

Actuarial Society of South Africa

EXAMINER'S REPORT

May 2025

**Subject F201 – South African Health and Care
Fellowship Applications**

Notes on exam technique:

- *Candidates often provided lists of data fields in response to questions relating to data rather than elaborating on the data, why it would be needed, how it would be used and considerations about the data. With this particular paper being relatively heavily focused on underlying data, its uses and limitations or interpretation considerations, candidates were expected to discuss the data. Candidates received very few marks for lists of data fields.*
- *Weaker candidates tended to give theoretical responses to questions which tended to reflect a F100 level approach to the exam and demonstration of knowledge. This was particularly evident for the data questions and for the modelling questions. At the F200 level, candidates are expected to explain their reasoning, drawing from the question context and give considerations for each aspect discussed.*
- *Stronger candidates developed their thoughts and points more fully. This is a consistent exam technique theme where we expect the points to be substantiated thus demonstrating an understanding of the subject matter.*
- *Candidates tended to write a significant amount of volume and 'shoehorn' information to bulk up their response. In most instances the additional information was not relevant and took up time that could have been spent on other parts of the paper.*
- *Candidates experienced slightly more challenges with time management, possibly with more questions being asked. This required candidates to provide focused and timely responses to each question and move on to the next question.*
- *Several candidates got distracted by minor points and spend disproportionate amounts of time on aspects that did not add to their marks.*

QUESTION 1

Question 1 asked candidates to analyse a restricted medical scheme scenario. This scenario is reasonably reflective of the challenges that several restricted medical schemes are confronting, specifically the complexities of navigating post-Covid membership losses, escalating claims risk and catch-up pricing dynamics. The question asked candidates to consider scheme sustainability, requiring a view of the future experience and how the scheme and related stakeholders might view the impact of these developments.

The question tested the concept of high cost claimants and how one would analyse the impact of these claimants and claims in the above context. Candidates needed to think beyond basic demographic and claims analysis to understand the nature of these claimants and how this might evolve.

This question was relatively well answered overall. Better performing candidates gave specific and reasoned responses beyond the technical mechanics, illustrating an understanding of the scheme dynamics and how to weigh up various challenges and stakeholder needs and interests.

Question 1(i)

Explain how you would do an analysis of high costing claimants as one of the potential drivers of the claims cost increases. [8]

Candidates were expected to demonstrate depth of understanding of the claims experience by distinguishing between risk pools, recurrent or once off high cost claimants and the impact of demographic change on claims experience. Stronger candidates went beyond the theory and mechanics to discuss how one might approach this analysis and why.

Analysis of high costing claimants

The analysis of high costing claimants would require detailed understanding of the types of members (for example by age, benefit option, duration on the scheme, etc) that are high costing as well as the clinical reasons for the high costs.

The high cost claimants could be identified from the top costing claimants and working down the list until a suitable cut off point. This cut off point could be determined with reference to prior years high costing claimant amounts and variation of amount claimed at an individual level to assess the thickness of the tail in this year compared to prior years. For example, the top 1% of claimants could be used to

ensure sufficient volumes of claimants in each year where there may be changes in the distribution of individual claimant's total costs over time.

Or the high cost claimants threshold could be set relative to a fixed value such as above R1m and increased by expected increases in claims costs in each year to remain consistent. The expected increase in claims costs could be based on tariff increases for healthcare providers together with an allowance for utilisation increases due to the worsening demographic profile. I would not use the latest 25% increase for the final year's expected increase as this may result in significantly less claimants being included in the analysis and result in a claimant inclusion bias which may invalidate the analysis.

The next step is the analysis of the clinical nature of the high costing claimants. For each top costing claimant it would be useful to distinguish if this is likely to be a once off event, such as a very costly admission for a neonatal patient compared to ongoing treatment of a haemophiliac member. The cost for the latter patient could be assumed to continue into future years and is, therefore, more part of the base of claim costs than the annual variation.

Emergency or trauma related claimants might also be considered once off, although to some degree these would be expected to occur in every year due to the more random nature of these occurrences. An analysis of these types of claimants over the years would be useful to understand the typical experience of the scheme but would need adjustment due to changes in the demographic profile.

For many of the high costing claimants it is likely to be difficult to ascertain if the costs are likely to be ongoing or once off as the clinical severity and indications of these conditions will vary significantly. For example, complications due to underlying chronic conditions may not recur in future years.

Costs in the year before death tend to be relatively high, so it could be that these high costing claimants are deaths. If so, one can analyse the morality rate to assess if it was higher in this period compared to prior periods. A higher mortality rate in this year may indicate that a lower mortality rate in future can be expected, depending on the age distribution of the membership.

The high cost claimants could be patients that are starting high costing oncology treatments which may continue for several months or years, depending on the cancer and treatment outcomes. An analysis of cancer patients by type of cancer, stage of cancer and treatment protocols would assist in determining the expected future claims together with trends in the incidence rate of new cancers over time, particularly given the worsening demographic profile.

Other sources of high costs for claimants include patients starting renal dialysis which requires ongoing treatment of relatively high cost. This might be a longer term cost depending on the effectiveness of the treatment and the availability of kidney transplants.

As the scheme has a relatively high proportion of older lives and is ageing further, the high costs may also be attributable to procedures and conditions for the elderly, such as hip and knee replacements. While these costs might be relatively lower than a typical high costing claimant in a large scheme, the small size of the scheme might mean that there is a disproportionate exposure to these costs.

