

Institute of Actuaries of India

Subject SA1 – Health and Care Insurance

October 2009 Examination

INDICATIVE SOLUTION

Introduction

The indicative solution has been written by the Examiners with the aim of helping candidates. The solutions given are only indicative. It is realized that there could be other points as valid answers and examiner have given credit for any alternative approach or interpretation which they consider to be reasonable

Q No.	Sample answers	Marks
1 a)	<p>Cashless coverage would be important for poor people so as to avoid out of pocket expenses. This should therefore be considered. Exclusions and limits should be minimal since target population would not understand them. However, the insurance company must control its risk exposure. Maternity benefits may be covered since childbirth often leads to sickness among the poor. Income replacement may be covered since the insured population is unlikely to have savings off which to survive during periods of illness. Health care providers must be easily accessible, even in remote areas covered by the scheme. Outpatient care should be provided. It can act as an early warning and a gatekeeper for in-patient care, thus helping reduce costs overall.</p>	
1 b)	<p>It is important that a high proportion of those targeted enrol so as to reduce the risk of anti-selection. This may be facilitated by working with a local agency, e.g. a local NGO with good contacts and reach in each area. Use of an NGO's existing infrastructure for administration would also be cost-efficient. Enrolment on a family basis rather than an individual basis should reduce anti-selection. The window for joining the scheme should be limited rather than continuous. The scheme should be widely publicised</p>	
1 c)	<p>Financial strength on realistic and regulatory bases Experience of group health business Experience of rural business Expression of long-term commitment to the scheme so that there will be an expectation of continuing cover. This may require a business plan that demonstrates the company's financial incentive, i.e. long-term profitability, to develop the business.</p>	
1 d)	<p>Lack of credible data for pricing and reserving, in particular:</p> <ul style="list-style-type: none"> • incidence rates • utilization rates • cost per claim <p>The costs per claim may in any case change if they are to be reimbursed by an insurer rather than met directly by the patient. Existing data, if any, may not be relevant. Utilisation rates may also change if healthcare becomes affordable. Incidence rates may also change if there is greater access to diagnosis of ailments The scarcity of data can affect :</p> <ul style="list-style-type: none"> • the pricing • the reserving • the capital requirements <p>It may prove difficult to confirm diagnoses and treatments in remote areas for the purpose of claim underwriting. It may prove difficult to confirm that the patient was actually insured since proof of identification may not be standard. Any tariff for treatment may be hard to agree with health providers, since demand for healthcare would exceed supply. Without a tariff system, it will be difficult to control costs per claim. The insured population may differ from that expected:</p> <ul style="list-style-type: none"> • By age • By sex • By district <p>each of which may affect the claim rates and costs per claim. There is a risk of political interference in particularly in underwriting since the scheme is sponsored by the state government There may be inadequate expertise in the company to deal with such a specialised type of business</p>	

It may prove relatively expensive to administer the business given the small claim sizes. Insured lives will be geographically concentrated and this will increase risks arising from:

- Infectious illnesses
- Particularly if there is local economic downturn and consequent impoverishment, e.g. because of poor harvests

Enrolment, renewals and claims may all be outsourced to local agencies. In that case, there is a risk that the quality of data will be poor. Also claims may not be properly scrutinised.

1 e) The company may:

- Use data from any other relevant source, e.g. NGO, national statistics
- Collect all data and analyse its own experience frequently
- Arrange reinsurance
- Ensure that adequate capital is in place to deal with claims volatility or mis-estimation risk
- Maintain open dialogue with the state government and the regulator

2 a) One point – trends in claim amounts help understand the overall claims trend that is important for monitoring premium adequacy/pricing basis/reserving (two points for all four aspects).

[50]

One point – comments that trends in claim amounts give indications as to developments in the cost of procedures treatments etc.

One point – results can be very good for product development, claims management, underwriting development, refining terms & conditions (only two or three issues of these need to be mentioned)

One floating point for:

- Obvious “excellent” understanding generally of two of the above points
- A good sensible point not mentioned above including a relatively minor but clever one that shows the student does understand how to use results in a business sense

Max three points.

Points to be given if student understands the issue even if poorly expressed, must be clear it isn't a "rote" answer without real appreciation.

To get more than one point the student must show they have a feel for claims and must give at least of a hint that they impact profitability/claims trend.

2 b) If inception rates go up it is quite likely that claim costs are also going up – however there other aspects to understand, depending on the type of incidence rates, such as increase change in business mix or rating factors e.g. changes in average policy duration, age, proportion insured in Delhi/Mumbai etc.

