

EXAMINERS' REPORT

JUNE 2022 examinations

Subject F101 — *Health and Care* Fellowship Principles

INTRODUCTION

The attached report has been prepared by the subject's Principal Examiner. General comments are provided on the performance of candidates on each question. The solutions provided are an indication of the points sought by the examiners, and should not be taken as model solutions.

QUESTION 1

Candidates seemed to miss the point that one already had the data, and that it was at an average monthly cost per member level. Many spoke of data manipulation with exposure to get an average, which was unnecessary. Many also spent a lot of time talking about stratifying the data into strata by risk factors, when it was not necessary (this is part of the job of the GLM). Candidates seem to generally understand the theory of GLM's (and, for that matter, one-ways) but not the practical application – which should have been covered in one of the earlier subjects. Link functions are generally seen as being used to move covariates to the multiplicative plane from additive, but this is not necessarily the case, nor the only reason.

i.

The data could be used to model how the various explanatory factors have an impact on the response. In this case, explanatory variables would be:

- Age
- Sex
- Chronic status, or can use the number of chronic conditions, since this is now available
- Whether they are part of National or Martingale (if available)

The response variable would be cost PLPM

The GLM can then be fitted to this, and the resultant model used to estimate costs based on the inputs of explanatory variables in a situation.

Factors to consider (not exhaustive):

- Inclusion of interactions
- Statistical significance of the coefficients modelled
- Link function used

ii.

Potential benefits:

- Handles risk cells with small volumes well, as it uses the full data
 - Also means that more granular levels of risk differentiation can be considered
- More stable transitions between levels of risk
- Gives control over interactions considered
- Can easily assess different combinations of explanatory variables
- Accounts for the effects of other explanatory factors in calculation of effect sizes

Potential pitfalls:

- If influential points affect coefficients, the impact spreads beyond the single cell that the influential point lies in
- Potential for model error if not specified correctly
- Requires some statistical understanding to be able to use (as opposed to risk cells which are straight averages)
- Might not capture correct shapes of relationships → risk cells may overfit though
- One-way views may call out areas of concern that might not otherwise be detected if just looking at GLM outputs

QUESTION 2

This question was answered reasonably well by most candidates. Part (i) was largely a bookwork question, which most candidates managed to answer well. Part (ii) was an application question around risks specifically for policyholders. Marks were not awarded for candidates discussing risks to the insurer. Most candidates that performed poorly on this part of the question were unable to either generate enough points for the 6 marks, or they repeated the same points under both LTCI and CI.

(i)

- (1) Income can be provided from the lump sum via an annuity when the individual cannot work as a result of his/her critical illness.
- (2) The benefit can be used to repay a mortgage or other loan when the policyholder is diagnosed with a critical illness.
- (3) Medical costs can be funded when the illness requires surgery or other expensive treatment.
- (4) A change of lifestyle can be funded where necessary to improve the claimant's health; for example, moving to a less stressful (and lower-paid) job following a heart attack.
- (5) Other needs include recuperation or rehabilitation treatment after illness, taxation planning, medical aids (for example, the installation of specialist equipment in the home to enable the claimant to remain in his/her house).
- (6) Critical illness cover can be used to buy out a partner's stake in a partnership in the event that they are unable/unwilling to remain in the partnership
- *Benefit offers inflation protection against escalation of the costs in meeting all of the above needs – as long as these cost escalations remains below CPI+2%.

(ii)

- **LTC**
- The benefit is not linked to the cost of care – lump sum and not indemnity
- There is a risk that the policyholder may have misunderstood the benefits at purchase, resulting in inadequate cover when care is required
- Due to the cost of indemnity benefits, the alternative may not have been possible
- Care is normally required for months to years, depending on the circumstances, and the lumpsum may not be sufficient to provide for the cost of care for the length of time care is required
- Certain forms of care will require accommodation in costly facilities and/or specialist nursing care
 - The cost of these (for the duration which care is required for) may well significantly exceed the lump sum
 - Further, the cost escalations may exceed the CPI+2%, exacerbating the problem over time
- Given that the benefit is escalating over time, the premiums are likely to escalate in a similar fashion
 - If CPI is high relative to the policyholder's income growth over time, premiums may become unaffordable
- If converting the lump sum to an income, the annuity rates available at the time may be unfavourable, resulting in a lower level of income
 - Similarly if investing the lump sum independently, risk of poor returns may render the income generated insufficient
- **CI**

