

CSP-GH Complete Illustrative Solutions

Spring 2010

1. Learning Objectives:

1. Analyze medical quality measures and their importance to companies, plan sponsors and members.

Learning Outcomes:

- (1d) Compare the role of comparative effectiveness research and evidence based medicine in the quality of medicine.

Sources:

GH-C100-07

Commentary on Question:

Candidates generally did well on part (a). Most candidates were able to identify the major sources of data and some of the advantages and disadvantages. A few candidates focused on broader external information sources which would not help a company evaluate their medical effectiveness.

Candidates were widely dispersed on part (b). Many candidates did well while some candidates responded with an answer to a slightly different question focusing on how to perform the analysis instead of how to get a statistically valid sample.

Fewer candidates performed well on part (c). Those that provided answers generally performed well but many papers provided no answers to this section.

Part (d) performance was somewhat disappointing. Many candidates failed to even take a stand on whether or not this was appropriate. When a direct question is asked or a recommendation is requested, candidates need to at least provide a specific answer and then try to support their answer. Providing all of the pros and cons without drawing a conclusion will generally not be a successful strategy to these types of questions. However, some candidates scored very well on this part by providing an answer and support to their conclusion.

Solution:

(a)

- Incurred claim data
 - Advantages: Readily available and inexpensive
 - Disadvantages: Quality make is limited due to data coding issues by claim examiners (no incentive to code correctly) and under reporting from capitation contracts

1. Continued

- Medical record
 - Advantages: Provides detailed information about specific encounters
 - Disadvantages: Expensive and somewhat incomplete because limited only to encounters
- Patient survey
 - Advantages: Provides total picture and includes all aspects of care; only source for cognitive information
 - Disadvantages: Subject to bias based on how survey is constructed

(b)

- Selection of population
 - Need to understand purpose and use of study
- Sample size
 - Define minimum sample size at most detailed level of study to get desired statistical confidence
- Selection of sample
 - Random or stratified
- Year-to-year consistency
 - Turnover of providers or members will reduce credibility of sample

(c)

- Preventative procedures performed
 - Preventative procedures should reduce overall health costs; compare to benchmarks developed by doctors/health organizations
- Compliance with medical care guidelines
 - Guidelines developed by specialists and researchers
 - Compliance indicates efficient care performed
- Cost and utilization measures
 - EG average length of stay, days per thousand
 - Measures indicate efficiency of care provided
- Proxy measures
 - Measures that indicate poor health delivery
 - EG low birth weight, cardiac arrest rate
- Health status outcomes
 - Measure of ultimate outcome of episode of care

1. Continued

(d)

- Not appropriate
 - Need to segment to reflect anticipated differences:
 - Product
 - Geography
 - Age (over and under 65 may have very different patterns)
 - Contract type - capitation may have different patterns than fee for service

2. Learning Objectives:

9. Evaluate the impact of regulation on company/plan sponsor financial management.

Learning Outcomes:

- (9a) Evaluate the interrelationship of state versus federal regulation on company financial management and marketing.

Sources:

Kongstvedt Chap 68

GH-C101-07

Commentary on Question:

In part (a), most candidates did well at describing the CCO's appropriate authorities. They were less successful in describing how the CCO position should be designed.

In part (b), most candidates didn't discuss the relative importance of the attributes. Many put down the qualities of a CRO, rather than the qualities of a CCO.

In part (c) some put down "common sense" steps of conducting an investigation in the hopes of getting some points.

Solution:

- (a) Designing CCO Position:
 - Should be ONE person with sole responsibility
 - Should also have operational management and industry experience
 - Should be a senior management level position
 - Has direct access to company's governing body, CEO and other senior leaders, including legal counsel

CCO's Appropriate Authorities:

- Advising internal audit to focus on issues that could lead to legal and regulatory risk
- Work with legal counsel to translate new requirements into policy
- Manage legal and regulatory investigations
- Have access to department heads to identify performance issues that increase legal and regulatory risk

The CCO should have the tools and (performance) drivers to influence employee behavior:

- Structure
- Leadership
- Education and development
- Communication/consulting

2. Continued

(b)

- Senior level individual with credentials in compliance
- Advocate for maintaining discipline/ethical work culture
- Ability to manage and execute
 - The most important trait, the CCO must be able to achieve the desired level of compliance
- Legal and regulatory knowledge
- Industry background/experience/technical
 - Less Important
- Ability to effectively use performance drivers (see list for more potential points)
 - This distinguishes average from superior CCOs

(c)