Members with rare conditions and high treatment costs, especially if covered on an ex-gratia basis, may be considered high cost claimants for 2024 and beyond. The potential for alternative treatments or reductions in current treatment costs will affect whether they remain high cost members.

An increase in high-cost claimants could be due to a new pathogen outbreak or a severe flu season. Similarly, antibiotic-resistant pathogens in hospitals could lead to many high-cost claims. Future occurrences and risk mitigation plans should be considered.

As the scheme has two benefit options the analysis should consider the high costing claimants per benefit option to quantify the impact on claims cost for that option and hence the cross subsidy implications between the benefit options.

As the scheme is required to pay for the Prescribed Minimum Benefits, it is likely that both options will have exposure to high costing claimants.

The analysis can identify current high costing claimants; however, it may be informative to predict future high costing claimants based on several factors such as the age and disease burden profile of the scheme.

One could also analyse past trends of high costing claimants to identify if this is frequent or occurs only every few years.

Question 1(ii)

Suggest, with reasons, other factors that could cause the high claims cost increase. [8]

Question 1(ii) was an extension to part (i) above requiring candidates to suggest other reasons for the high cost claims increases. These were more systemic factors that could impact the membership base, rather than only high costing claimants, to highlight the claims risks and challenges that the scheme is dealing with and needs to consider in pricing and risk management.

The most likely factor driving the high claims increase is the change in the scheme's demographics.

The high and increasing pensioner ratio is likely to result in more lives requiring care and treatment for conditions relating to older age, such as cataract surgery, hip and knee replacements, which would impact costs driven by volumes and/or cost per procedure.

Elderly lives may also be more likely to have one or more chronic conditions and therefore this adds to the cost of these lives. The progression of these chronic conditions over time together with the development of additional related chronic conditions would increase claims costs.

Younger lives may be developing chronic conditions at a faster rate or at younger ages. The severity of their chronicity may also be increasing which adds to the costs of chronicity.

Claims cost increases could be experienced for a variety of other reasons including:

- Disease profile: in addition to chronic condition incidence and severity such as increased incidence of cancer or renal failure, rare medical conditions and other expensive conditions
- Increased factors such as members being overweight or obese which negatively impacts their health and may lead to new conditions or deterioration for existing conditions
- Increased number of patients with complications
- Increased number of patients with accident or trauma events
- Usage of high cost drugs for cancer and rare conditions
- Higher hospital admission rate
- Higher case mix or cost for patients admitted to hospital
- Higher utilisation of benefits out of hospital
- Higher claims costs due to fraudulent claims
- Poor coordination of care resulting in duplicated costs being incurred
- Benefit changes, such as removal of a network or copayments
- Benefit changes such as paying for GLP-1 drugs for diabetic and obese members

- Natural disasters impacting a region where many members reside
- Changes in medical practice, including new technologies such as robotic surgery
- Impact of selective effects, for example selective lapses or entrants
- Any changes in legislation

Evaluate high cost claims increases for other medical schemes to identify if there are systematic factors contributing to high increases or if this experience is limited to this medical scheme.

Question 1(iii)

Given the analysis in parts (i) and (ii), describe what you would consider and how you would project the claims experience forward for a 5-year period. Your answer should include projection scenarios. [7]

Question 1(iii) asked candidates to describe how they would project the claims experience forward and include projection scenarios. Stronger candidates discussed the various considerations in doing a projection in light of the high cost claimers experience and the systematic issues addressed in prior questions with the relevant techniques to do so. Very few marks were allocated for theoretical responses. There are various ways to do these projections and stronger candidates were able to highlight these ways and discuss which scenarios might be of relevance to the scheme to give insights into their financial position and risks for this particular scheme.

The projection analysis should follow the requirements set out in *APN 303 – Advice to South African Medical Schemes on Adequacy of Contributions*.

The projections of the claims experience relies on establishing a baseline expectation of claims cost increases into the next year and then subsequent years.

The expectation will depend on the analysis of drivers of the high cost claims experience in terms of whether the claims cost is likely to recur in future or not, and on the other underlying causes of the increase.

Should the view be that the high cost claims experience is particular to the year and is less likely to recur in future years, then allowance can be made for the claims costs or increases in 2024 to be considered an unusually costly year. The actuarial valuation report should set out the results of this analysis in detail and highlight reasons for the rationale.

However, if the high costs of claims are expected to continue into the future, then allowance would be required for this high cost on an ongoing basis. This depends on whether the cost of claims is driven by the demographic changes or if there are cost increases over and above the demographic change and whether these higher than expected costs are going to increase further in future years.

The projections should allow for initiatives that could reduce the cost of claims such as additional tariff discounts from service providers, benefit changes, managed care interventions such as improvement in disease management and so on. These initiatives would need to be costed over the time period and allowed for on a prudent basis. Analysis of the impact of previous cost reduction approaches should be used to determine the expected impact.

It may also be important to explore a combination of the above approaches where some allowance is made for high costs to continue. However, the rate of increase will need to be modelled to take account of underlying changes in the membership and disease burden as well as any changes to benefits and scheme rules.

In addition to the assessment of high cost claimants it will be important to formulate a view of factors causing the high cost claims increase and the extent to which these can be managed or averted in future.