- The risk that cost escalation (in their needs) exceed CPI+2% - whether this be salaries, mortgage repayments, cost of treatment/care/lifestyle changes, etc.
- Risk of contracting a CI that is not covered, or does not fulfil the policy criteria
 - But still impacts the policyholder's ability to earn a future income, or they may require expensive treatment, fund lifestyle changes, etc.
- **Generic**
- Risk of insolvency of insurer – long term products
- Significant regulatory changes requiring substantial changes to their benefits

QUESTION 3

Overall candidates scored quite well in this question with many generating enough valid points to justify high marks. The difference between rider and standalone benefits was not always well-explained but the latter part of the question allowed many students to gain marks. Some weaker attempts confused claims experience with incidence rates – the former is tied to the expected claims (i.e. the pricing) whereas the incidence is pure claim rates.

Part i)

- *Candidates needed to state that the standalone benefit was a CI only or that it was the main benefit to gain full marks; many candidates merely explained what a CI policy is rather than differentiating between a standalone vs. rider CI benefit*
- *Many candidates did not generate enough points for a 4 mark question*

Part ii)

- *Many candidates wrote about claims underwriting or underwriting in general being more strict for the rider benefit – this is unlikely to be the case due to the high anticipated anti-selection on the standalone benefit*
- *Pricing does not impact pure incidence rates other than to possibly offer cheaper products to the target market; many students incorrectly assumed that the standalone CI is cheaper than the death benefit – this might not be the case due to the higher anti-selection and more comprehensive offering*

Part iii)

- *Candidates generally scored well on this part of the question*
- *Many candidates didn't list enough points to gain full marks*
- *Decreasing pricing of the benefit would not increase incidence (it would bring experience in line with incidence however) – the question specifically asked how to increase incidence; marks were awarded to students who argued decreasing pockets of pricing to attract more risky policyholders (e.g. Older age rates to increase number of older age lives)*
- *Reducing claims underwriting was not awarded marks as these benefits would be underwritten upfront; rather relaxing/widening claims definitions was a good way to increase incidence and awarded marks*

i)

Standalone CI – benefit is the main benefit (✓) and payment on happening of insured event results in benefit ceasing

Rider CI – benefit is supplementary to death benefit (or other main stand-alone benefit)

and payment of rider sum assured on happening of insured event does not remove the main benefit

ii)

The Light CI does not cover as many conditions/illnesses as the Comprehensive CI and so we would expect the claim incidence to be lower

There may be a sense of lethargy in claiming as policyholders are not as aware of the rider benefit as they are of the stand-alone since the main benefit purchased was the death benefit

There may be an element of anti-selection in the stand-alone CI benefit as policyholders who are more likely to claim (past family history) would want to take out this cover. This is made worse if the underwriting measures of CIRUS Life are not adequate to screen for these sorts of risks (for example ask questions about family history).

This may not be present in the rider benefit as the main intention of taking out the cover is the death benefit.

It may be purely chance that the risk profiles differ and that the Light product has healthier individuals than the Comprehensive – however, unlikely given the product features

Survival period in the Rider benefit may result in claims not being admitted that would otherwise happen if the Standalone benefit doesn't have a survival period

Mortality experience has been higher than expected on the rider population which results in deaths occurring before expected CI events

iii) Half mark each

- Increase number of conditions/illnesses covered
- Market the benefit more widely (mailers to policyholders) – educate current policyholders about their benefit entitlements
- Lower underwriting measures at inception
- Consider changing product risk measures such as decreasing any waiting periods / pre-exclusion clause periods / survival periods
- Look at previous declines to see if claims practices were too strict and partial claims could be considered
- Target a higher risk group of lives (sell to older lives for example)
- Increase the value of the CI benefit
- Include tiered benefits to offer less severe conditions
- Offer reinstatement of benefit after claim

