question contained detailed information about each scheme which candidates were expected to use and interpret in the context of the amalgamation evaluation. Candidates that scored well were able to apply this information into considerations and implications for the amalgamation and on each scheme. Calculations were given credit where this was coupled with an appropriate interpretation for the purpose of answering the question.*

*Candidates that made generalised comments about open schemes and restricted schemes in the industry did not score marks unless they were specifically applicable to these schemes and such explanation was provided.*

*Some candidates placed unnecessary emphasis on the timing of the amalgamation and the potential practical complications that could occur with a mid-year amalgamation. However, those candidates that were able to consider the actuarial impact of a mid-year amalgamation were awarded marks accordingly.*

The first step would be to assess the differences in the schemes.

This involves understanding the details of the different benefit options.

From this one can assess the potential movements of beneficiaries from their current options to the benefit options of the amalgamated scheme.

This should be done by examining both benefits and contributions.

Because there are structural differences this comparison should be done by balancing the likely needs of the beneficiaries and the affordability of the options.

For example: if the contributions and benefits on BCS option are similar to those of DCS then the beneficiaries could be mapped easily.

However, if there are significant differences between these items there would need to be a number of scenarios assessed...

...and judgement would need to be exercised as to which scenarios are more likely to occur.

A comparison of the contribution by income level, family composition and benefit option selection would likely provide a reasonable view of possible scenarios to simulate.

Any defaulting of members to a particular option and the impacts of this in terms of contribution impact and benefit changes would need to be considered.

Impact of benefit and contribution changes on lapse rates and how this would relate to decisions around compulsion by the employer would need to be considered.

Once one has narrowed down the potential scenarios a more detailed examination of the benefits can be conducted.

This would inform the likelihood of each benefit option selection of the beneficiaries.

Once the benefit option selection scenarios have been finalised one can estimate the impact on the schemes.

This requires mapping the relevant per life per month (PLPMs) claim costs per option to the new options.

Here it would be advisable to check the claiming PLPMs between DCS and BCS.

One would need to assess the potential changes to the paid risk PLPMs based on the benefit set of the options selected.

For example, would the beneficiaries of DCS claim in a similar way to those already on BCS or as they claim on their current options.

It would be advisable to perform a number of scenarios relating to claim costs and how these may change with the amalgamation and movement to different benefit options, for example on the current PLPM, on BSC PLPMs, DSC PLPMs...

...or some level of weighted average between the two, especially given the age differential between the options.

Using the assumed option mapping and claims cost assumptions an income statement for the amalgamated scheme can be derived.

Any changes in non healthcare costs such as the restricted scheme members now having to pay broker commissions for the open scheme environment should be allowed for.

The estimated contribution income, claims costs and expenses can then be projected from the mid-year to the end of the year.

In addition one should consider the impact of the age differential of the options, particularly if there are small options on BCS that would be attractive to members on the Higher option on DCS, and how this would change over time and any other significant demographic differentials for example family size composition.

A few assumptions would therefore need to be made for the projection of the Scheme's position once amalgamated for each option.

This would include:

- the claims expected to be incurred, plus
- Expenses that would be incurred for the merger, e.g. the cost for the administration changes (systems development if self-administered or not borne by a third party administrator) and any other additional non healthcare costs,
- Any changes to contracts (such as provider contracts, network contracts, administration and managed care contracts etc.) that may be affected by the amalgamation and the effect of these on tariffs and costs and,
- Any other costs to be incurred in the amalgamation process, for example any termination costs when terminating DCS's administration and managed care contracts.

Using the results from the income statements the resulting Surplus/Deficit can be assessed

as well as the resulting Solvency level for the Scheme incorporating the combined reserve position.

It is assumed that all the reserves from DCS will be transferred to BCS.

Consideration should be given to the timing of the amalgamation since this is mid year...

... hence there would need to be a blending of the income statements of the schemes,

Therefore you would need to consider the pricing reports for both schemes and how credible the assumptions in these are for the period concerned to determine the reliability in constructing a blended income statement.

The income statement would therefore need to account for the first half of 2020 as per the pricing reports and the blended experience from July 2020.

Furthermore, one would need to review the expected level of reserves of both schemes at the time of merger and how these are affected by the forecasted experience of the combined scheme.

There may be differences in the investment policies of DCS as it is well funded and may have a more aggressive investment policy.

The income statement would need to be projected to simulate the impact of the demographic changes of the scheme say over the next 5 years to ensure that the scheme is viable.

Additional scenarios should be compiled to show the "worst" case scenarios - where the beneficiaries do not select the options that they are mapped to, for example all beneficiaries downgrade, the claims mimic those of the most costly plans, selective lapses, etc.

