

EXAMINATION

April 2009

**Subject SA1RSA — Health and Care
Specialist Applications**

EXAMINERS' REPORT

The solutions contained in this document are more detailed than what would typically be required for a clear pass. Any relevant points made by candidates were given full marks, even if they are not contained in the solutions presented below.

Solutions to Question 1

Candidates' performance on Question 1 was exceptionally poor, with the exception of part (viii) – only a small number of candidates scored well on all parts.

- i) Age
- Gender
- Occupation
- Income level
- Marital status
- Province
- Medical history
- Industry in which employer operates
- Current HIV cover available to employees, particularly ART
- Voluntary or compulsory cover
- Number of employees registered for HIV / AIDS programme, if any

Some candidates discussed pricing of the product in this part, which was clearly not asked. Performance was generally disappointing. Most candidates missed the central role that the definition of disability plays in managing risk, and the strategies required to manage HIV / AIDS disability risk in particular.

- ii) Ensure that there are adequate disability management processes in place
 - Including ability to suggest alternative duties, part-time employment etc with a reduced benefit
 - Also allow for rehabilitation benefits
 - And ensure as far as possible early notification and manage claims from early on
 - Could use waiting periods and / or deferred periods to manage risk
 - Underwriting strategy could also be used to reduce risk
 - Regular assessment of cases in payment, particularly if there are changes to the ART protocol or treatment, which may improve the health of an individual
 - Lump sum payment should be kept as low as possible to avoid perverse incentives to go on disability
 - E.g. may be limited to Rand cap and to certain percentage of salary
 - Ensure that the definition of disability arising from HIV / AIDS is as objective as possible, and use concept such as disability on the basis of own or similar occupation, as opposed to own occupation only.
 - May be difficult to determine whether disability arises from HIV / AIDS or not – definition should be as clear as possible
 - Ability to change premiums or benefits if there are substantial changes in an employer's health care arrangements
 - Introduce a waiting period for benefits, as post-disability mortality is high.

PLEASE TURN OVER

It was especially on this part that most candidates disappointed. Most candidates missed the central concept, namely that a Select model is required. This concept is covered in some detail in the Specimen exam and in the core reading.

- iii) A select or sub- population model is required for the demographic modeling
The Select model will take into account the interactions between the employed group and the population around them
A Select model will have to be run for every employer group, and a view formed on the risks posed per employer group
Or, if the employer is not large enough to justify such an approach, run the model for the relevant industry or salary band to derive base rates
Which means that data has to be collected on the HIV / AIDS risk characteristics of each group, including income, industry, age, gender, province
This data can be used to decide on how the socio-economic groups within the employer (based for instance on income and province) relate to the 4 major risk groups in the national model (i.e. PRO, RSK, STD and NON)
The employer-specific model then has to be calibrated relative to any relevant statistics of the group,
such as historic mortality in various socio-economic groups,
any information on past disability levels and trends,
including the age and gender and location of deaths and disability applications,
the results of any VCT programme, or HIV screening in the workplace, adjusted for any potential bias
and results of published studies about HIV prevalence in the relevant industry or socio-economic group
Finally, the model should take into account current and future access to ART, by considering any data from medical scheme(s) or HIV / AIDS disease management companies involved: take-up, pathology data, survival rates on ART
Based on all of this, the Select model should produce results in terms of:
- the number of new infections each year
 - the number of individuals in each of the 4 stages of the disease (asymptomatic, early symptomatic, medium symptomatic and late stage AIDS)
 - with disability benefits being paid mostly in respect of individuals who are AIDS sick
 - the number of HIV positive individuals on ART

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Several candidates did not read the question, and failed to appreciate that the capitation fee is payable per patient registered on the HIV / AIDS treatment programme, i.e. that they would already be receiving treatment.

- iv) The capitation fee for each doctor has to reflect the sickness profile of that doctor's registered HIV patients
Based on the available data, and the demographic projection described above, determine the number of patients in the different stages of the disease
In particular, identify the percentage of patients who would be in need of ART, and also whether they would need first, second or third line treatment
Bearing in mind that, for this group of employees who have not had easy access to ART up to now, the incidence of disability may be higher and may arise sooner than for those who have been on the medical scheme
The stage at which benefit are taken up is a key assumption
Now set an initial average capitation fee for a doctor depending on the average costs involved for patients in each stage of the disease, derived from the data, and the percentage of patients expected in each stage.
Once the programme is implemented, and the doctor has a number of registered patients, each doctor's fee would be adjusted based on the disease staging of that doctor's profile of patients
The price of the capitation fee would also be set according to the treatment protocol agreed with the OHN for each stage of the disease
- v) The OHN fee should consist of the average capitation fee paid to doctors, plus a fee for pathology and hospitalization
Based on the demographic modeling, estimate the number of patients expected to be registered on the programme, and the disease stages found among them
Given the capitation fee applicable to each stage, now determine the average capitation fee
Then consider expected pathology claims based on disease staging
And expected hospital costs based on disease staging
Divide the total cost of treatment by the number of employees to obtain the average cost per employee per month
Now add margins for any administrative and other costs of OHN
Allow for inflation
Allow for a contingency margin
Then add margins for tax
And finally the 10% profit margin, to obtain the total fee paid to OHN

PLEASE TURN OVER

Most candidates performed reasonably well on this question.