The projection requires a view of tariff increases over the period, which will rely on current tariff levels and an expectation of future negotiations relative to expected increases in consumer price inflation.

The projection will also require an assumption of utilisation which can be derived from past utilisation and a projection of how utilisation may change over time, linked to the underlying membership size and profile, as well as any additional unexplained utilisation.

The claims projection should incorporate scenario modelling to quantify the impact of changes to assumptions for claims experience.

Scenarios could also be constructed for membership changes and any other changes that could impact claims costs that may be foreseen. It may be useful to consult with Leisure World Group to ascertain whether further downsizing or a future recruitment drive is anticipated.

It may also be useful to know if Leisure World Group are looking to make any changes to their medical scheme subsidy policy or eligibility criteria. A reduction in the amount or percentage subsidy would render the medical scheme cover more expensive for members.

If Leisure World dropped the required for compulsory membership, we would likely see selective lapses and joining, leading to increased claim costs. It would be important to model these scenarios if they are considered probable steps that the employer could take.

Selective lapses of younger and healthier lives may result in a worsening demographic profile if claims costs, and required contributions increases, continue to increase above salary increase levels.

The claim costs increases assumptions could be assessed relative to other schemes to understand if this is an industry dynamic or a scheme specific dynamic.

Question 1(iv)

Describe the actuarial analysis you would perform to assess the sustainability of the scheme. [5]

This question focused on the concept of medical scheme sustainability. Candidates were expected to discuss the interplay between demographic changes, claims cost increases, contribution increases and reserve levels over the short term and longer term. Candidates who detailed the specifics of this situation in the assessment and included the practical challenges of this restricted scheme performed better.

Medical schemes need to balance long term sustainability against ongoing affordability for members when determining the optimal contribution increase strategy.

Medical schemes that are sustainable in the long term ensure that contributions continually meet claims cost increases. The cost of adjusting for catch up of contribution deficits, due to the 0% increase after COVID to disburse reserve increases, can have a significant impact on the membership.

Sustainable schemes also have reserves that are sufficient to cover the legislative minimum requirement of 25% with additional allowance for risk based capital depending on their size and risk profile. This is particularly important for a shrinking scheme where the reserves are artificially increasing and higher than 25% but not maintainable due to risks of very high claims increases which cannot be matched by contribution increases.

The actuarial analysis should therefore consider all aspects of the scheme's financial position:

- The current and expected future loss ratio reveals the extent to which the scheme is adequately priced or will require corrective increases to contributions in future.

- The claims cost increases experience over time and how these are likely to progress in future and whether these increases are affordable for the employer and members of the medical scheme
- Utilisation changes driving claims costs increases and how these might be impacted by the underlying demographic profile and changes in healthcare demand and supply, moderated by planned management and interventions
- Current and expected future changes to the membership in terms of both the size of the scheme and the nature of the demographic profile. High contribution increases could lead to selective lapses (by members and dependents) further increasing the cost of claims
- The ability of the employer to afford the contribution subsidy in future. Or whether the employer is willing to increase the subsidy to reduce the impact on members and reduce selective lapses at the cost of the company's profits. However, if the subsidy continues into retirement, the increase in the employer's post-retirement liability may result in changes to subsidies for future employees or a buy-out of existing promises and removal of existing subsidies.
- The projected solvency position of the scheme allowing for these changes and whether this position is sufficient to cover the solvency requirement and allow for future claims outgo. Membership losses may increase the reserve requirement and therefore it will be critical to assess the reserve requirement relative to the risk to reflect the likelihood of not meeting the minimum reserve requirement and requiring an amalgamation with another large scheme.
- Whether or not the employer is subsidising post-retirement contributions, as this will have a material effect on whether employees remain members of the scheme after retirement.
- Whether the employer is imposing a condition of employment for its employees to belong to the medical scheme, and if so, the degree to which pressure may exist for the employer to open up freedom of choice to belong to a basket of medical schemes.
- Any planned or anticipated corporate activity on the employer's side, including the potential disposing or acquisition of new divisions and the attendant impact this may have on the scheme's membership.

Question 1(v)

Outline possible steps the employer (*Leisure World Group Pty Ltd*) or scheme (*Leisure World Medical Scheme*) could take in the event that the scheme is unlikely to be sustainable, and discuss the implications for members. [10]

Candidates were expected to demonstrate an understanding of the various options including amalgamation, liquidation, or changes such as benefit reductions, contribution increases. Stronger candidates discussed which of these might be most practical and why and how each of the stakeholders would be impacted. Weaker candidates made sweeping statements about employer donations and other solutions without articulating the likelihood or reality of these being possible and considering other options more fully.

Broadly speaking, the medical scheme can consider one of three possible scenarios:

- Maintain the status quo and attempt to restructure itself to improve sustainability
- Amalgamate with another medical scheme
- Liquidate or dissolve the medical scheme

The scheme should identify reasons why it is unlikely to be sustainable. Should it be due to a shrinking membership base, the employer and the scheme could explore options for other employers to join the scheme or to form an industry scheme to increase size, depending on the risk profile.

However, if the employer is expected to continue to reduce the size of the workforce, it might no longer be viable to offer a restricted scheme.