Test to see that the overall scheme is better off and that members are potentially better off. Where members are worse off, it will be important to identify these members and understand why this may be the case and how this can be mitigated.

The move to options that are not income rated could result in those on lower incomes paying significantly more than their current contribution on the restricted scheme...

...so analysis would need to include the potential contribution increase impact, as with more option choice these members could buy down and then most likely pay lower contributions depending on the contribution levels of these options relative to the contribution levels of the income rated options. This is part of the option mapping process.

Any underwriting implications – presumably none as this would be an amalgamation of the scheme into the open scheme. However, these may be applicable for new entrants to the scheme via the employer unless there is an arrangement in place to have no (or limited) underwriting for these employees and their dependents.

The restricted scheme may be 'over contributing' with their high level of reserves... relative to the demographic profile they bring to the open scheme. This would need to be assessed to determine the fairness of the reserve transfer. Similarly, the restricted scheme could be 'under contributing' with their level of reserves to reduce reserves or rely on investment income. This would rely on assessment of their solvency level.

Any differences in provider networks for doctors (GPs and specialists) and hospitals would need to be assessed on an option level and per network to determine the extent of differences and whether these would materially impact costs and access to medical care for the restricted scheme members, particularly the impact of Designated Service Provider networks for Prescribed Minimum Benefits.

The potential impact on stakeholders, for example, the sponsoring employer of the restricted scheme and the service providers to the schemes should be considered.

For the sponsoring employer there are considerations around the subsidy policy and compulsion of membership to a scheme. For example are they going to keep membership compulsory to one scheme only or split the risk among multiple open medical schemes.

The impact on savings contributions in the restricted scheme which would be paid out if members move to an option with no savings or if members move to an option with savings and these balances transfer across.

The assessment would need to include an analysis of the accumulations to threshold calculations and pro-rating threshold levels.

And the effects of the continuation of waiting periods and late joiner penalties if these applied.

Subsidy of medical scheme contributions by DCS may reduce some of the impact of contribution table changes but may have an impact on their PRMA liability

**(iii) Discuss the actions that could be considered to assess and overcome the concerns raised.**

**[8]**

*Clear actionable points were raised to assist in understanding how the concerns raised could be addressed. The candidates that were able to show consideration to the concerns raised scored better than candidates that provided generic points.*

In order to understand the concerns raised by FISS, the actuary should further review the past benefit design changes and contribution increases.

In general, within a closed Scheme the Trustees attempt to manage the increases to be in line with salary inflation.

One should review the increases of Drink Corp and Big Consumer Scheme and understand the underlying drivers of these increases.

If there is a large differential in the increase, or changes to the benefits which can obfuscate increases, there is merit to the argument, if not then one should highlight this to FISS and justify why this is the case.

Should the increase differential be significant one may be able to put steps in place to mitigate the anticipated increases.

These can include:

Introducing an efficiency discounted option (EDO) tailored to the members of FISS, e.g. providing a reasonable access to networks of GPs and/or specialists in the main geographical areas of concentration of the beneficiaries. However, the scheme may be too small for this to be effective.

Alternatively, one may be able to replicate a current option on DCS that would result in a similar level of increases assuming there is limited anti-selection by existing members of BCS.

One could visit the subsidy policy for the employees by engaging with the employer to allow for an additional subsidy to cover the potential impact over a number of years. However, this would not be a long term solution if increases outstrip salary inflation, and would bring a long term promise that would have to be valued on the balance sheet. The impact if the employer(s) have a post retirements medical liability obligation should also be considered.

It could be that the increases, while higher year on year on BCS, would be on a base contribution that is a lot lower than that of DCS and so the ultimate Rand impact on the members will be absorbed by the step wise reduction in the contributions.

The Trustees could commit to an increase policy that will allow greater cross subsidy between the options selected by FISS members and the other options. However, this may be difficult to implement and enforce in practice.

This may be difficult as there is no ability to ring fence these members should they choose options commensurate to the other options of the scheme.

The actuary would need to provide sufficient credible modelling to support these initiatives in order to get approval from all stakeholders.

However, one could argue that the lower option(s) could have an increase lower than the higher options on the basis of providing an explicit cross subsidy to the lower option provided that the scheme remains financially viable and the Trustees do not violate their fiduciary duties.

This would need to be discussed with CMS and a legal opinion could be sought to ensure that this is legally viable.

Other points include engaging the union to discuss scenarios for example, what would happen to DCS if they don't amalgamate – is the scheme sustainable if they don't merge?