- vi) OHN is paying for the provision of medical services...
and receiving a premium or contribution in return for it
And hence would therefore be doing the business of a medical scheme
But may obtain approval from the Registrar for Medical Schemes to do this
business without registering as a medical scheme
PMB benefits are as follows, most of which would be provided by OHN, hence
emphasizing the fact that they are doing the business of a medical scheme:
Diagnosis and prevention, including VCT and post-exposure prophylaxis
Treatment for prevention of mother-to-child transmission
ART and other relevant medication
Medical management, including comfort care and pain relief
- vii) The take-up may be higher than expected, or the costs per patient may be higher
than expected
Employees may also not comply with the programme, and hence costs may be
higher due to treatment failure
The employer is paying for the treatment of employees, but their families do not
seem to be covered. This is a problem as patients may share medication with
family members who may also be HIV positive, and this may result in drug
resistance
...which also results in reduced impact on productivity or absenteeism
The employer is open to criticism for paying only for HIV treatment for those low
income employees not on the medical scheme. Low income cancer or diabetic
patients may legitimately also ask for payment of their treatment
OHN may fail to pay claims in time and the employer may be liable for it, or
OHN may not have sufficient capital to provide for fluctuations in claims
experience
OHN may then go insolvent or require increases in fees to continue business
Services provided by OHN may be of poor quality as the incentive is to reduce the
cost per patient, leading to reputational risk for the employer
OHN may attempt to register as many people as possible, even and especially if
they do not require treatment, to maximize their fee. This may increase the cost to
the employer

PLEASE TURN OVER

This question was generally well answered.

- viii) The mining sector is the industry most heavily affected by HIV / AIDS
This is because of the high proportion of migrant workers, away from their families, and there is a significant proportion of the employees living in hostels, so it is likely that the risks in this mining group would be high
Also, there is additional exposure to lung disease due to the exposure to dust, and the incidence of TB, together with HIV, has severe implications for most mines

Likely consequences:

- low productivity
- high absenteeism, due to illness, as well as the consequences of high mortality among families, colleagues and friends
- high mortality
- low morale
- high cost of death benefits and disability benefits
- high costs of recruitment to replace workers
- high cost of training new employees
- loss of skills
- with potentially more accidents and other losses

Mitigation strategies:

Intensive HIV / AIDS education programme

Providing anti-retroviral therapy

Doing a Voluntary Counselling and Testing campaign at each of the mines

Train managers in how to handle HIV positive employees in the workplace

Ensure that important staff are multi-skilled

Ensure that production processes are not dependent on particular individuals

Structure benefits in such a way as to minimize the cost of benefits, but care should be taken that benefits are still meaningful for all employees

PLEASE TURN OVER

Solutions to Question 2

Candidates performed better on Question 2 than on Question 1.

Part (i) was generally well answered, with most candidates appreciating the risk of option downgrading. However, many candidates did not identify the full range of mitigation strategies available.

- (i) Scheme could grow too fast (e.g. more than 15%) and experience capital strain, and take operational strain due to fast growth
Could grow too slow and not get required minimum size, and subsequently have to collapse the option, running market risk
Pricing could be incorrect for new plan resulting in losses and solvency erosion
Pricing error could be due to demographics being different than expected
Risk of buy down – that members buy down to a new lower cost plan without significantly modifying their claims behaviour, resulting in lower premiums collected for the same / similar claims
Buy down risk seems particularly relevant in this case as the new proposed plan designs fit in below the current option range, i.e. it is a cheaper plan
Anti-selection – that the new plan is attractive to people with a high burden of disease, or with specific diseases and they join in larger numbers than expected causing losses

Mitigation strategies:

Growing too fast can be indicative of pricing being too low. If margins are built properly into premiums, the solvency growth will resume as soon as growth slows. If growth is due to marketing efforts this can be slowed to accommodate more reasonable growth

For slow growth, an improved marketing plan (a road show with Brokers) will help raise awareness of the new product.

Too slow growth could also mean overpricing so check pricing basis.

Ensure design appropriate to meet need if growth is slow – in terms of benefit design and affordability. Could design in discussion with key brokers or employers to ensure product is appropriate to grow scheme as intended

Pricing: ensure adequate data for pricing, and that base data appropriately checked.

