Question 1

This question was based on bookwork and well-answered.

i)
administration costs if the scheme is self-administered
or administration fees if third party administered
management fees associated with disease management programmes and managed care services;
other fees such as for auditors, consultants and lawyers;
marketing costs;
communication expenses;
broker commissions;
trustee expenses;
statutory fees and levies;
membership of industry bodies (such as BHF);
increase in bad debt provision = bad debts written off – bad debts recovered + increase in provision for bad debts;
other operating costs such as bank charges and legal expenses; and
net reinsurance loss;
principal officer and Board of Trustees
investment management costs
ii) The majority of candidates treated the two objectives as two separate tasks and structured their answers accordingly. This isn’t inherently incorrect, but candidates that assumed a more holistic approach tended to perform better. Rather than merely listing numerous ways in which (for example) non-health could be reduced, a successful fellowship candidate would be expected to consider interactions between interventions, as well as second-order (indirect) consequences where appropriate.

Some relatively trivial calculations will give the following figures. These are not required for the answer but may inform some insightful answers.

<table>
<thead>
<tr>
<th>Gross contribution income</th>
<th>1831.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthcare expenditure</td>
<td>1661.6</td>
</tr>
<tr>
<td>Gross healthcare result</td>
<td>170.1</td>
</tr>
<tr>
<td>Non healthcare expenses</td>
<td>248.2</td>
</tr>
<tr>
<td>Net healthcare result</td>
<td>-78.1</td>
</tr>
<tr>
<td>Investment income</td>
<td>25.9</td>
</tr>
<tr>
<td>Net surplus</td>
<td>-52.2</td>
</tr>
</tbody>
</table>

Only way the scheme can increase solvency in a sustainable manner is by building reserves.

Reserves can only increase by generating net surpluses, as a medical scheme cannot raise capital from other sources.

Note: It may be possible that a restricted scheme could receive a capital injection from a sponsor such as the employer but open medical schemes hardly ever have such a benefactor.

In order to generate surpluses the scheme will have to find a strategy that achieves at least some of the following:

**Increase contribution income by raising contribution income**

The claims ratio is 90.7% which is on the high side, indicating that the scheme is under-priced.

If the scheme wants to achieve a breakeven net healthcare result in 2013 the increase will have to be at least $78.1 \div 1831.7 = 4.3\%$ even before allowing for medical price inflation, utilisation increases etc.

If possible it would want to spread such increases over a number of years. Unfortunately the scheme does not have a lot of time given the rate it is eating into reserves.

The scheme is rapidly losing members as it is, which may be due to the product not being competitive (contributions too high compared to the benefits being offered).

High contribution increases could exacerbate the situation.

Furthermore contribution increases will raise the level of reserves required to meet the 25% solvency target, all other things being equal.
Rapidly reducing membership will ease the reserving requirement. This seems to be what has happened – a stable solvency ratio despite widening deficits due to declining membership.

Purposely trying to achieve this by, for example, closing the scheme for new business to maintain a solvency ratio cannot, however, be considered to be a viable long-term strategy, especially in the case of this scheme (see comments on fixed overheads below).

**Reduce healthcare expenditure**

The scheme could reduce benefits to reduce healthcare expenditure but this could make the products uncompetitive.

The extent to which benefits can be reduced is limited by the PMB regulations.

It could also apply measures such as stricter managed healthcare but this is unlikely to yield very large savings – especially if these controls were working well to begin with.

**Reduce non-healthcare expenditure**

Increasing contributions may decrease the expenses as a percentage of contribution income

However, due to its self-administered nature the scheme will have significant fixed overhead costs, which do not vary by the number of members. If the scheme continues to lose members, these will need to be spread over fewer members.

These fixed overhead costs could be structurally addressed by selling parts of the business to 3rd parties and potentially contracting with them for provision of these services

The scheme’s ability to reduce variable expenses depends very much on how efficient it already is. If the administration is already quite cost-efficient then the scheme will not have much scope to reduce these without sacrificing quality of service, which could again hurt their marketing, sales and retention efforts.

**Increase investment income and recognisable assets**

The scheme could look to ensure that the amount of assets that can be recognised in terms of Regulation 29 is maximised (so realise the value of the non-recognisable assets and use the proceeds to purchase recognisable assets).