The scheme should compare its benefits and contributions with other medical schemes to determine the extent to which the scheme might be under-priced or over-delivering on benefits. This could guide whether a cash injection from the employer could be useful (even though probably very unlikely given the employer is themselves probably under financial pressure) and/or find ways to reduce benefits to align benefits and contributions. The cash injection from the employer may need to be regular to maintain solvency and ultimately put the company at risk of insolvency.

Assess the adequacy of reserves to determine if the reserves are adequate to cover the long term claims of existing beneficiaries in the event of an amalgamation.

If the reserves are sufficient, then seeking another scheme for amalgamation would enable a more seamless transfer of members to another medical scheme and they enjoy the protection of underwriting free cover.

If the reserves are not sufficient to cover the risk profile, the situation becomes more complex. Again, assuming the employer is unable to inject money to correct deficits and/or boost reserves, the scheme is unlikely to find a suitable amalgamation scheme as the members of that scheme would be worse off with an amalgamation. The Trustees would need to consider liquidating the scheme or dissolving the scheme. The impact to the members could be significant, with exposure to underwriting on joining another scheme, and / or any other penalties. They could also face risks of losing funding during periods of ongoing care, such as during an extended hospital admission or cancer treatment. Furthermore, they may be required to pay a higher contribution for the same level of benefits.

How would the employer subsidy be impacted by any changes; would they continue to fund 30% of the contribution in the event of an amalgamation or liquidation. This will impact members from an affordability perspective and, therefore, they may not be able to purchase the same or similar levels of cover in the open medical scheme market.

QUESTION 2

This question tested candidates understanding of National Health Insurance from the perspective of data, costings and funding models and cross subsidies, which is a key role and competence that health actuaries bring to such matters. Candidates were not expected to demonstrate detailed understanding of the National Health Insurance structures itself, with this question being answerable entirely from first principles and knowledge about the South African healthcare environment.

Question 2(i)

Describe in detail how you would use the medical schemes data to estimate the costs of delivering healthcare services to the population envisaged under the NHI framework. Your answer should include an explanation of the limitations of the medical schemes data. [10]

Stronger candidates could discuss what medical scheme data represents and how it would need to be adapted to extrapolate the costs of care to the remainder of the population, recognising the unique demographic and cost features of medical scheme members and benefits.

It should be acknowledged that the NHI is anticipated to be structurally dissimilar to the current fee-for-service medical scheme environment. Adjustments would need to be made in the costing model to reflect this:

1. Risk-adjusted capitation for primary healthcare will likely inspire different provider behaviour. One could potentially expect lower utilisation levels, and possibly also higher referral levels. Projected experience should be adjusted to reflect this, based on appropriate assumptions or analyses of the above-mentioned capitated experience.
2. The monopsony purchaser approach contemplated by the NHI could lead to cost reductions by healthcare providers, which should be reflected in the costings. Pricing of services, consumables and medication may need to be adjusted to reflect this.
3. Public facilities that employ salaried healthcare providers will also be contracted by the NHI. The entrenched behavioural patterns in these facilities are different compared to that of providers historically reimbursed through fee-for-service. This could also result in reductions in utilisation (albeit complemented by lower accessibility, e.g. due to queues or waiting lists) – especially at the outset - that should be allowed for in cost projections.

The costing of the National Health Insurance should be done with reference to the health system and funding structures as set out in the Act. Medical scheme data is largely reflective of a fee for service environment for a set of Prescribed Minimum Benefits. Therefore actuaries would need to use modelling and judgement when analysing medical scheme data so that it can be used in a way that reflects the NHI.

The medical scheme data is available at granular detail for membership, demographic, chronic registration, benefit authorisation and claims data across the various schemes and members that contributed data. The data would need to be anonymised appropriately with no personally identifiable identifiers included. Unique identifiers for each member would still be required to link demographic, claims, authorisation and chronic registration data.

As medical schemes provide benefits from cradle to grave (from the time of birth to death), the claims data reflects the utilisation and costs of healthcare services required at all ages.

Medical schemes are required to cover the Prescribed Minimum Benefits and therefore the data will largely reflect the utilisation and costs of these benefits depending on the benefit design per benefit option. The more comprehensive benefit options will reflect the cost of benefits over and above the PMBs for those members that purchase such cover.

It will be necessary to accurately identify claims included in Prescribed Minimum Benefits and to adjust for the differences in additional benefits between benefit options so that the claims costs across and within schemes can be comparable. Alternatively, benefit options with similar benefit levels and designs can be grouped together and into different benefit levels.

The medical schemes claims experience will reflect the demographic profile of the underlying membership. For example, schemes with older beneficiaries will incur higher claim costs (and utilisation), all else being equal. Standardising for various risk factors such as age and chronic disease profile may enable comparisons between schemes to determine costs of healthcare benefits adjusted for demographics.

Medical scheme data offers the distinct advantage of reflecting the nature of compulsory clinical coding on claims and billing coding; and therefore provides a detailed account of the costs of medical services, procedures, conditions and episodes of care.

With this detail, one is able to analyse claim costs for various practice types, for example GP utilisation and specialist utilisation. This can be split further by specialist type level as well as for various facilities such as clinic visits and hospital admissions and gain insights into the costs of care at a macro and micro

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level. These insights reflect population health needs and can support with the accurate determination of budgets for various levels of care for different population groups.