QUESTION 4

Part i was bookwork, and for the most part, fairly well answered. Many candidates did however repeat the same point in different ways on multiple occasions

Part ii was bookwork, and generally poorly answered. Many thought that the principle of mutuality was based on profit sharing. In pricing, the principle of mutuality refers to pricing for the individual risk posed, whereas pricing on solidarity principles means that the price an individual pays is not directly linked to the level of risk they pose

Part iii was poorly answered. Candidates focused mainly on the cost to the insurer of implementing the regulation, missing out on all the other elements influencing the cost.

Part iv was fairly well-answered with most being able to identify that this will result in persons previously excluded from cover (due to risk posed) now being able to access cover.

i.

- protect consumers of financial services
- prevent financial crimes
- Address information asymmetries
- ensure confidence in the system
- correct perceived market inefficiencies and to promote efficient and orderly markets

ii.

Mutuality – each risk/individual is evaluated on its own risk characteristics and charged a premium commensurate with the level of risk posed

Solidarity – individual risks aren't evaluated for premium purposes – premiums depend on other factors such as ability to pay, and cover is granted based on need. The group's risks as a whole are evaluated to establish the overall premium required

iii.

Direct costs:

- Developing the regulation
 - o Time, experts, consultation
- Administering the regulation
 - o Monitoring compliance, reviewing records, investigating suspected breaches and imposing sanctions
- Compliance for regulated firms
 - o Disclosures, maintaining records, demonstrating compliance
- These costs are likely to be borne by the final consumer/policyholder

Indirect costs

- Alteration of consumer behaviour
 - o Anti-selection if voluntary environment
 - o Old/sick will be subsidised by young/healthy, and these may exit from cover
- Intermediaries/advisers' behaviour may be influenced which can have a large detrimental effect on the system
 - o More marketable to old/sick and may try capitalise on this at the expense of the insurers/system
- Reduced competition – players may exit market if requirements too onerous
- Reduced innovation – community rating restricts features/pricing freedom
- Incentives for insurers to find other ways to control costs/risk profiles, e.g. cherry-picking, declining cover (if allowed), which may have a detrimental effect on the overall system, and disadvantage most vulnerable members

iv.

- People who previously may have been unable to obtain cover due to age or state of health (premiums having been unaffordable), may now be able to enjoy cover
 - o These are the persons that have the greatest need for cover
 - o Healthcare is considered a public good, so the regulation may be widely welcomed and instil greater public trust in health insurance
- Making insurance cover accessible to great number of people can result in greater economies of scale and overall efficiency of the system.

QUESTION 5

In part i candidates knew their bookwork and did well for this question. Many gave generic responses, however the candidates who brought in that the question was referring to a large insurer selling critical illness business tended to score higher marks. Marks were not given for reasons including tax and regulation unless these were explained.

For part ii, some candidates gave lists of information that the reinsurer would need to give to the insurer which wasn't really asked.

Many candidates did not give a useful list of information and kept it at high level information (for example average benefit amount) which isn't as helpful as giving the underlying detail as this is an existing book of business with claims experience. Many did not think about the various data types for this specific class of business and its features that would be of interest to a reinsurer. A few candidates gave descriptions of what data would be needed and why rather than just listing the information so they used up time that could have been spent elsewhere.

For part iii again very generic approaches were often given focusing on what each type of reinsurance is and when proportional or non proportional may be used making it a bit repetitive relative to part (i). Marks were not given for general definitions but only where there was some element of application to the question. The discuss aspect of the question guides candidates to need to consider their responses and motivate accordingly which was often not done.

i.