A comparison of the Regulation 29 reserves to the total assets shows a large difference. However since this is a self-administered scheme a large proportion of the difference is likely to be assets related to administration such as IT infrastructure, buildings, systems and so on.

It can also see if it is getting a good return on investments.

However the dwindling reserves means that the scheme cannot rely on investment income to turn the situation around.

**Attract profitable new business**

Attracting sufficient volumes of new business with a good risk profile (i.e. members who will make a net contribution to reserves) will turn the scheme around. This is easier said than done.

**Other ideas**
Looking for an amalgamation partner in order to increase the membership and the reserves is another option. The other scheme would have to have a high solvency ratio if the combined scheme is to achieve the minimum level.

iii)

Although this question is based on bookwork, it was generally poorly answered. It is important to note that Section 63 of the Medical Schemes Act could be applied to any transfer of business into or out of a medical scheme. A number of candidates listed factors that a Board of Trustees should consider, or steps that should be considered, rather than focusing on the applicable regulatory process.

As is the case for amalgamation or any other substantive transfer of business the scheme will be required to deposit an exposition document with the Registrar of Medical Schemes.

This must include copies of any actuarial reports or statements taken into account for the purpose of the transaction.

The scheme shall furnish the Registrar with particulars of the voting at any meeting of its members at which the proposed transaction was considered and with such additional information as the Registrar may require.

The Registrar may require a medical scheme to comply with any of the following provisions regarding the proposed transaction:

- a report on the proposed transaction to be drawn up by an independent valuator or other competent person nominated by the Registrar at the expense of the medical schemes concerned.
- a copy of the exposition of the proposed transaction and of reports, if any, referred to above to be forwarded by the parties concerned to every member and creditor of those medical schemes.
- the publication of the proposed transaction of the parties concerned in a form approved by the Registrar in the Gazette and in such newspaper or newspapers as the Registrar may direct.

Copies of the above documents will be made available to all interested parties for a period of 21 days for inspection.

The Registrar will then:

- confirm the exposition; or
- suggest modification of the exposition; once the exposition has been modified, confirm the modified exposition; or
- decline to confirm the exposition
iv) **This question was generally poorly answered, although stronger candidates were able to differentiate themselves. Several candidates incorrectly interpreted the “profit share” mentioned in the question to mean that the administrator would share in the profits made by the medical scheme (which would be illegal, and, even if permission from regulatory authorities were obtained, a rather nonsensical proposition given Astramed’s specific circumstances) rather than the other way around. Few candidates considered the dynamics of the future financial performance of the newly-formed administrator, and even fewer questioned whether the potential R80 million penalty would impact on shared profits. Candidates also generally failed to recognise that LargeCo would typically take over staff and buildings and systems (i.e. as a going concern) from Astramed, and would not be starting from scratch. Finally, no candidates offered ideas on the valuation of the business or tax (VAT) implications. The marking schedule allowed liberally for the allocation of relevant points, and credit was awarded for valid considerations.**

You will need to determine and report on what the consequences of doing the transaction are and weigh them against the implications of not doing so.

A fair amount of due diligence investigation must also be done.

The scheme is suffering from declining membership as well as an increase in average age. Is the scheme sustainable if it maintains the status quo or is it in a death spiral?

The offer is being made with the promise of new business. A number of scenarios will need to be explored to determine the implications of the deal.

The promised increase in membership is likely to cause significant strain on the scheme’s solvency ratio. Will the scheme be able to bear it?

This will be made worse if the nature of the new business does not improve the scheme’s risk profile and the current losses continue.

Something the scheme should be worried about is that the guarantee will create perverse incentives – i.e. in order to avoid paying the penalty LargeCo could put pressure on the scheme to relax new business risk controls or do something else that brings in large volumes of unprofitable business.

Does LargeCo have the expectation that offering the guarantee entitles them to a greater say in the scheme’s product and pricing decisions?

Another scenario to explore would be the implications for the scheme if the promise of new business does not realise.

In particular will the penalty payable in terms of the guarantee be sufficient to protect the scheme in such an eventuality?

Is there a possibility that LargeCo will be unable to honour the R80 million guarantee? Especially considering the fact that LargeCo’s income will be derived from membership growth.

What is the relationship between the penalty and the profit sharing arrangement? Will the penalty be offset against any profit sharing?