- Stating / understanding that trend in inception rate influences trend in overall claim costs [0.50 points]
- Analysis by SI or other investigation that detects anti selection [0.50 points]
- For demonstrating some depth of understanding of the complexities of the statistic thereby showing they have a reasonable chance of working with the statistic. [1 point]

Cannot expect too much as only one point.

2 c) Categories:

- Major procedure - heart, hip, knee etc.
- Claim type – accommodation, surgeon, etc.
- Distribution/underwriting method e.g. group/individual; broker/agency/internet ; Underwriting/SI band; major geographic region or population density (e.g. Tier 1 city/ city/ town/rural)
- Policy type (where the organization has more than one product)
- New procedures/providers

As only one point have just requested four items however these need to be fairly main stream and logical. Esoteric categories without a sensible/clear explanation as to why it can be important should not get points.

Don't award maximum marks if answer shows poor understanding even if listed.

2 d) Both incidence rates and average claim size might change depending on the category – increasing some and decreasing others – the net effect is usually an increase in overall claims but can vary. Sometimes claim amount may increase but incidence decrease.

Discretion for obvious understanding remembering only four minutes with which to formulate the answer.

2 e) For each sensible point that doesn't demonstrate lack of full appreciation of the reason. [0.25 points]

Need to cover at least one of:

- Changes in procedure mix & treatment patterns no longer matter
- SI can be a rating factor e.g. 99,999 (because of underwriting rules)

Bonus: Give 0.50 points for stating that changes in diagnosis methods/definitions can change claims incidence.

2 f) Weather related disease and accident patterns e.g. monsoon diseases in and accidents Southern areas vs. winter flu's and ice related further accidents in the North.

Holiday patterns of insureds and providers.

Give the full point if clearly understanding the concept. Do not give points if an answer is suitable for UK but clearly not India....but ok if an intelligent but incorrect guess.

[9]

3 a) Give 0.25 points for any of the following:

- New business
- Lapse
- Death (but I think this is minor)
- Upgrade
- Additions to policy
- Other reasonable response

Be harsh where only insignificant movements are poorly mentioned.

3 b) Give indications of:

- Growth and where it is coming from
- Problems in underwriting
- Problems with terms and conditions or other policy features
- Problems with distribution arrangements e.g. churning, initial commission too low etc.
- Impact of changes in distribution e.g. a sales campaign or in environment
- Under/over pricing
- Problems with other parts of the premium basis
- Early indication of undue profits or losses

Must cover three distinct concepts with a good indication that the candidate understands it. This can get full marks if well discussed.

If little/no discussion give 0.50 points; for simple listing of each point up to a maximum of two points.

3 c) Give 0.25 points for each correct point listed in the answer of the previous question. Give 0.25 points for additional sensible points.

3 d) If there is a mismatch between exposure and measured events results can be misleading and potentially dangerous.

- 3 e)
- Delays in reporting of event
 - Delays in processing the event into the system once reported
 - Changes in portfolio size
 - Changes in portfolio characteristics
 - Different cut off dates between different data sources, etc.

1-1.5 points for a good example and 1.5 – 2 points for answer that covers a lot of the above concepts even if only implicitly

Max points can be got if two points are covered that implicitly cover two or more sub categories but the example needs to be very good at showing the concept is understood.

3 f) There are a range of sensible answers. The text gives a formula for lapse at renewal but any sensible formula is OK if sign of understanding.

Preferably enough detail to show that they are trying to (even if implicitly -- remembering question only worth one point and so not much thinking time in which to work out a clear way to express answer).

- Match time periods of remunerator and denominator
- Ensure the selected remunerator and denominator are sensible to be compared with each other

3 g) A little time is allowed for candidates to change tack in thinking.

Two points for any three of:

- Distribution channel
- Geographical area
- Policy size
- Benefit type
- Yearly cohorts

Additional marks: 0.15 for a valid minor point and 0.25 for an additional major valid point.

3 h) There are a range of sensible answers.

The text gives a formula of # new policies for period x/# invited renewals for period x. Again any sensible formula is OK if sign of understanding. Particular emphasis on exposure measure.

Preferably enough detail to show that they are trying to (even if implicitly -- remembering question only worth one point and so not much thinking time in which to work out a clear way to express answer).

- Match time periods of remunerator and denominator
- Ensure the selected remunerator and denominator are sensible to be compared with each other

4 a)

- Anti-selection can make premium rates unaffordable/unviable
- Unexpected anti-selection can make premium rates inadequate
- A new trend might indicate the beginning of something worse even if there is no anti-selection e.g. deterioration in sales methods or underwriting quality, epidemic etc.
- Can be very useful for product development and review of terms/conditions and underwriting etc.
- Non detection of issues can lead to any of losses, threat to solvency, increased capital needs etc.
- A point for required to detect anti-selection
- A point for issues that are not related to anti-selection
- A point for the impact on the company if issues aren't detected
- Max points can be gained for an answer that shows good understanding of three distinct major issues

[14]

Max points can be gained if excellent understanding of two critical issues.