### QUESTION 3

- i. **Describe the considerations for the introduction of RiteCare to current and prospective residents.** [10]

*Candidates generally did not answer the question which required an explanation of how current residents may be impacted by the introduction of RiteCare and similarly how this may apply to prospective residents. The candidates who differentiated themselves applied good exam technique by addressing the considerations for the current and prospective residents separately.*

*Many candidates only considered frail care without taking account of all aspects of the medical package.*

*Candidates were given credit for addressing the monthly levy sufficiently, regardless of whether this was interpreted as a part-of-the-package levy or a levy in addition to the RiteCare package.*

*No credit was awarded to considerations other than those relating to the residents.*

#### *Resident demographic mix*

The demographic mix of the population will be a key determinant of the residents expected and actual utilisation levels for each type of medical service.

For example, older residents are more likely to require more regular medical attention

Sicker residents are more likely to require access to higher levels of care, for example the medical specialist...

... This will depend on the type of morbidity (for example single ongoing chronic condition or multiple chronic conditions) and the degree to which the disease / diseases is / are managed

There may be different requirements for males and females depending on their healthcare needs in old age.

Some residents may have spouses while others may be single. The number of residents per unit may not necessarily be related to the size (and value) of the unit.

#### *Access to medical scheme cover*

The proportion of residents that have medical scheme coverage will impact utilisation of the retirement village medical services...

As those with medical scheme cover will most likely seek medical services from their existing doctor...

Which may need to be part of a network of doctors, if they are on a network benefit option.

Residents on benefit options that allow freedom of choice of doctor may be comfortable switching to the RetireRite medical team and submit their claims to the medical aid.

Residents may have a long-standing history and relationship with their current medical service providers and may therefore have a preference to continue to see these doctors rather than use the services provided by the retirement village.

The reimbursement arrangement between the medical scheme(s) and the RetireRite establishment, including direct payment arrangements and the tariff at which the doctors are paid could also impact residents preference for their own doctor versus a RetireRite doctor...

Should the doctors charge more than the medical aid tariffs this would result in a co-payment for the resident and possibly make using this arrangement less attractive compared to a medical practice that charges at the scheme tariff.

The number of residents with post-retirement medical aid subsidies would impact their ability to afford medical scheme contributions into the future compared to those that don't have such subsidies.

#### *Quality of medical care*

The demand for nurses may increase depending on the extent to which the conditions are managed, and the nurse is able to triage patients accordingly.

The quality of care delivered by the medical team and how this may change with the introduction of dedicated medical specialist...

... And any potential changes to standards of care that could lead to a change in the morbidity and mortality of residents (for better or worse).

Poorer quality care could lead to more intensive and expensive care which would increase the costs incurred over the longer term.

While lower mortality would lead to longer lifetimes, care would be needed over a longer term.

If the quality of care delivered is poor, the services may go under-utilised, however RetireRite could scale back on the services in such a case by reducing staff headcount and/or hours of consultation.

The extent to which downstream hospitalisation costs occur is a consideration and reflection of the quality of care, even though RetireRite takes no liability in this regard. However, it could be influenced by the RetireRite medical team in ways such as timing of admissions.

The experience of the residents in using the facilities and services, if negative could adversely impact the perception / reputation of the retirement village overall.

#### *Uptake – compulsory or voluntary*

An assessment and determination will need to be made if all residents are required to switch to the new arrangement or if residents are permitted to continue with the current arrangement.

Should residents be permitted to have choice, there could be anti-selection risks as those who are older and/sicker are more likely to choose the RiteCare package of care, as their healthcare needs are likely to increase over time.

Furthermore, those residents who do not have medical scheme cover are also more likely to elect the RiteCare package as payment is effectively due on death.

RetireRite will need to consider the administrative and contracting complexities of having the mixed model in place.

The operations of the medical facilities will need to bill appropriately and keep records in support of the mixed model.

Should residents be required to change over to the RiteCare package, there may be contractual obligations that are impacted and so a legal process may be required to ensure that the switch is adequately dealt with.

There may be a pricing consideration to buy into the package, as long standing (and old) residents may be expected to incur a significantly different cost compared to newer (and possibly younger) residents.

RetireRite should consider whether residents are able to exit this package, and if so when and under what conditions, and how this would affect the price charged upon death – for example depending on the definition of the fixed percentage of the property value such as per year covered.

### **Considerations for introducing RiteCare to prospective residents**

RetireRite should consider anti-selection risks whereby older and sicker residents are signed up and utilise medical services more often than the current resident group.

Resulting in higher costs of care in aggregate

Particularly those who are living in smaller retirement units and thus their contribution to the costs of providing medical services is lower than those in larger units.