How is the administrator’s profit defined? Would there be room to manipulate reported profits through capital expenditure or accounting provisions?

Could the profit share be extended into subsequent years?
The amount of the offer must at least be equal to the net asset value of the buildings, administration systems and other assets being transferred.

Therefore information on the assets of the scheme that will be sold will need to be collected. The basis for valuation of these assets will also be required. Are the assets such as buildings being valued at a reasonable, market related value?

The transaction may increase the scheme’s solvency level on 1 January 2013, but only to the extent that the purchase amount exceeds the NAV since these assets will be removed from the balance sheet.

The long term impact of the transaction on the cost of administration needs to be considered.

On a per member per month basis the admin costs could be much higher for the following reasons:

- Self administered schemes do not pay VAT on their administration costs. VAT will however be payable on any fees paid to another party.
- LargeCos’s profit margins will be added to the fee while AstraMed did not include a profit margin on its administration costs.

One way to look at this impact would be to consider the net present value of the difference between the administration fee over the current per member per month costs and compare this to the premium of the amount being offered to the NAV.

The deal will require the approval of the regulator who is unlikely to give it if there is a significant increase in the scheme’s non-healthcare expenditure…

…or if it appears that that transaction is not in the best interests of the members of the scheme…

the scheme may be required to go through a member voting process on the matter. Are there members who may be opposed to such a transaction, in sufficient numbers that they may successfully oppose the deal?

Depending on the volume of new business the scheme was attracting before the deal and the cost of employing an agency sales force, the cost of new business may be very different (higher or lower) than the cost of paying broker commission.

The non-healthcare costs as a % of contribution income has been rapidly increasing. This suggests that the scheme has a problem due to reducing membership and fixed overhead expenses. If the deal goes through this risk will be transferred to the administrator.

Does LargeCo have other schemes lined up as potential clients? If so then larger volumes could lead to greater economies of scale which could lead to reduced non healthcare expenses on a per member per month basis.

Will these other client schemes be other open medical schemes? If this is the case problematic conflicts could arise where these schemes are direct competitors. Will the administrator have sufficient controls in place to deal with such conflicts?

Is the profit sharing arrangement also a loss sharing arrangement?

How will increases in fees be determined after year one? Will the increase be fixed in the contract, linked to CPI or some other measure or will it be renegotiated annually?
The administration fee should also be compared to the fees that other medical schemes using third party administrators are paying.

Some costs such as the principal officer, the board of trustees and the hosting of annual general meetings will definitely remain with the scheme.

v)

Candidates did not perform particularly well in this question. Most candidates focused on the points raised in the question (e.g. the undesirability of buy-downs within Astramed) and did not consider the implications for the administrator’s business. A surprisingly high number of candidates did not consider the manner in which the R80 million guarantee could come into play through these developments.

The implications for LargeCo are:

- Administration income is less than it would have received if the targets were being met. Depending on the fee it could be resulting in losses or reduced profits for LargeCo, particularly as it now has the fixed overhead costs.

- If the administrator can find other schemes as clients this may offset the effect.

- LargeCo faces the possibility of having to pay the penalty if this situation continues.

- If the health insurance business that is being sold is profitable then this may offset the losses due to admin income…

…These would however have to be very profitable to offset the R80 million penalties.

- It is likely that the brokers are unhappy with LargeCo because it is putting pressure on them to sell the product, which they are finding difficult. If the situation continues brokers may move their business (medical scheme and other business) elsewhere.

- If the relationship with the scheme doesn’t improve then LargeCo may, in the long run, lose AstraMed as an administration client.

The implications for AstraMed:

- LargeCo may be hurting the sustainability of the scheme if the sale of the policies is indeed driving anti-selective buy downs.

- If the impact on the scheme’s financial results is severe then the penalty will not be enough to protect the scheme. It is already making deficits of around R50 million per annum and the penalty is only R80 million after three years.

- If the reduced volumes mean that the administrator doesn’t make a profit then there will be nothing to share under the profit sharing arrangement.

- Also does the profit sharing arrangement extend to other schemes/products administered by LargeCo or only the administration of AstraMed?

- This will be worse if the profit sharing doesn’t extend to the profits on these policies (which is in fact the case since the profit sharing is limited to the administration agreement).