Medical scheme data is largely based on fee for service reimbursement which means that transaction level data is available. This enables costing of benefits at a granular level, reflecting the actual costs of the services rendered. The NHI reimbursement models will need to be considered here and modelled to the extent possible with the underlying fee for service data. Where capitation models, for example, are used in medical schemes, it would be useful to use these as a basis for estimating the costs of various capitation models (provided the underlying data is available).

For the purposes of a costing model, the medical schemes data would need to be analysed with reference to the benefits envisaged under the NHI. As these are largely undefined in the legislation, the data could be used to construct various packages of benefits. The packages offered on benefit options for lower income individuals might provide useful insights into the claims experience for a larger segment of the population.

The medical schemes data, however, would not reflect the cost of the uncovered population nor the out of pocket payments made by medical scheme members where claims are not submitted. The out of pocket payments could be estimated and added to the cost of benefits.

The NHI applies to the whole South African population. The population not covered by medical schemes is younger and therefore the claims experience would need to be adjusted to reflect the younger population, as described above.

Furthermore, as a function of age, as well as any other demographic differences such as region and socio-economic status and selective abstinence from medical scheme cover, the uncovered population might have a different disease profile to the medical scheme population and therefore the claims experience would also need to be adjusted for these differences. There may be other conditions that require estimate that may not be evident from medical scheme data, such as poorly managed HIV and TB.

Public sector access and service provision differs to medical schemes and therefore adjustments may be required to reflect lower levels of access and quality of care. This may require subjective assessment to produce adjustment estimates. Public sector data (refer to below) may also assist to give direction on the quantum of such adjustments.

Medical scheme data may include capitation payments, for example to GPs or dentists, and therefore appropriate allowance should be made for these benefits. These capitation arrangements could provide valuable information on an alternative to fee-for-service reimbursement.

The medical scheme data also reflects the underlying availability and supply of the health system, including medical professionals and facilities. To the extent that this is not matched by the NHI, the claims experience would need to be adjusted accordingly. Over supply in the private sector may result in overutilisation of healthcare services which may also require adjustment.

The costs of administering medical schemes should also be included in the costing model so that the costs reflect the full cost of healthcare provision.

Question 2(ii)

Describe data collection methods, potential uses and limitations of the public sector data. [10]

Stronger candidates recognised the nature of public sector data limitations, how to identify opportunities to collect samples of data or other data sources that could be used to understand the current demand for healthcare services and that this might be understated due to more limited access to care. Stronger candidates also discussed how public sector data might be structured and which utilisation and costs would be reflected.

The public sector clinic data might be a useful source of data as clinic utilisation is likely to be under-represented in medical schemes data. This will depend on the quality of the data – explored below.

The public health sector is managed at a provincial level and therefore hospital and clinic systems are likely to vary at a facility and/or provincial level.

Each province, and potentially each facility, may use different systems to collect and store data. This introduces complexity in standardising the data for analytical purposes. Data may not be readily available due to a lack of digital systems in many public facilities.

As public facilities do not necessarily bill for health care services rendered, they may not always keep records of healthcare services delivered.

The facilities may use different coding schemas, making it difficult to compare services and costs between facilities.

Doctors and other healthcare professionals are employed by the public sector earning a salary and benefits. The costs of services provided by these professionals are therefore largely fixed and it would be difficult to allocate this at a population and condition or episode level. Costs of employing doctors and specialists together with running the facilities may, however, be very useful to determine appropriate reimbursement rates.

The public sector data is unlikely to reflect the 'exposure'; in other words the characteristics and claims experience of the population that might use the services. Therefore, the public sector data would only capture the actual utilisation of those facilities. Allocation of the population to healthcare service areas would be required to estimate the exposure to risk together with district level reports on disease burden.

To obtain this data one might need to approach the various provincial departments of health requesting access to data. Each province is likely to have different access requirements and willingness to share data.

As healthcare provision is decentralised within the province, each facility might have discretion in the provision of data. One might therefore need to engage at a facility level to obtain data. As there are many facilities operating across the country, this would be a resource intensive exercise.

Where paper based records are used to capture patient utilisation data, this would require data capturing, another resource intensive exercise.

Where facilities are overcrowded with long waiting times, this will not necessarily be reflected in the data and it may be difficult to triangulate the supply and demand dynamics in the provision of services. Other data collection methods might include reference to academic research and district reporting citing the utilisation and costs of care in public sector facilities to the extent that this information is available.

Surveys could be done to collect utilisation information for specific populations or conditions or episodes of care to approximate public sector utilisation.

One could also refer to published accounts for the public health system and the population covered to estimate a per capita cost. However, this would not reflect the actual costs of services rendered for the population seeking care.

Another useful source of data is employer clinic data where these clinics are funded by the employer. They might reflect utilisation levels in a public sector facility.

Question 2(iii)

Describe the methodologies to incorporate both medical scheme and public sector data into the costing model to estimate the costs of healthcare provision for the population. Your answer should explain how the interpretability of the model results is impacted by the data used. [5]

This required candidates to bring parts (i) and (ii) together showing their knowledge of each of the costings and how they would be applied to estimate healthcare costs under the NHI benefit package. Stronger candidates could identify which aspects of the costings would apply to which populations and how to adjust the costings to take account of different benefits or reimbursement models.

The methodologies used depend on the extent and quality of data obtained from the public sector facilities.