(i) Requirements for Third Party Endorsements

- Testimonials/endorsements in advertisement must be genuine
- Represent the current opinion of the author
- Be accurately reproduced
- Is directly or indirectly compensated for the endorsement
- A financial interest must be disclosed in the advertisement in the intro and with equal prominence
- Advertisements can't imply that a policy has been approved or endorsed unless it is fact and unless the relationship is disclosed
- For testimonial, claim data must be retained for at least 4 years or until the next regular examination of the insurer

Requirements for Third Party Statistics

- Statistics must be relevant and can't be used unless it accurately reflects all current and relevant facts
- Statistics must be derived from the policy advertised and state when applicable to other policies
- Must use extreme caution not to mislead the public
- Cannot imply that claim settlements are generous or liberal or exceed the terms of the contract
- Cannot use an unusual amount paid for unique claim since this can be misleading
- Must identify the source of statistics used

2. Continued

- (ii) Steps in Conducting an Investigation and Recommended Documentation
- Include assistance from legal counsel and professional investigators
 - Use standard investigation protocols
 - After completing internal investigation, develop a plan for further action
 - Disciplinary action should be prompt and consistent with organization's written standards
 - After completing, determine if changes need to be made to compliance program
 - Report violations to external agencies within 60 days
 - Recommended Documentation:
 - Documentation of alleged violation
 - Description of investigation process
 - Copies of interview notes and key documents
 - Log of interviews conducted and documents reviewed
 - Results of investigation

3. Learning Objectives:

7. Integrate reinsurance arrangements with overall strategy of company/plan sponsor.

Learning Outcomes:

- (7a) Analyze the key risks that reinsurance will stabilize for a company's given line of business.
- (7b) Recommend a type of reinsurance for a given scenario.

Sources:

GH-C110-07 Reinsurance for Group Accident & Health Insurance

GH-C30-10 Spring Meeting 2009, Session 44, Update on Employer Stop-loss

Commentary on Question:

Part (a) was a list question requiring recall and most candidates did well. Part (b) was mostly based on information presented in GH-C30-10. In part (b) many candidates described the various types of reinsurance rather than an objective method to compare their selection choices. It was important that the candidate was able to justify their choices in the score sheet. For part (c), stop loss deductible selection was directly discussed in GH-C30-10 but was also referred to in other reading sections. Considerable latitude for answering was given if the candidate demonstrated an understanding of the selection considerations and gave a well reasoned justification of their recommended deductible based on their description of the general considerations.

Solution:

- (a) Improve financial capacity
 - Sell higher amountsNew Business growth
 - Quickly grow a product lineStabilize earnings
 - Control aggregate losses
 - Manage mix of business in force
 - Increase spread of riskReduce capital strain
- Improve balance sheet position
- Improve intellectual capacity - use reinsurer's expertise in design, pricing and underwriting acquisition
- Joint Venture
 - Fronting may be used because reinsurer is not licensed as direct insurer
- Catastrophic protection
- Reinsurer as Guarantor

3. Continued

(b)

(i)

Score Sheet		
Price		60.0%
- Reasonable		
- Consistent		
- Funding Alternatives		
Coverage		5.0%
- Covered Services		
- Deductible Selection – consultations		
- Limitations		
- Exclusions		
- Laser Philosophy		
Definitions		5.0%
- Medical Necessity		
- Experimental		
- Usual and Customary		
- Acute Care or in lieu of hospitalization		
Service	10.0%	
- Agreement production		
- claim turnaround		
- claim accuracy		
- New Case installment		
- Visits		
Managed Care Programs		10.0%
- Access to critical Vendors		
= Transplants		
= Neonates		
= High Cost Drugs		
- Consultative case management		
Other products or Services	5.0%	
- Employer stop loss pricing and underwriting		
- Out of network solutions		
- Group life an ancillary products		
Financial Strength		5.0%

		100.0%

3. Continued

(ii)

- Price is almost always important, but Paterno needs other services from the reinsurer specifically to help growing the market place.
- Paterno will value the relationship with the reinsurer more than a larger organization will.
- With the small size they may need help with funding.
- If they grow fast they will need help with several areas including managed care programs and possibly administration.

(c)

(i) Appropriate Deductible Selection Criteria

- Count: Should generate between 5 to 15 claims per year
- Risk: Risk appetite - higher deductible if the ceding comp is comfortable with increased risk
- Price: If deductible too low, be careful not to be just dollar trading
- Trend: Deductible leveraging, are you adjusting the deductible for inflation
- Surplus: Is the deductible appropriate for the surplus situation
- In force: is the deductible adjusting for changes in membership levels or other factors influencing variability

(ii) If the company was stable we would select a \$300,000 deductible based on the number of claims. Because the company expects to grow, a \$500,000 deductible would be more appropriate.