- A reduction in membership will result in short-term increases in solvency as well as higher expenses as a percentage of contributions.
There are some potential trust issues:
  
  o  Is LargeCo using the scheme’s data to market these products without the scheme’s permission?
  o  Why are the moves anti-selective? Is LargeCo using the scheme’s data to selectively market to good risks?

vi)

This question was generally well-answered. Stronger candidates were able to differentiate themselves through generating a sufficient number of points.

Income bands

There is a risk that introducing an income band could lead to unsustainable losses on this option.

If the lower contributions are then successful in driving sales volumes the resulting losses may be significant.

The extent of the risk depends on how large the discount on this income band will be compared to the higher bands and whether the option is currently priced correctly.

Losses could be a result of fewer young and healthy lives purchasing the option and more poor risks purchasing it than expected.

A large source of risk with income bands is fraud in terms of declaration of income. If the scheme cannot verify income, a large number of members who should actually be paying the higher contribution rate may get to pay the cheaper one.

Many pensioners earn very small incomes and could qualify in terms of the income criteria. The low contributions may be more enticing than the restricted benefits. The low price point may therefore drive anti-selective buy-downs from the more comprehensive options.

Another risk is that if the introduction of income bands goes wrong it is very difficult to remove them at a later stage without disruption (in terms of large contribution increases) to these members. Any sales won may then be lost in a very short time.

The maximum commission payable on low-cost business is low and may fail to generate the anticipated volumes of business

How will the scheme deal with existing members earning below the proposed threshold? This will result in a loss of income unless higher-income members’ contributions are raised.

…Which introduces an element of uncertainty, as the scheme is unlikely to have data on the income distribution of current members.

Hospital plan

This is a new option and so the scheme will have to make some assumptions regarding the demographic profiles and claiming behaviour of the target market when setting the contribution levels. The scheme faces the risk of reality turning out worse than it assumed and contributions then not being sufficient.
The PMB regulations also mean that it cannot completely remove day to day and chronic benefits. The minimum is in fact quite high.

The scheme could then create a lower priced option that appears to have restricted benefits in the marketing material but that members who fully understand their entitlement under the PMB regulations know must provide these benefits. This can result in anti-selective buy-downs by poor risks.

Another risk is that profitable members buy down to this new option. The cross subsidisation on the higher options will then be lower, resulting in the more comprehensive options being less profitable

**Waive underwriting on maternity**

The logic is that these are young and healthy members that the scheme would like to attract to improve the cross subsidisation. The flaw in the argument is that the scheme has no power to ensure that these members remain on the scheme for any length of time.

The risk to the scheme is that of anti-selective behaviour by members who join just before the expected birth, incur the costs of the birth then leave before these costs are recouped.

The effect will be particularly bad if other schemes do underwrite these cases, as AstraMed will then be an obvious choice for members who intend to do this.

New-borns may not be underwritten, and are expensive due to the prevalence of neo-natal cases

**Enhance benefits on the top option**

These benefits were probably not included because of the high cost. If Astramed does do this product enhancement then any new business that results from it may be joining the scheme with the specific intention of using this benefit.

If this anti-selective behaviour is not allowed for when this benefit is costed then the scheme may face losses. This will be worse if LargeCo wants the benefit enhancement without a corresponding contribution increase.

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**Question 2**

i)

*This question covered relatively straightforward pricing principles. It was disappointing to note that the majority of candidates did not consider the fact that community rating would not be applicable in this situation.*

The actuary needs to consider the package of benefits being offered as well as any changes in that package over time.

There is no regulation of these products in Feros and therefore risk rating is allowed. The demographic profile of the insured lives need only be considered to the extent that the rating factors being used do not allow for variations in demographic risk.*
Any past trends in claim frequency and severity and whether these are likely to continue into the future…

…particularly South African medical price inflation

Other trends include changes in utilisation that could be a result of

- Increasing utilisation by policyholders
- Changes in burdens of disease
- Changes in the control measures such as case management or underwriting

This is a voluntary add-on and anti-selection is likely to influence claim costs. The actuary will need to allow for this and consider the strength of any underwriting measures that are in place.

The anti-selection will be worse if the add-on cover can be purchased at any time rather than only at the start of the contract.

If past claims experience is being used as a basis for pricing, have there been any particular cases that may be distorting the experience and must be allowed for?