RetireRite could implement a minimum level of health before residents may be allowed to buy a unit as a way of managing anti-selection risk or charge a higher price...

... however, this could be viewed negatively by the market, depending on how it is communicated and managed.

The package may be more favourable to some residents over others for example sicker individuals who require more medical attention may find this package more attractive.

Conversely younger and healthier residents may not be attracted to this structure as they may not need the medical services (in the short term) and may therefore view the structure as punitive for their dependents.

Considerations of any medicolegal risks for RetireRite and the potential costs of insuring for this risk.

- (ii) **Assess the funding model based on the percentage of the property value on death, with specific reference to the healthcare liabilities to be incurred by RetireRite.** [5]

*Candidates were expected to identify the long term nature of the funding and the factors that could drive the value of the liability distinctly from the source of funding (property value).*

*Candidates that could work through the elements driving costs and how these may change over time scored relatively well.*

The modelling of income for RiteCare should consider the impact on the viability of the RetireRite business model – no new money is being raised as income for the RiteCare product is coming off the sales price upon death.

So unless prices are raised when the units are resold, there is less money coming in for the RetireRite business. Unless the model is surcharge the purchase-back price with the cost of cover – so in effect they buy the unit back at a lower price.

Income will also vary for reasons other than claims costs – inflation assumptions, the price of units sold over time, timing of deaths – which all add to uncertainty.

There is a match and mismatch in income and costs – residents who live longer, will incur costs for longer, unit prices will continue to inflate and so recovery will be higher. But residents who die earlier will result in recovery of costs sooner at lower prices.

The length of time between the date of residents moving into the retirement villages and the ultimate sale of the property is an important factor to consider...

...As it reflects the longevity rates of the residents.

And the amount of time that it takes to recoup the cost of medical services by that resident – presenting a significant liquidity issue for RetireRite.

Consider the extent to which the formula reflects the individual's consumption of the medical services or if it is community rated in the sense that individuals contribute the 'average cost' of delivering services to the group and this is then applied to the group to determine the fixed percentage.

Consider the extent to which experience is pooled across retirement villages or ring fenced to each village pooling their own risks.

Consider the basis on which the costs are recouped – for example prospectively by considering future expected costs or retrospectively by considering past costs, or a blend of the two measures based on a point in time.

Consider the various sizes of the properties and other factors that may differentiate property prices between units and hence the sales price and a clawback factor linked to the sales price.

Consider factors affecting the sales price of the units, for example expected future demand for retirement villages. If retirement villages continue to be a popular choice of residence for the elderly this could inflate property prices beyond the general market growth and positively impact the business.

If RetireRite is expanding, this will mean they are always behind the curve in recovery as new entrants get cover before premiums are collected.

If there is a downturn in the market, they will be adversely affected.

Whether the unit is inhabited by one or two (or more) residents will impact medical care utilisation and costs but not necessarily property values, depending on the design and mix of houses by size (and number of rooms).

The length of time it takes to sell the property to a new owner and thus receive the capital value for the property is an important factor.

Although the house price is linked to a formula and is generally reflective of inflation, the actual variation in house prices may be driven by other factors and therefore the sale price may depart from actual housing prices, thus impacting the amounts recouped for RiteCare through the percentage of property value model.

Utilisation and costs of medical services may not necessarily be matched by the housing price formula and therefore there may be a departure, requiring the pricing formula and/or funding model to be reviewed.

The costs of the package would need to be pre-funded for new residents as they would be purchasing the property on entry and their contribution to the medical expenses would only be realised on sale of the property. RetireRite would need to contribute to a capital injection at the outset.

Consideration of experience adjustment of pricing as experience emerges driven by who joins RetireRite (and who exits).

*[Reasonable explanations of how the funding model could work demonstrated through examples could also attract marks]*

- (iii) Discuss the factors to be considered in setting the reserving strategy required to pre-fund the healthcare liability. [7]**

*Candidates who could identify the mismatch between the receipt of payment towards their medical care, i.e. on the residents death and subsequent sale of their property, and the occurrence of costs, i.e. over the remaining lifetime of the resident, tended to do well on this question.*

*Candidates were also expected to demonstrate some thinking about a retirement village business taking on long term funding risk and commitments and how this could be done / managed.*

The costs incurred in funding the RiteCare package will only be recovered on the last death of a resident when their property is sold...

... Therefore, there could be a considerable amount of time between the date of medical treatment and the recovery of the medical costs incurred.

Secondly, the amount, timing and frequency of residents utilising the medical services is unknown and therefore the expected total cost of medical services over the duration in question is unknown. However, this should be relatively stable and therefore predictable in groups.