Use credibility theory to weight the utilisation and costs of medical scheme and public sector experience. The weights will depend on the relative quality of public sector data and actuarial judgement would be required and the degree to which the NHI delivery system will ultimately mimic the public vs the private system.

Use demographic risk adjustment to approximate the cost of care in the public sector based on the medical schemes experience. Apply adjustment factors to reflect lower levels of access to care and services.

Refer to public sector data for specific aspects of healthcare delivery where this data is available. For example, there might be a select number of facilities that have good quality data that could be reflective of the costs of delivering the services in those facilities.

The public sector data may reflect utilisation patterns at a primary care level for primary care services rendered to the population, where these are captured in the data and reliable enough to represent primary care experience. This may, however, be more reliable than medical scheme data where primary care is often funded out-of-pocket on less comprehensive benefit options.

The medical scheme data may reflect utilisation patterns of tertiary and secondary care given the structure and nature of the Prescribed Minimum Benefits that medical schemes are required to cover.

The access gaps in the public sector may suggest that the utilisation in the public sector, while actual experience, is likely to be under-stated relative to if, say, capacity and capability matched demand for

healthcare, or at least was scaled up towards meeting more of the demand. Data on waiting times and abandonment on seeking care would be valuable where available.

Question 2(iv)

Outline the advantages and disadvantages of a single funder and multiple funder model. [10]

Although theoretical responses were given, better candidates could apply these concepts in the South African healthcare landscape and discuss the advantages and disadvantages in more detail

Advantages and disadvantages of a single funder structure

- The development of a single funder structure could require massive reorganisation of the healthcare system
- Healthcare funding is concentrated within a single entity with decision making power on the purchasing of healthcare services
- The centralisation of purchasing in one entity eliminates competition from the market which would help stimulate strategic purchasing, pricing and efficiencies in the system.
- A single fund may, however, result in greater efficiency due to economies of scale and greater market power to negotiate tariffs.
- To administer such a large fund could be administratively cumbersome, expensive and complex and likely bureaucratic leading to inefficient and irresponsible purchasing decisions.
- A single fund is unlikely to be able to cater to the different needs of the population across all regions and all levels of care.
- Accountability for spend and quality of care is likely to be limited as there is no alternative to compare to
- A single fund could potentially result in greater consistency in funding decisions and reimbursement rates
- This model presents substantial risks that are likely to result in the exodus of healthcare professionals and lack of investment in the health sector due to actual and perceived risks.
- Administrative costs may be lowered as providers deal with a single entity and don't have to coordinate across multiple insurers
- People have no opportunity to choose a better value for money option
- Concentration of risks in a single fund could increase the risk of insolvency

Advantages and disadvantages of a multiple funder structure

- Promotes competition between funders for funding and delivery of healthcare services
- Competition is likely to result in lower costs of healthcare delivery and differentiation based on ability to deliver efficient health care services.
- Multiple funder structures allow providers to compete on the non healthcare costs of delivering the healthcare services as this is a key component of the overall costs.
- Multiple funders allow healthcare spend to be distributed among several players in the market and thereby reduce dependency on any single provider over the others (depending on relative size) and that each needs to be sustainable to support the needs of the population.
- A multiple funder structure may be more complex to oversee in that there are several funding vehicles to monitor compared to one. However, one funder would not necessarily be simpler to oversee due to the inherent complexities of the aggregation of risk and scale required to operationalise the funding for the population at large.
- A multiple funder structure enables providers to differentiate their offers to the market and appeal to different segments of the population.
- A multiple funder structure would lead to greater competition in the provision of administrative and managed care services, improving efficiencies and quality of services provided

Question 2(v)

Describe ways in which income and risk cross-subsidies are achieved within current healthcare funding structures and how this might change within a single funder and a multiple funder structure, respectively. [7]

Question 2(v) was focused on income and risk cross subsidies in current funding structures and how this might change within a single funder and multiple funder structure. Candidates were expected to unpack current medical scheme cross subsidies and the unique ways in the funding structures enable or change cross subsidies across the population.

Income cross-subsidies

Medical schemes offer income cross subsidies where contributions are income rated. This enables lower income individuals to purchase a similar level of cover to relatively higher income earners. These contribution tables are more common in employer or restricted schemes and tend to be used more for lower costing benefit options.

Income cross subsidies are achieved within the tax funded public sector with tax payers contributing to the fiscus and the money being allocated to the provinces to spend on healthcare. As the public healthcare sector is largely utilised by lower income individuals, there is income cross subsidies currently in place between tax-payers who make up medical scheme membership and those that cannot afford medical scheme membership and using public healthcare services.

The medical scheme tax credit is a monthly rebate amount that carries an element of income cross subsidies with the flat amount being relatively larger for lower income earners compared to higher income earners. The tax credit further motivates tax-payers to belong to medical schemes and reduce the burden on public health facilities resulting in greater cross-subsidy.

Within a single funder model, all money would be pooled and paid out according to healthcare need. The income cross subsidies would therefore be implicit within the tax base paying for all healthcare services as is currently the case.

Risk cross-subsidies

Medical schemes operate on the basis of risk cross subsidies with the fund indemnifying for the costs of healthcare based on healthcare need. Therefore, healthier lives cross subsidise sicker lives. This

currently occurs within the multiple funder structure with the ability to cross subsidise by risk needs depending on the levels of anti-selection, pricing and risk management.