The cost of claims is in South African Rands but the premium is payable in the local currency. The actuary therefore needs to consider trends as well as the volatility in the exchange rate.

Because the product provides for travel to another country these costs are likely to be significant, especially medical transport such as air ambulances.

Expenses need to be allowed for including the variable costs per policy and the contribution of these policies to the insurer’s fixed costs.

If managed care is applied to these claims then the cost of that should be allowed for.

The resulting premium will need to be competitive compared to other such products in the market.

A risk contingency margin may be added to the premium and will depend on the volatility of the claims as well as the level of uncertainty associated with the assumptions used to set the premium.

The premium will also need to include an allowance for the insurer’s required profit margin as well as the capital requirements for writing this type of business.

ii)

This question was well-answered.

- Benefit design
  - co-payments and levies may address unnecessary utilisation
  - clearly defined benefit definitions will reduce risk
  - including a list of exclusions
- Case management may be employed for hospital admissions
- Disease management may also be done for certain types of conditions
• Pre-authorisation may be required for any claims
• Auditing may be done to assess the reasonability of the claims
• Contracting directly with certain providers such as hospitals and specialists to reduce uncertainty regarding the rates at which claims will be invoiced
• Limiting cover to only certain suppliers
• Applying extensive underwriting to new business
• Imposing waiting periods and exclusions

iii)

This question was poorly answered. Very few candidates considered health economics principles and the general approaches that could be adopted in structuring a minimum package. Perhaps disappointingly, several candidates offered only superficial comments and proposed that an expert should be approached to assist with the process (rather than assuming the role of an expert). Credit was awarded for several valid considerations, and several of the candidates that performed well in this question were successful in passing the exam.

At its core this is a rationing exercise, weighing the benefits in terms of increased lifespan and quality of life against the cost of limited resources, including

- funds (ie the affordability of the package)
- human resources (nurses, doctors and other providers) and
- infrastructure (for example if only a limited number of dialysis machines are available).
- sophistication of the healthcare systems in Feros. Do the information, coding and billing systems support more complicated minimum benefit approaches?
- the availability of alternative sources of care such as NGOs or government sponsored facilities

The healthcare situation specific to the country must also be considered, including

• the demographic profile of the country’s population
• level of economic development
• the burden of disease
• and the major causes of mortality.

There are different approaches that could be followed:

The first would be to target high cost and life threatening diseases, much like the South African PMB package, which could take the form of a disease and treatment pairs (including chronic conditions) – the DTP approach.

The other possible approach would be a simple benefit category approach. For example this would define a fixed number of GP consults or clinic visits per family per annum – the LIMS approach.

A combination of these approaches may also be considered, such as a package of benefits for day to day care and a limited set of DTPs for high impact conditions (as long as these remain affordable).

Where it is cost-effective preventative treatments such as immunisation could be included as well.
The LIMS approach has the advantage of being much easier to administer and police, which may be more appropriate to a developing country such as Feros.

On the other hand the DTP approach will be much better for targeting specific diseases.

For each disease and treatment pair or benefit category to be included in the package the government will need to perform analyses. Examples include:

- Cost effectiveness analysis where the benefits of a treatment are measured on a one dimensional scale
- Cost utility analysis, which would require that the benefit of each treatment be quantified using QALYs.
- Cost benefit analysis, which require that the benefits of a specific treatment be quantified in units of money

The cost of a disease may include the cost of treatment, the overall prevalence, and other consequences of the disease such as the socio-economic impact.

Information will be required as a basis for these studies. Organisations such as the WHO may be able to provide information.

If such information is not available then pricing a DTP package will be difficult.

LIMS approach will be much easier to price since the prices of healthcare services will be much easier to determine.

Treatments considered for inclusion in the package must be scientifically valid and evidence-based and would have been approved by a relevant medical body.

The treatment would also have to be available in the country.

In setting the benefits package preference may be given to

- common diseases that can be cost effectively treated and where the financial and socio-economic benefits of treatment will be the greatest
- and to rare conditions where the impact of contracting the condition may be devastating to the patient due to high cost of care (for example renal failure).

In some cases the country may also need to consider public sentiment regarding particular diseases, as was the case with HIV/AIDS in South Africa.