4 b)

- Medical expense
- long term care

The text book answer for the UK is given here but full marks can be gained for a different answer where the example shows that the issues are understood.

Allow hospital cash, etc.

- 4 c)
- a sound method [1.5 points]
 - mentioning the situation when the method would be appropriate [0.5 points]
 - noting the limitations of the method [1 point]

Max points can only be gained where candidate shows they understand how the method could be safely and sensibly used.

- 5 a) Note the text gives two separate types of portfolio analysis. It recommends the student in the exam makes sure they note which version they are talking about. **[8]**

Text book answers are:

- Information about business being written
- Evidence that premium rates are out of line
- Show where company is over exposed & so corrective action can be taken
- Information for planning and budgeting purposes
- Basic information about quantity of business written
- Assessing exposure to types of risks
- Premium rating
- Planning & budgeting

1 point for each item:

- if described well (ignoring English expression)
- if 0.5 point if description weak
- and 0 points if incorrect description even if correct point listed.

Points should be deducted if the candidate demonstrates lack of understanding of the basic principles, max one point if some concepts worryingly incorrect/wrong.

Confusingly expressed answers or using a broader definition of portfolio analysis than in the text (e.g. if a more comprehensive detailed analysis is assumed) should not in themselves cause deduction in marks.

- 5 b) Any two problems well described that highlight that high level analysis may include policies that have too much homogeneity to be meaning full

- Text book (e.g. analysis between classes of business based on policies written will contain a wide variation in the size of risk between the classes)
- Text book (e.g. where some policies are non-annual then analysis at a given date can be misleading)
- There are many suitable examples. These should be allowed if clear show the important limitations however it does need to be clear ...there should not be much benefit of the doubt given here

Note: Some candidates may use a different concept for portfolio analysis than the text book – if their answer given to this part is consistent with that given in the first part lenience should be given if correct and hasn't changed the question entirely & shows good understanding and is internally correct.

5 c) Several possible observations will be accepted.

[9]

- 6 Text book (if these points are mentioned it is necessary that the candidate gives enough info to show why the objective is important)
- Have smooth (from policy holders perspective) & efficient (from company and expense perspectives) administration
 - Ensure that claims are paid out according to the claims rules and intention of the policy
 - Timely & convenient to policy holder
 - Sensitive to policy holder
 - Customer expectations
-

Overall –**the 4 most important aspects may ideally be-**

- need high customer satisfaction (timeliness, fairness, sensitiveness, ease of making a claim),
- a high degree of integrity (fairness & confidentiality)&
- Paid in accordance with policy intention & rules
- Good data capture

A point for each of the 4 overall main points above expressed and understood.

- If only 3 of the topics covered full points possible if show good overall and perceptive understanding
- Deduct point if the importance of customer service is not mentioned.

Note: A problem with the text book answer is it gives what the objectives should ideally be – some Indian insurers/TPA's may have quite different objectives or not have values that are implicit in what is above. Candidates that know this should be given marks – hopefully they understand the long term consequences of morally dubious objectives.

[4]

7 a) Text book:

- Brand damage to the company/market perception
- Selective lapses - Leading to either (i) unviable premium rates for non premium guaranteed business or (ii) unaffordable losses for premium guaranteed business
- Implications for being able to retain reinsurance – especially CI
- Company morale e.g. loss of staff confidence in products
- Loss of critical mass

Three separate and major implications that are well mentioned indicating understanding to gain full points.

Simple listing of implications that are valid and pertinent without clear description understanding get 0.5 points but additional separate points can get additional points (e.g. public reaction and regulator interest, industry damage/loss of public trust, social impact of loss of cover if a substitute is not provided?)

Here I have assumed that an abandoned product could include a PMI product closed to new business as well as totally removing the product.

- 7 b)
- One point for describing how the points in the first part of the answer vary by CI/PMI.
 - The consequential/broader damage beyond the simple of actuarial facts of selective lapses/ public reaction etc needs to be understood for full points.
 - Note one of the most important issues for closed PMI products is that you can end up with an unviable closed portfolio that has corporate/social responsibility issues as well as having

potentially very poor consequences for the company on a number of fronts. If this is well explained it can earn two points on its own.

- Two points for clearly understanding the different impact according to non-premium guarantee and premium guarantee

Total Marks [6]
[100]