RetireRite needs to pay the salaries for the nurse(s), GP(s), medications dispensed, medical specialist(s) and operational costs of running the medical facility on an ongoing basis for the services to be delivered to residents.

Therefore, RetireRite will need access to capital that can fund these ongoing operational costs on a regular basis until such time as money is recouped from the sale of a property...

...And make a return on that capital.

On an aggregated basis, residents will die over time and hence properties will become available for sale, thus releasing funds to be directed over to the RiteCare package.

The timing of these deaths and sales is uncertain and therefore the funding would need to account for this unknown factor by ensuring that sufficient money is available should it take longer than expected for funds to be released.

There may be a mismatch between the medical expenses incurred by the resident and the value of the property which could result in possible under or over funding from the particular property...

... This however depends on whether the formula takes into account actual individual experience or pools it across the community.

Should the experience be pooled, there would need to be reserves to allow for the mismatch risk that could occur.

RetireRite would also need to consider the duration over which they are prepared to pre-fund these costs...

... and whether they ask for an upfront payment to inject capital into the programme, with residual costs being recovered on sale.

Consideration should be given to the funding formula and how it is calculated, the frequency of rebalancing or adjustment for actual experience and the method of taking account the demographic mix or individual resident experience.

Any future changes in care levels would impact the cost of care. This may depend on whether there is one plan or options for care.

Other factors to consider that impact reserves include RetireRite's ability to access capital, fund the capital outlay,

... and maintain the costs of capital on an ongoing basis.

They may not be able to access and manage such capital in which case they could consider approaching an insurer or a reinsurer.

RetireRite's ability to absorb or transfer the impact of under-funding or transfer the risk to a third party, at a cost, is a factor to consider...

As is RetireRite's appetite for long term funding of medical expenditure of the residents.

RetireRite's view of the demographic and health composition of its residents over time which would impact utilisation of medical services and its ability to recover costs.

Medical costs at the end of life, or the last year of life, palliative versus curative care towards the end of life, living will related issues will impact on the cost of providing care.

RetireRite's view of the retirement village property market and how this is expected to move over the medium to long term in line with demand for these types of properties.

High demand for retirement properties could improve capital values and provide some longer-term cushion to fund the medical expenses. This however would depend on the nature of the formula.

The extent to which RetireRite wants to focus on the business of running retirement villages versus medical facilities and services together with the funding of these arrangements.

Pricing of the package and how affordable this is relative to the expected property price which would drive the capital outlay required. Since affordability is usually related to income, the price charged affects the balance of the property price going into the deceased estate.

**(iv) Outline the key features of an appropriate investment strategy for the RiteCare proposal.**

**[8]**

*This question was generally well attempted. Candidates worked through the main investment principles and applied these to the situation. Candidates that scored better were able to recognise real nature of the liability and how property, a typical real asset, would pose a concentration risk. Stronger candidates were also able to link the investment strategy to the reserving strategy.*

RetireRite should aim to match the nature of the liability, allowing for an appropriate level of risk.

The nature of the liability is long term, driven by the longevity of the resident from the time that they purchase the property to the time of (last) death.

Since the 'deposit' occurs at the end of the transaction, the moneys come in after the costs are incurred so the matching is not with regard to current assets but rather assets to be received in future. Therefore, the costs of running the services and any additional fee for service type charges are important to manage.

The underlying asset mix should reflect the potentially very long term nature of the liability.

The value of the liability will increase by the increase in the utilisation of medical services and the increase in the underlying tariff rate (cost per service) as members age and therefore require more medical services and more expensive medical services.

Increases in utilisation may be driven by a variety of factors including care related to ageing, worsening disease burden, the convenience of on-site medical services, the benefit of 'not having to pay' for the services, and possible behavioural trends.

Increases in costs may be driven by increases to salaries and other costs involved in running the service.

Both factors are likely to result in above inflationary increases and therefore the underlying asset would need to increase in real terms at least.

The liability is locally denominated so local currency investments are appropriate.

The ongoing payments to meet salary and operational costs require that there is sufficient liquidity to draw down against on a monthly basis.

The level of risk should be determined by RetireRite according to their risk appetite.

Consider the level of solvency, whether RetireRite is holding lower levels of solvency relative to their needs or higher levels of solvency. The higher the solvency level, the more aggressive the investment strategy can be.

Should investment income be used to subsidise the cost of medical expenditure, the extent of this subsidy should be modelled and understood.

Consider the volatility of capital values, particularly retirement village property prices.

And the extent to which additional exposure to property is required, for example through a diversified property portfolio within the overall portfolio (for example industrial and commercial property).

Diversification across asset classes and individual securities / investment institutions will be important given their already significant exposure to the retirement village property market.