- limit exposure to risk...
- ...if the book of business is new or the insurer is new to writing this type of risk they may want to limit their exposure initially to **each** risk (QS or individual surplus/XoL)
- Or on the overall book – stop loss/aggregate XoL
- ...any changes in the burden of disease may mean greater uncertainty for the insurer so they may wish to limit the risk through reinsurance
- avoid large single losses...
- ...increased burden of disease or new technologies or pandemic effects (i.e. long COVID) may influence claim trends
- smooth results...
- ...while the insurer is large, the critical illness book could be small and/or new...
- ...this means higher variability in experience
- provide expertise ...
- ...especially if new to the market or significant market changes

- increase capacity to accept risk...
- ...increased capacity helps the insurer write a variety of business
- ... or larger risks than it would otherwise be happy to accept
- ...niche market
- ...group versus individual
- provide financial assistance..
- ...e.g. reinsurance commissions

ii.

- Type of CI contracts (e.g. fixed/index-linked, individual/group, tiered)
- Number of contracts currently on the books
- Duration in force
- Premium frequency
- Premium size
- Sum assured
- Original contract term
- Conditions covered
- Definition of conditions
- Claims experience
- Deferred and/or survival period(s)
- Policy expenses
- Underwriting information – age, gender, exclusions, etc.

iii

- Proportional reinsurance shares the risk for all claims (experience of reinsurer follows the fortunes of direct writer) in some proportion
 - QS – fixed proportion
 - Surplus – proportion differs based on retention limit compared to sum assured
- Appropriate for a new book of business
- Or where capital not sufficient for expanding the book of business
- For CI cover there may be variation in severity and frequency
- Could use surplus reinsurance when there is a fixed maximum amount per risk that the insurer wishes to retain per policy
- Non-proportional reinsurance provides protection against larger claims
 - Either on individual policies (Individual XoL) or in aggregate (catastrophe cover, aggregate XoL, stop-loss)
- Insurer may be more concerned about claims where sum assured is large, i.e. excess of loss cover
- Or risk of accumulation of claims, i.e. stop loss
- Appropriate cover will depend on risk appetite, solvency, reinsurance cycle, strategic objectives
- May also use a combination of proportional and non-proportional cover

QUESTION 6

The candidates generally did well, the strong candidates covered the salient points in all of the main categories. The weaker candidates did not generate sufficient points and demonstrated a weak understanding of the pricing process.

The second part of the question was also generally well answered. The concept of the Free cover limit was confused with the concept of underwriting free acceptance, but some candidates understood the effect of underwriting on the price.

i) Setting the objectives

- An individual PMI product will need to be marketable and affordable to individuals in the various countries targeted.
 - o There may be substantial variation in the acceptable price per country
- The premiums will be a function of the product features, demographic profile of policyholders, claims patterns, business objectives, competition in various countries, regulation in various countries, expenses etc.
- In pricing the new PMI product, I will start with a generic benefit design (based on an existing product of the insurer) and adjust as the premiums are assessed against various objectives - The health insurer is large, and already has operations in these territories
- The data and experience from these will be a good starting point, adjusted for differences in product design, features, inflation, seasonality, one-off events, etc. in the various territories

Policyholders

- The target market in various countries needs to be defined.
- A representative set of expected policyholder profile can be derived from existing policyholders if a product similar to PMI exists
- Otherwise this can be obtained from reinsurers or external consultants.
- Local demographic/census data can also be used, bearing in mind that these may differ substantially from insured lives' data.
- The data should be divided into suitable groups by age, sex, marital status, income level, smoker status, location etc
- Different countries may have differing proportions of members with regards to these factors.

Expected claims

- Available existing claims experience can be used as a starting basis for estimating expected future claims.
- Split in the same risk cells by which we aim to price the respective policies.
- Average claims can be estimated considering the following factors:
 - o Type of claim
 - o Date of claim
 - o Plan – if the PMI product has different plans for different members
 - o And any other relevant factors depending on their significant factors in various countries.
- Adjustments to take into account the specific product's benefit features
- To take into account expected claims patterns due to changes in regulations and claims behaviour in each territory.
- To account for inflationary increases in costs of healthcare.