4. Learning Objectives:

14. Demonstrate an understanding of the requirements regarding retiree life and health benefits.

Learning Outcomes:

(14a) Determine appropriate baseline assumptions for benefits and population.

(14b) Project future retiree benefit costs.

Sources:

AAA Practice Note, Actuarial Equivalence

Commentary on Question:

Many candidates cited the tests by which the plan qualifies for the retiree drug subsidy, as the tests for actuarial equivalence for alternative coverage plans. Some candidates listed the tests but weren't able to identify the correct values from the table. Additional credit was available if candidates explained why the tests were passed or failed (e.g., cite values and compare). Recommendations for changes in plan design needed to be more specific than simply "change cost sharing."

Solution:

(a)

(i) Actuarial Equivalent Cost Sharing Plan

- Deductible and ICL are the same as they are in the defined standard coverage.
- Average coinsurance percent for amounts between the deductible and ICL must be actuarially equivalent to the defined standard plan (25%).
- Average coinsurance percent above the catastrophic threshold must be actuarially equivalent to the percent in the defined standard plan.

Alternative Coverage Design

- Can be either a basic alternative or an enhanced alternative coverage.
- Deductible and ICL can be different than in the defined standard plan.
- Basic Alternative Plans have no supplemental premium.
- Enhanced Alternative Plans have a supplemental premium.

(ii) Actuarial Equivalent Cost-Sharing Plans

- Compare effective coinsurance in the defined standard plan and the proposed plan
 - Between the deductible and the ICL; and
 - Above the catastrophic threshold.
- Difference must be within a CMS specified threshold.
- If cost sharing is used, it may not discriminate against particular beneficiaries.

4. Continued

Actuarial Equivalent Alternative Plans

- Tests whether overall cost of proposed plan is similar to standard plan, and:
 - Beneficiary coverage is not substantially reduced for very low or very high drug spend beneficiaries (protect beneficiary).
 - Medicare program is protected.
 - Excess benefits in the alternative plan are funded by beneficiary premiums.
 - Basic alternative plan designs of the equivalence test are restricted to a subset of all possible designs that would be actuarially equivalent to the defined plan.
 - This promotes price competition and not benefit competition.
- (b)
1. Total Covered Costs for the proposed plan are equal to or greater than the total covered cost of the standard coverage.
Alternative plan = \$103.00
Standard plan = \$104.20
Test assumes non-pharmacy expenses and gain/loss margin are the same.
Since this plan will file for demonstration, the federal reinsurance will equal the fed reinsurance under the standard plan.
Since $103 < 104.20$, this test is failed.
 2. Unsubsidized value of the proposed plan must be equal to or greater than the standard plan.
Checks just the part D covered drugs.
This is the same check as in Test 1 since all the other items are equal.
Since Test 1 is failed, this test is failed.
 3. The average plan liability at the ICL for the proposed plan must be equal to or greater than the standard coverage.
Plan cost for members with expected cost greater than the ICL must be greater than the standard plan.
Alternative plan = \$70.16
Standard plan = \$78.75
Since $70.16 < 78.75$, this test is failed.
 4. Deductible for the proposed plan must be less than the deductible for the standard plan.
Since \$20 is less than \$310, this test is passed.

4. Continued

5. Average cost sharing for catastrophic coverage in the proposed plan may not exceed the same in the standard coverage.

Cost sharing amounts over catastrophic coverage level was not provided by the trainee.

Test cannot be applied. (Credit was also given if a candidate made an assumption regarding cost sharing under the plan, then applied the test and made a decision about pass/fail.)

(c) Test 1 and 2 Failure (Coverage prior to ICL)

- Means that the proposed plan has cost sharing that is less rich than the standard plan, thus the plan benefits will need to be made richer.
- Since this is a copay plan, the copays prior to the ICL will need to be decreased.
 - Will need to make sure that the changes made do not discriminate against certain beneficiaries.
- Lowering the deductible may also help to enrich the plan sufficiently.

Test 3 Failure (Coverage prior to ICL)

- Means that the proposed plan has cost sharing that is less rich than the standard plan, thus the plan benefits will need to be made richer prior to the ICL.
- Since this is a copay plan, the copays prior to the ICL will need to be decreased.
 - Will need to make sure that the changes made do not discriminate against certain beneficiaries.