Check assumptions for reasonability and do sensitivity testing

Check pricing levels against competitor products for reasonability of pricing (premiums and financial performance figures available from the Councils report, at a lag)

Administration and managed care fees should be set at appropriate levels relative to other plans, so as not to be too high a percentage of premium of the new plan

If the plan is to have a different contribution structure to the other options (eg different rules for charging for a large number of children, or income based contributions) – these differences should be taken into account

New plans occasionally get different tariffs from providers, especially for lower cost plans. These differences in cost must be factored into pricing properly

To protect the scheme completely from pricing risks a capitated provider could be sought to take the risk for the new option, if one could be found that would agree to the chosen benefit design.

PLEASE TURN OVER

Demographics: do proper demographic modeling, using GLMs for example, help to understand the sensitivities in pricing regarding demographics.

For lower cost options, buy down can be partly mitigated through income based contributions, although these are sometimes difficult to verify, and the number of bands and differences in contribution between them can be difficult to balance correctly

Education and marketing also play a key role in plan selection and these should be conducted so as not to promote buy downs.

The scheme should ensure that proper underwriting rules are still applied and not waved in an effort to grow the scheme faster.

Reinsurance may be used to mitigate the risk, but would be hard to obtain in the South African market

Again, education and marketing play a key role in anti-selection - for example advertising the best chronic benefits in the market will potentially lead to an influx of these patients

(ii)

1) A modified hospital and chronic cover plan with deductibles applied to certain elective procedures

Advantages:

Deductibles on elective procedures should lower incidence of those procedures, which in turn lower costs

The deductibles also save the amount of the deductible on each procedure done which further lowers cost

The deductibles can act as a disincentive for anti selection on the basis of seeking treatment for one of these procedures

No network restrictions

Disadvantages:

The actual impact on member movement might be that healthier members who do not expect to have to have these elective procedures move to the new plan, resulting in a drop in premium for no saving, eroding the loss ratio of the plan they have left

Collecting deductibles can be difficult logistically

Members may forgo necessary (even though elective) care due to the deductible being unaffordable

A hospital only plan can give rise to incentives for admission to hospital in order to access benefits like radiology not available on an outpatient setting, which inflates costs

PLEASE TURN OVER

2) A modified hospital and chronic cover plan with only certain hospitals appointed as designated service providers and a restricted chronic medicine formulary

Advantages:

A network plan can bring costs down significantly

Through negotiation with the specific hospitals reduced tariffs can be sought in return for more patient volume

A restricted chronic medicine formulary can bring chronic costs down quite significantly

Disadvantages:

Membership movements could cannibalize the other plans – members living close to the hospitals in the network will choose the network option, so the scheme loses premium without a commensurate drop in costs

Non voluntary admissions for PMBs and emergency admissions in non network hospitals have to be paid in full which limits the extent of possible savings

If the network is too sparse or restrictive, access to hospital care may be too limited, compromising the quality of healthcare delivered by the plan

Restricting members' choice of service provider

Buy down may occur from healthy lives who are only concerned with emergency cover in hospital

A restricted medicine formulary is resource intensive to develop and maintain, in terms of getting the balance right as to what medicines are on and off the formulary

Formularies inevitably have to allow for exceptions and this can be operationally intensive to manage

3) A traditional option with a hospital limit of R300,000 per family, a General Practitioner network for which members must each appoint their own GP and a restrictive chronic medicine formulary.

Advantages:

A traditional option with a low limit will appeal to a different market than the existing plans which might help growth

This plan design lends itself more than the others to finding a capitated provider to take risk

Having to choose a GP means the GP can play a proper role in the health system of coordinating care, assuming all the right reporting and measurement structures are in place. This can reduce costs significantly

The hospital limit will help prevent buy down as members that can afford higher contributions will likely be risk averse to being exposed to high cost hospitalisations

Disadvantages :

The hospital limit provides no protection for PMBs and emergencies

The GP network needs to be carefully chosen to ensure efficiencies are achieved, and GPs should be paid appropriately so as not incentivize risk shifting to specialists and hospitals

Members may not always be able to go to their chosen GP, if they are out of town for instance

PLEASE TURN OVER

Candidates generally performed fairly well in this part. However, many candidates mentioned reinsurers as a source of data for medical scheme pricing, which is simply not correct in the South African market.

(iii) Beneficiary data

For existing options detailed beneficiary data – member and dependent numbers, start and end dates of memberships on plans, dates of birth, gender, region, income level if recorded, family size, chronic status,

Claims data – should be requested for all options, a medium scheme could get away with using a year's worth of its own data, but could get two years data to be safe, and be sure to inflation adjust.