- Per risk cell calculate the burning cost premium (BCP) – expected claims per risk cell divided by the exposure (number of life months) to get the expected PLPM costs
- Next these BCPs need to be adjusted for expenses and profit, and market tested for suitability

Expenses

- Estimate the expected overheads and renewal expenses based on:
- Existing costs of the overheads structure and any future changes to determine expected per policy expenses
- Expected upfront costs such as marketing and sales expenses to determine upfront premium loadings
- Costs are likely to vary per country and this should be taken into consideration.

General

- The premium table structure will depend on the rating factors that can be used in each of the countries – regulations
 - The profit margin required by the shareholders should be added to the estimated expected claims per policy.
 - The impact of lapse rates should be considered even though PMI is an annually renewable product.
 - The expected cashflows should be projected to estimate the profitability of the product based on the expected mix and volumes of business.
 - Sensitivity tests should be done – adjusting the levels of margins, changing the mix and volume of business, and testing other key variables.
- PMI is short-term, so rates typically valid for one year, after which both premiums and benefits may be reviewable, unless some guarantees offered. Emerging experience needs to be monitored and incorporated into the following years' rates

ii) General considerations for group PMI as opposed to Individual PMI:

- If membership is compulsory, then the scope for anti-selection is reduced, which could result in lower premiums
 - if voluntary, then level of anti-selection likely to be similar to individual – hence consider requiring a minimum take-up rate
 - without reduced anti-selection/compulsory membership, can offer underwriting-free acceptance
 - ...which will lower cost and possibly premiums for the employer
 - Multiple lives covered under single policy – reduces policy administration
- Can tailor benefits to employer/employees' specific needs
- Important to consider competitor offerings and price – may be very price sensitive if competitive market
 - Distribution channel likely to differ – in this instance, the employer approached the company directly – will impact the price
- A group PMI product for this employer can be suitable because the employer is sufficiently large.

- Due to the large size, the group can be experience rated if historical data is available and as the claims experience becomes more credible.
- Without historical data then book rates may have to be used until actual experience data becomes more credible.

Employees work in different countries, and it is therefore important to establish the following:

- The number of employees and their dependents in various countries
- The demographic profile of these members in terms of age, sex, income levels, and other key factors

If the insurer has experience in such group PMI policies, this can be used as the base for pricing, but if there isn't sufficient data available, then:

- Suitable book rates for this group can be identified – may require reinsurer assistance.
- Should be classified according to country where benefits are rendered

The expenses will need to be added to the experience rates or book rates as per pricing methodology – allowing for overhead and direct costs

The final table will include the following:

- Country specific Experience/book rates for each of the key rating factors discussed.
- The results are sensitivity tested until a suitable price is determined.

QUESTION 7

In parts i to iii, the calculations were typically done well. Some candidates commented on the numbers not being comparable because they “need to be adjusted for demographic differences”, when this is exactly what they had just done - correctly! It seems there is some mismatch between theory and practical application thereof.

Part iv was generally well-answered but some were very repetitive on their points (complications from surgery, complications from discharge, complications from incorrect treatment, complications from Or child mortality, adult mortality, maternal mortality, surgery mortality, etc).

In part v, many candidates interpreted the scenario from a political stance, and were missing the point that it was doctors who were being incentivized to deliver sub-standard care. This was the core issue and often missed.

i.

$$PLPM_{National} = \sum_{Risk\ cells} (Risk\ Cell\ Distribution_{National} \times Risk\ Cell\ PLPM_{National}) = 3,228.74$$

$$PLPM_{Martingale} = \sum_{Risk\ cells} (Risk\ Cell\ Distribution_{Martingale} \times Risk\ Cell\ PLPM_{National}) = 3,173.49$$

ii.

The expected PLPM in Martingale is 55.25 (1.7%) lower than the national. This tells us that, when using national cost data as an indicator of how healthy the population is by risk cell, Martingale has a slightly healthier population than that observed nationally, and therefore this gives some evidence substantiating the claims made by the State that they have a healthier population.

iii.