5. Learning Objectives:

6. Evaluate financial performance measures for insurers for both short-term and long-term products.

Learning Outcomes:

- (6a) Assess key financial measures used by various entities (insurers, HMOs, provider-owned plans).

Sources:

Higgins Chapters 2 & 8

Group Insurance Chapter 43

Commentary on Question:

- (A) Most candidates understood the objective here was to outline the components of the Dupont Formula. For the case study calculations, some candidates used net income prior to investment income. Others used BOY or average of the EOY and BOY for assets and equity which was acceptable. Many candidates were able to compare/contrast the key drivers of these elements to at least obtain partial credit for their responses.
- (B) Many candidates were able to correctly identify the 3 primary weaknesses of ROE. The strengths were broad so most responses were able to receive at least partial credit.
- (C) Most candidates understood the objective here but had some trouble with the calculation.
- (D) Many candidates assumed that the change in asset turnover will have no impact due to its cancellation in the ROE formula.
- (E) This question was a straightforward calculation. However, most candidates did not remember to adjust the return on debt by the tax rate. Some didn't set up the correct return on equity formula.

Solution:

- (a) **Dupont Formula**

(Note: Financial leverage is the same as Total Leverage Ratio)

Return on Equity (ROE) = Total Asset Turnover * Net Profit Margin * Total Leverage Ratio

Total Asset Turnover = Revenue/Total Assets

Net Profit Margin = Net Income/Revenue

Return on Equity = Net Income/Shareholder Equity

5. Continued

Total Asset Turnover (or Asset Turnover)

Great Expectations:

$$\text{Total Asset Turnover} = 54,434/28,175 = 1.93$$

Copperfield:

$$\text{Total Asset Turnover} = 19,448/21,479 = 0.91$$

Great Expectations has much higher revenues generated from their assets.
Great Expectations is more efficient with its resources.
Low asset turnover such as Copperfield's signifies a more capital intensive company.

Net Profit Margin

Great Expectations:

$$\text{Net Profit Margin} = -1,099/54,434 = (0.02)$$

Copperfield:

$$\text{Net Profit Margin} = 2,482/19,448 = 0.13$$

Great Expectations has a negative profit margin (or loss).
The Investment income loss for Great Expectations is the primary driver of the negative net profit margin.
Copperfield's investment income contributes significantly to its net profit margin.

Total Leverage Ratio (or Financial Leverage)

Great Expectations:

$$\text{Total Leverage Ratio} = 28,175/20,148 = 1.40$$

Copperfield:

$$\text{Total Leverage Ratio} = 21,479/11,427 = 1.88$$

Total Leverage Ratio indicates the level of debt (including reserves) to the equity.
The liabilities are driven by the statutory reserve requirements.
Copperfield's capital intensity appears to be related to higher reserve levels that impacts their total leverage ratio.

Return on Equity

Great Expectations:

$$\text{Return on Equity} = 1.93 * (0.02) * 1.4 = (0.05)$$

Copperfield:

$$\text{Return on Equity} = .91 * 0.13 * 1.88 = 0.22$$

Great Expectations has a negative return on equity.
Copperfield's return on equity is positive.

5. Continued

(b) Weakness:

- Includes only 1 year earnings so fails to capture the impact of multi-year decisions.
- Looks only at return while ignoring risk so can be inaccurate yardstick of financial performance.
- The ROE uses book value for SH Equity not market value.

Strengths:

- Widely used measure of company financial performance.

(c) Adjust ROE up by 10% for increase in income and decrease 18% for decline in asset turnover.

$$\text{ROE} = \text{ROE} * 1.10 / (1 - 0.18) = 29.1\%$$

(d) Overstatement of Reserves in 2008 affects net income in 2009

$$\text{Income for 2009 should have been } 1,097,000 = 2,482,000 - 1,385,000$$

$$\text{ROE} = 1,097,000 / 11,427,000 = 9.6\%$$

(e) Amount of Equity = Stock Price * Outstanding Shares (from case study)

$$\text{Amount of Equity} = \$40 * 444,902,956$$

$$\text{Amount of Equity} = 17,796,118,240$$

Amount of Debt = Sum of Debt from Balance Sheet

$$\text{Amount of Debt} = 820\text{M} + 6,616\text{M}$$

$$\text{Amount of Debt} = 7,436,000,000$$

Return on Equity = (Return on Government Bonds) + (Great Expectations Beta) * (Historical excess return on common stocks)

$$\text{Return on Equity} = (3.5\%) + (1.55) * (5.5\%)$$

$$\text{Return on Equity} = 12.025\%$$

Cost of Capital = [(1 - tax rate) * (return on debt) * (amount of debt) + (return on equity) * (amount of equity)] / [amount of debt + amount of equity]