Claims data should include service dates or at least service months to allow scrutiny of seasonality

Hospitalisation information – detailed information by admission – beneficiary number to link to beneficiary data, admission date, unique admission number, hospital name, hospital type, hospital network, total cost of hospital, total cost of related accounts, costs of specialists in hospital including information on billing rates, PMB indicator, Emergency indicator, Length of stay (while this is not directly relevant for costing if no LOS limits are going to be applied, but is important when considering certain PMBs – mental health for example)

Outpatient Data – beneficiary number again, detailed data on Pathology and Radiology (by tariff code) and total costs, number of GP visits and the costs associated with these visits including information on procedures done, data by specialist discipline (overall costs and visit frequencies)

Medicine Data – beneficiary number, acute or chronic medicine indicator, month of service, chronic disease if for chronic, nappi code, paid amount (could differentiate between savings and threshold on those plans), indicator whether on / off formulary,

Information on the growth and lapse rates of the medical scheme, by option, as well as the rates of movement between options,

Financial position of the scheme – ideally a projection of the scheme for the next year by plan of that the overall impact on solvency of the new plan can be incorporated, allowing for potentially anti selective member movements from other options

Some candidates failed to explain how the data of the existing options of the scheme would be adjusted and used to price the new option. Some did not discuss at all how to take the benefit features of the new option into account in the pricing.

(iv) Data checks:

Check membership totals against statutory returns, possibly REF grids

Check ratios for reasonableness - chronic proportion, female proportion, age distribution,

And check against industry stats and ratios

Check claims data against financials and statutory returns data

Check the data versus data from previous years and check that changes are reasonable.

PLEASE TURN OVER

Methodology

Key consideration of profile of member likely to join the option – both from existing plan and new members.

GLM modeling can assist in testing the sensitivity of member profile movements the new option, and the impact of those profile members leaving other options

The benefit design can be overlaid on existing claims to represent the impact of the applying limits to certain claims categories.

Applying the hospital network will not mean removing the hospital costs associated with hospitals not on the network, but rather replacing them with hospitals in the network at better tariff levels

This starting point makes no adjustments for possible behavioural changes that might occur on the new option, which should be included in the modelling

Certain outpatient benefits are going to be paid from the risk pool and this might impact on the propensity to claim, so margins can be added for prudence

Limits for outpatient benefits may be viewed as targets which can again lead to increased usage on certain discretionary benefits, and may require a margin

Care should be taken when considering seasonality distortions that might arise when using claims data from Savings plans and Threshold plans, compared with seasonality on a traditional option.

Modeling should include duration of membership and what impact this has on claiming levels

GP visits costs should be modeled looking at the distribution of the number of visits, and what risk factors are important in determining the distribution shape

Are procedures done in the GPs rooms covered? Detailed claims information is need on these; the benefit may be a global fee per visit that includes procedures

Choices as to what rates to pay specialists at – low cost options usually at benchmark rates (eg NHRPL or Scheme's own internal rate which is usually close to NHRPL).

Depending on nature of Outpatient limits for radiology / Pathology – could be Rand limit, then just need the distribution of costs and how these distributions change for different risk factors; or could be no Rand limit but basket of tests from each group – then need to model the frequency of these tests, with an allowance for an increase of current experience of certain tests are not allowed – for example, more Black and white X-rays may be done if MRI or CT scans are not funded.

Should take into account market information – competitor plans design and costs, and scrutinize Council's annual returns to assess financial performance of these competitor plans

If there are a range of medicines possible for each condition, then either a clinically derived weighted basket of medicines could be used, or the most expensive medicine on the formulary to add prudence

Note that not all patients may move to medicines on the formulary as Doctors may motivate for special circumstances to stay on the specific medicine they have prescribed

To price acute medicines – a mapping will be required between all acute medicines used on other plans, and the formulary medicines; again the cost can be estimated by substituting the medicines.

These methods make no adjustments for a drop in the usage of medicines, other than that allowed for in the demographic modeling.

PLEASE TURN OVER

Allow for inflation

...and for expenses (administration, managed care and commission)

...and potentially for a solvency margin

Finally do some sensitivity testing before recommending the contributions

Choosing a hospital network:

A key part of the work is deciding on the network of hospitals. There should be a balance between lower cost hospitals and access

Sufficient hospitals should be chosen to ensure access to appropriate care is not compromised

The regional distribution of members expected on the new plan will inform which areas hospitals are needed in

If there is more than one hospital in the area then the scheme can seek to negotiate lower tariffs in return for patient volume

Alternatively hospitals can be chosen based on efficiency, assuming the right tools are available (DRGs or something similar)

The quality of care provided by the hospitals is important when choosing network

END OF EXAMINERS REPORT