To do this, we want to see how the true Martingale PLPM would differ from that calculated using the National PLPM.

$$PLPM_{Martingale} = \sum_{Risk\ cells} (Risk\ Cell\ Distribution_{Martingale} \times Risk\ Cell\ PLPM_{Martingale}) = 3,040.72$$

The PLPM is lower than what would be expected when using National PLPM data (taking account of risk profile differences in i), and therefore there is evidence that their treatment is more cost efficient, all else being equal. It does not indicate whether the population is being underserved or not.

PLPM using National costs = 3,173.49, so the difference is 132.77 PLPM. (4.2%).

iv.

Ideally, we want to look at how outcomes differ in Martingale when compared to National. For Martingale and National, evaluate:

- Admission details by different conditions
 - Readmission rates
 - Complication rates
 - Length of stay
- Prevalence of complications of chronic conditions
- Treatment protocols for different conditions
- Utilization of primary care, preventative, or screening benefits, compared to those which are focused on treatment
- Pathology results, especially for chronic members
- Would also want to know the costs of various treatments, as it could be possible that care is delivered for lower prices than Nationally

Furthermore:

- Patient satisfaction surveys can be evaluated
- Any publicly published reports from the State or Federal Departments of Health can be evaluated
- National statistics agencies should publish data on mortality rates, which are a good indication of the quality of care
 - They may also publish on causes of death
 - Deaths from complications or errors in hospitals/misdiagnoses, etc. can be measured.
- Records from doctors can be evaluated
 - Can also go to doctor groups
- Records from hospitals can be evaluated
 - Can also go to hospital groups
 - Readmission rates

- Complication rates
- Pharmacies could give information on medication claims for different types of medication
- Any programmes in place, e.g. disease management in the State can be evaluated and benchmarked
- Staffing in facilities can be evaluated and compared
- Use of technologies can be evaluated

v

For individual doctors, it may well be sustainable, especially if they don't plan to work for much longer in Martingale.

However, from a health systems perspective, if quality of care is poorer, outcomes will be poorer, and therefore in the long term we would likely see the following:

- Excess hospitalisations
- Excess premature deaths
- High costs of treatments out of hospital, as people would likely have more complex chronic profiles

From a broader economic perspective, there is an impact of disease burden on the economy of Martingale, as workers are likely to require more sick leave, have higher rates of ill-health retirement, disability claims, and be less productive when at work.

These make such situations unsustainable.

QUESTION 8

This question appeared to be a challenging question overall for most candidates, as only a few were able to score well. It largely required application of a few key areas of the syllabus. This was also the last question of the exam and was for the highest number of marks - although this should be factored in when candidates are planning their time and approach.

Part (i) required candidates to discuss implications of the new State proposal for the State, existing state facilities and then for the population. Most candidates were able to score reasonably for parts (a) and (b). Candidates were able to go beyond just describing tax implications for part (a) and for part (b) recognising the new cancer facilities would be outside/separate to the existing facilities. Candidates struggled to generate sufficient points for part (c). The question noted that all members of the population did previously have access to free cancer treatment in existing state facilities - this question was more about the impact of new specialised treatment centres separate from existing facilities (both public and private). Candidates also appeared to have focused their answers on generating criticisms rather than also thinking about positive implications. This would have helped generate sufficient points for the available 3 marks.

*For part (ii) candidates needed to discuss the roles of the private sector with this new proposal. Not many candidates were able to score well. This was either due to them not generating enough **distinct** points or in most cases candidates focused their answer on discussing private insurance product design that could compete or integrate with the State's new cancer facility. This was not a benefit design question but more about how the State can leverage the existing knowledge and skills of the private sector. Candidates struggled to recognise that the private*

sector is not just private insurers but also includes medical professionals, pharmaceutical companies and other medical organisations etc.