The government may also consider implementing a mechanism such as administered prices or a central negotiating forum to determine the rate at which providers will be reimbursed for these minimum packages.
iv)

This question was very poorly answered. Most candidates focused almost entirely on bookwork (even though question clearly asked only for a “brief” description of each model) rather than spending time on the application of the model to perform an actual costing exercise. Most candidates failed to address the fact that they were being asked to model the impact of HIV/AIDS on a group healthcare product rather than the standard uses for these models.

ASSA2008

The ASSA2008 model is a population model that models the progression of the HIV/AIDS epidemic in a country or region. It comes in two versions – the Full and the Lite model. For countries other than South Africa the Lite model would be used.

PGN105

The PGN105 model is a simple model that predicts extra AIDS mortality for assured lives and is used in life insurance (and sometimes pension) applications.

ASSA Select

The ASSA Select model models the impact of HIV/AIDS on a sub-population and is used to assess the impact of the disease on employees benefits (death and disability costs), human resources (sick leave, productivity) and treatment costs.

This exercise is concerned with healthcare costs of HIV+ individuals and therefore we need a model that takes a multi-state approach rather than simply modelling HIV+ prevalence rates and AIDS mortality. The ASSA Select model is the most appropriate model to use for this specific population.

Even though the ASSA2003 or later versions of the ASSA AIDS and Demographic model is not appropriate to this population it is still needed to populate the ASSA Select model with HIV incidence rates.

If a version of the ASSA AIDS and Demographic model has been calibrated to the experience of Feros then that may be used as a basis for incidence rates. Otherwise the modeller will have to perform the calibration exercise.

The modeller will have to consider any differences between the population being insured and the general population of the country or region in making adjustments to the incidence rates.

The ASSA Select would then need to be populated with the demographic data of the population being insured.

Some adjustment will be necessary since the ASSA Select model is intended to model the impact of HIV/AIDS on an employee workforce and this population group includes the dependants of employees.

In particular assumptions regarding family structure and the relationship between HIV infection rates between the employees and their spouses and children will be required.
The ASSA Select model can be further calibrated if other sources of experience data are available such as:

- Any HIV+ prevalence surveys that were conducted on the insured population (maybe by the company through VCT or other measures)
- Death and disability data for the group
- Any information on the number of beneficiaries currently receiving treatment for HIV/AIDS.

Once the model has been calibrated some assumptions will be required regarding the HIV/AIDS related healthcare costs at each stage of the disease.

The assumptions would not only relate to the direct costs of treating HIV/AIDS via antiretroviral therapy but also the indirect costs such as increased hospitalisation and other claims.

The actuary will need to take into account the specific HIV/AIDS related benefits included in the minimum package.

v) This question was derived from bookwork and candidates performed very well. Although it was clearly stated that this product would be sold as an add-on to the healthcare product described earlier in the question, some candidates spent too much time considering the healthcare costs implications of a motor vehicle accident (which are already covered). Some candidates also answered the question in a South African context rather than that of the hypothetical country of Feros – for example, discussions of GAP cover are not necessarily relevant.

Critical Illness / Dread Disease Cover
– provides a lump sum payable if the policyholder suffers from one of the defined conditions
Not appropriate since injury is not an illness or a disease.

Major Health Event Cover
– provides a specified amount on the occurrence of a specified health event
This would be an appropriate product as provides a cash payment in the event of a major health event such as an accident

Hospital Cash Plans
– provides a stated sum for each day that the insured person is hospitalized
Not really appropriate as only provides a benefit whilst hospitalised and only a fixed amount.

Accident and Sickness Cover
– provides income usually for a specified period following a deferred period, payable for as long as the claimant remains disabled
– additionally, a fixed sum will be paid if the policyholder suffer a loss of, for instance, a limb
This would be an appropriate product.

Disability Cover
– provides income replacement benefits on temporary or permanent, total or partial disability
Provides for loss of income but wouldn’t offer the additional cash payments

Long Term Care
– provides cover for continuing personal, nursing or associated domestic care to people who are unable to look after themselves without some degree of support

*Most candidates performed well in this question. Credit was awarded for other appropriate products provided that sufficient motivation was given.*

vi). Accident and sickness cover would be the most appropriate product

It provides cover for loss of income and could also pay out for loss of limbs which may help with the other unforeseen expenses and accident and sickness policies are more specifically designed to cover this specific application.