Risk cross-subsidies in medical schemes have been eroded due to anti-selection, which in turn has been exacerbated by the lack of risk equalisation and mandatory cover – both of which were originally intended to complement community rating and make it more sustainable. Without risk equalisation, individual medical schemes may lose their internal capacity for risk cross-subsidisation, due to ageing (e.g. Transmed). Without mandatory cover, the same applies to the industry as a whole.

Risk cross-subsidies in medical schemes are also impeded by the self-sustaining requirement in section 33(2)(b) of the Act. This is exacerbated to the degree that older and sicker populations prefer to select more comprehensive options which will become ring-fenced risk pools to the degree that such options are compliant with the self-sustaining requirement.

These shortcomings would not apply in a single funder model as the single funder model would cover the whole population.

The single funder model would, in theory, direct care where it is needed and therefore require risk cross subsidies between healthy and sick and between and within various population cohorts. The extent of risk cross subsidies would depend on the benefit package, access and eligibility parameters and degree of funding available.

The basis of risk needs should be defined as there would be a trade off between access to basic healthcare services for more people compared to access to tertiary and more costly healthcare services for fewer people, with each cohort having their own needs.

Question 3

Question 3 was set in the country of Acturia so that candidates focused on the healthcare market structure given which is very similar to South Africa and where hospitals can and do employ medical specialists. Many candidates missed the fact that the medical schemes or other funders will have the specialists' billings data and not necessarily the hospital group themselves.

This question was mostly higher order, requiring candidates to synthesise their knowledge about the ways in which South African medical scheme and private hospital markets operate with regards to medical specialist reimbursement.

Question 3(a)

Discuss the data you would gather and use in your analysis.

[6]

Stronger candidates went into detail about how the data might be obtained, which data fields were needed and why, and how these fields might be used for the analysis. Candidates providing lists of data fields without explanation or substantiation did not receive marks.

Most candidates assumed that the hospital would have the specialist billing information rather than this information needing to be obtained from medical schemes and other funders.

Medical specialists are paid on a fee for service basis by medical schemes and not by hospital groups, therefore hospital groups will not have data about specialist earnings.

We would need to obtain data on specialist billings from medical schemes and other funders of specialists' services. This data would reflect the gross earnings of specialists and should be supplemented with data from their various sources of income to estimate total gross earnings for specialists.

Medical schemes or health insurers are likely to be the largest and most representative source of specialist billings as they cover a relatively large population, so would be a suitable basis for the data collection. Specialist may, however, see a few private patients paying out of their pocket. This should be the minority though.

Data on specialist billing is required at a practice level of detail showing the practice type so that the specialist type can be identified, such as physician, surgeon, etc.

The billing practice number is required to show who the billing entity is and further detail on the specialists within each billing entity would enable quantifying how many specialists are billing under that practice. This is an important step to obtain earnings information at a per practitioner level, particularly for specialists who work in a group practice.

For those who work in a solo practice, the billing entity will be the same (or similar to) the practitioner.

The time period over which data is collected should reflect the latest earnings information and where historic data is used it should be adjusted for tariff increases and changes in billing practices.

The data should be reviewed to account for differences between benefit option reimbursement levels and benefit design. For example, benefit options reimburse at different levels (such as 100% or 200% of scheme rate). Therefore, an adjustment could be applied to measure the relative earnings levels removing the impact of plan design. This may not be a true reflection of the specialist's actual income as specialists in more affluent areas will typically see patients on higher benefit options that reimburse greater multiples of the scheme rate. The provider may also be able to recoup the amounts not funded by the member's benefit option from the member directly. However, there will probably be a high level of bad debt for these amounts.

The data should be gathered and reviewed at a practice type level and potentially at a practice sub-type level to account for further specialisation and hence variation within practice types.

The data should be assessed for outliers – both minimum and maximum earnings – to reflect specialists who work mostly full time in the private sector and those super-specialists that only take on very complex or high risk cases.

The data may include billings for medical equipment, surgical items and other aspects that might not be directly incorporated into a specialist employment model if these items would be provided by the hospital group under such arrangement. These costs would need to be stripped out and added to the hospital costs so that the total costs are not understated.

As the data is on a fee for service basis, the analysis should include the frequency of each item billed. For specialists practicing in hospital, this would include the admission data for hospital admissions, number of theatre time minutes billed per theatre admission, number and level of acuity of ward consultations per admission and the detail of each of these including procedure codes and tariff codes.

For specialists practicing out of hospital (only or in addition to in hospital), data would need to reflect billings per consultation with procedure and tariff codes.

An additional source of specialist earnings data is from gap cover claims. Gap cover is more likely to pay for specialist claims in hospital and on benefit options with relatively lower reimbursement levels. It would be important to allow for this data appropriately so that total earnings are reflected in the analysis as far as possible.

Similarly if any out of pocket expenditure is available, as well as consideration of debt written off as unrecoverable from members where applicable.

Specialists have a cost of delivering their services which should also be taken into account to estimate their net earnings.

Specialists would typically employ various support services such as secretarial services to assist with appointments, billing, etc, nurses to assist with providing care and potentially other specialists to assist with care delivery such as assistant surgeons, for example. Specialists may also rent facilities and equipment which could be provided by the hospital and offset these costs.