For part (iii) candidates were required to explain how to estimate the budget allocation for the costs associated with the centre. Candidates needed to recognise this question was asking for how to determine the expected cost of treating cancer for the population over the medium term, as this would determine the amount required from the State budget (less any donor funds). Candidates needed to also generate sufficient points for 8 marks in order to score well. Candidates who did score well were able to explain the costing and projection process but also detailed what specific costs would be included for setting up and running a centre as well as treating cancer. They also discussed what uncertainties required adjustments/margins and listed a number of data sources which could be used for specific cost elements needed. Candidates were not awarded marks for generic points without application to the question nor for points about **how** to allocate budget. The focus was rather on points to estimate the budget amounts.

Part (iv) required candidates to suggest ways of managing costs. This question was not answered well. Candidates need to recognise the difference between risk management for the State versus an insurer. Not all points applicable for an insurer are reasonable for the State. Candidates needed to recognise this question is also not about limiting or excluding but more about managing. Candidates who were able to score well explained their points and linked them well to the circumstances for the State, as the question did not ask candidates to just list points.

(i)

(a)

- ...increased cost to fund the facilities for all citizens
- ...economies of scale by co-ordinating care in dedicated centres
- ...improvement in the burden of cancer on the population – improved productivity
- ...improved public perception (delivering on promises)
- ...may cause budget constraints/challenges elsewhere

(b)

- ...shift of cancer treatments away from state hospitals and to new facilities
- ...more capacity for treating other conditions/cases
- ...may impact on availability of budget and resources

(c)

- ...access to cancer focused treatment
- ...potentially reduced delays in treatment
- ...improvement in care
- ...improvement in morale
- ...private medical care (PMI) may be more affordable if cancer treatments are shifted to state care...
- ...as cancer treatment is expensive and likely drives up cost of PMI
- ...this would reduce burden on state facilities
- ...improve access and thus burden of disease
- ...risk of increased taxes which reduce disposable income;
- ...may see increased wait times if private sector no longer offer cancer care/differs from the quality of state care

(ii)

- Can provide expertise – costing, risk management, operational requirements
- Input on setting treatment protocols/standards
- May be contracted by the state to provide the cancer treatment centres (e.g. private hospitals)
- May be contracted by the state to provide services at the centres (e.g. oncologists)
- On a capitated or global fee basis
- State may negotiate with pharmaceutical companies to provide drugs at lower prices
- Tax on profits in private sector could be earmarked for this initiative

(iii)

- Note that this is a facility based costing rather than an insurance costing
 - Collect data over a reasonable period
 - Data could be from
 - State hospitals
 - National register
 - Publications
 - Private hospitals/facilities
 - Consult experts – both local and international
 - Data will relate to number of patients (incidence)
 - And treatment required (resources / intensity)
 - Adjustments to data to allow for full population coverage
 - Note the impact of the treatment being free on utilization
 - Allowance needs to be made for any fraud/wastage/abuse
 - And any observed trends
 - Need to understand what treatment protocols will be applied
 - Project the number of patients
 - For various levels of severity
 - And assess resources required e.g.
 - Number of health professionals
 - Support staff
 - Drugs and consumables
 - Facility running costs
 - Project the resource requirements
 - Cost these resources (e.g. salaries, operational costs, drugs etc)
 - Allowing for inflation as appropriate
 - Determine an appropriate forecast period for the operational model (medium term)
 - Project the amount of donor funding
 - Possibly by source?
 - Deduct these to determine the balance of cost that needs to be funded by the state
 - Allow for sensitivity/scenario testing to gain a better idea of the variability in the amount required
 - Allow margins around the most significant assumptions to provide a cushion
-
- Eligibility requirements to manage the number of patients
 - User fees for those who can afford to reduce balance of cost funding
 - Case management through treatment protocols/approved medicines
 - Reimbursement models for contracting with private sector

- ...global fee/fixed-fees
- Regular case management and audits
- Good governance of single payer and donor funds
- ...consider independent board running the centre/overseeing allocation and use of funds
- Consider the use of volunteers and NGO assistance
- prevention campaigns and initiatives to help increase awareness and reduce incidence;
- early detection/screening campaigns to help identify cancer cases in early stages which are less costly