These operational costs would vary by specialist type and therefore it would be important to take account of the specific deductions from gross earnings to determine the net earnings for the various practice types.

The determination of net earnings is made complex due to the fact that the cost of operations is unlikely to be available in the medical scheme data. The estimates of these costs would need to be obtained through various sources including the specialists themselves, hospital groups (e.g. rent equivalent costs), practice groups etc.

As the client is a large and established hospital group, it may be informative to incorporate location data to assess regional variation in earnings.

The degree to which the specialist works part time or full time for that hospital group would also be useful information to analyse to reflect the extent to which the earnings show a subset of total earnings. Many specialists work in multiple hospitals.

Question 3(b)

Discuss the analysis and modelling you would do to construct the remuneration framework.

[7]

Part (b) was about analysis and modelling to construct the remuneration framework. Candidates were expected to demonstrate ways in which they would use the data from (a) to design and calculate remuneration models and factors to consider when doing so. Candidates tended to give theoretical answers rather than discussing how to account for underlying patient complexity, time versus outcomes-based remuneration and dealing with aspects including quality of care, under-servicing and capacity.

A few candidates assumed limitations including that employing a specialist meant they had to work at one hospital only, rather than exploring how it might work for doctors working at more than one hospital as is common practice.

Assuming the data set out above is available, the analysis and modelling would be firstly to estimate gross earnings and then net earnings of specialists by practice type and sub-practice type level.

Gross earnings

The total billings by each practice type over a defined period, say a year, which reflects the medical scheme billings, gap cover billings and any other billings will be an estimate of total earnings.

Total earnings would need to be modelled at a daily, weekly or monthly level to convert to an equivalent salary.

The model would also require an estimation of the case load that the specialist practice type is reasonably able to perform within a given time period. The potential patient volumes and case complexity over a period and over say a day should be modelled so that the earnings can be calculated per time period.

These earnings then require capacity adjustments for doctors who work longer hours than a full time employment contract may require, and similarly for doctors who work shorter hours such as part time or on a locum basis.

To determine a salary, the modelling would need to reflect the equivalent earnings for full time work based on a reasonable level of capacity and throughput in that time. This may require time and motion studies to estimate reasonable workloads for a full time employed specialist.

Gross earnings should be analysed by several factors including years of experience, levels of specialisation, and other factors reflecting skill, experience and earning potential.

Net earnings

The gross earnings above are then reduced by the costs of delivering services as outlined above.

Salary equivalent

The final proposed salary should include appropriate allowance for tax and employee benefits commensurate with the group's remuneration policy.

Model variations

The model could allow for payment for overtime. This could take the form of hourly payment or a salary adjustment depending on the overall amount of overtime done per month or per year.

The hospital group could offer a base salary to all specialists with a multiplier per specialist practice type depending on several factors such as the level of specialisation, scarcity of the skill, intention to attract and retain particular practice types, patient demand for care, etc.

The remuneration model could differentiate by years of experience and levels of specialisation to remunerate more experienced doctors accordingly.

Another variation of the remuneration model could involve setting a bonus or incentive for the specialists. This would need to be designed considering performance metrics and aligning incentives while balancing the clinical autonomy of the doctor.

The complexity of the remuneration model should be weighed against its ease of implementation and any direct or unintended consequences of the model.

Question 3(c)

Discuss the risks and implications of employing medical specialists on a full-time basis for the hospital group, medical specialists and other impacted stakeholders in terms of the remuneration framework. [7]

This question was generally poorly answered, possibly as it was the last question in the paper, and/or candidates gave very brief responses to the risks and implications for each stakeholder.

Specialists

- Risks of reduced or loss of clinical autonomy depending on design of salary package and how incentives are defined and payable.
- Risks that salary may be lower than current earnings
- And / or working hours are longer to achieve the same earnings as before
- May be attracted to the predictable earnings, particularly for younger doctors starting out
- Risks that remuneration model does not account for patient profile adequately

Hospital group

- Hospital group would need to develop and implement an appropriate billing structure for medical specialists
- Changes to operational and financial models of the hospital group
- Predictable cost outflow which may be higher or lower than expected when implemented
- Risks of employing specialists from a labour and managerial perspective
- Medical legal risks and insurance premiums for specialists would transfer to the hospital group
- There is a risk that the embedded behaviour represented in historic FFS data reflects over-servicing, which raises a question as to whether this should be adjusted downwards to reflect more appropriate remuneration. This would need to be weighed against any changes in access such as waiting times or queuing under a salary model.
- Conversely, there is a risk of under-servicing with a salary model (depending on the incentives) which could then lead to lower volumes of patients serviced in the hospitals, impacting earnings or reduction in quality of care and reputational damage.
- How to account for patient complexity in a remuneration model to remove incentive to focus either more or less on a sicker patient cohort and whether this risk resides more with the hospital group or with the doctor

Other stakeholders

- Medical schemes could contract with a single party such as the hospital group rather than the hospital and / or specialist separately
- Patients may lose the direct relationship with the specialist
- Billing for services rendered changes together with the inability to analyse efficiencies across services provided
- Allied health professionals and how their operating models and remuneration might be impacted by a change in specialist reimbursement, particularly where these allied professionals work closely and rely on referrals from the specialists
- Medical societies and their representation of the relevant health professionals