$$\text{Cost of Capital} = [(1 - \text{tax rate}) * (6\%) * (\text{amount of debt}) + (\text{return on equity}) * (\text{amount of equity})] / [\text{amount of debt} + \text{amount of equity}]$$

$$\text{Cost of Capital} = 9.63\%$$

(f) Stock price will keep rising until the cost of capital and the return on assets are in equilibrium. If returns are in below the cost of capital, shareholders will receive a return lower than their expectations. Stock price will decrease until the cost of capital and the return on assets are in equilibrium. The cost of capital is the return on assets that a company must earn in order to keep the stock price constant.

6. Learning Objectives:

3. Evaluate techniques for claims and disease management.

Learning Outcomes:

- (3c) Apply principles of study design to the measurement of intervention outcomes to specific situations.
- (3f) Estimate savings, utilization rate changes and return on investments.

Sources:

Managing and Evaluating Healthcare Intervention Programs, Chapters 2 and 8 (Including Appendix)

Commentary on Question:

Many candidates did well with parts (a) and (b) of this question. Most candidates simply provided the conditions for part (b), but those who listed supporting information received additional points.

Part (c) of this problem was missing two important assumptions (cost and utilization trend). However, without these assumptions, candidates were still able to perform the calculations by ignoring trend, making an arbitrary trend assumption, or utilizing the available case study information to calculate an expected trend.

Part (d) asked the candidates to recommend a DM program. Candidates were given full credit if they made a recommendation and supported their decision.

Solution:

- (a) Once contracted, the disease remains with the patient for their lifetime.
The disease is often manageable.
The patient can take responsibility for their own condition.
The average annual cost of chronic patients is often.

- (b) End Stage Renal Disease
 - Ultimately costs can't be contained.

Transplants

- Costs increase in the time leading up to the transplant and naturally stabilize after the transplant without DM.

HIV/Aids/Other conditions where privacy is an issue

- Privacy issues make it difficult to obtain data and manage members.

Institutionalized members

- Not reachable.

6. Continued

Members with catastrophic claims

- Claims are often one-time and do not carry over into the intervention year.

Members eligible for other programs

- Should be excluded based on objective criteria.

(c) NTI's DM Program:

2010 Expected admits w/o DM program = 57,600 * assumed utilization trend

2009 Cost per admit = $133,880,000 / 57,600 = 2,324.31$

2010 Expected Cost/admit = length of stay * cost per day

$$= 1.47 * 1,845 = \$2,712.41$$

Reduced admissions = expected 2010 admissions without DM program - expected admissions with a DM program

Total Gross Savings = 2010 expected cost * reduced admissions

Annual Expenses = members in DM program * expenses PMPM * 12

$$= 19,603 * \$1.98 * 12 = \$465,767.28$$

Gross Savings after expenses = total gross savings - annual expenses

ROI = gross savings after expenses / DM program cost

Net Savings = gross savings after expenses - DM program cost

GEIC's DM Program:

2010 Expected Cost/admit = 2,324.31 * assumed cost trend

Reduced admissions = 2010 expected admissions without the DM program - 59,657

Total Gross Savings = reduced admissions * 2010 cost per admission

Annual Expenses = 19,603 * expenses PMPM * 12

Gross Savings after expenses = total gross savings - annual expenses

ROI = gross savings after expenses / DM program cost

Net Savings = gross savings after expenses - DM program cost

6. Continued

- (d) I recommend (proceeding/not proceeding) with NTI's DM program because:
- The net savings for NTI's program is (greater/less than) GEIC's DM program.
 - The ROI for NTI's program is (greater/less than) GEIC's DM program.

Reporting savings on a PMPM basis allows us to determine whether a program has meaningful savings.

ROI is favored by the DM industry for reporting the value of a DM program.

7. Learning Objectives:

4. Formulate and evaluate insurer claim reserving techniques.
12. Prepare a Statement of Actuarial Opinion (SAO) for selected health matters.

Learning Outcomes:

- (4a) Describe the types of claim reserves (e.g., due and unpaid, ICOS, IBNR, LAE, PVANYD).
- (12e) Describe common situations where insurance regulations or Medicare laws call for a signed SAO by a qualified actuary.
- (12f) Describe the continuing education credits for signing SAOs.

Sources:

Practice Note on Revised Actuarial Statement of Opinion September 2009

MAAA Code of Professional Conduct Note

MAAA Requirements for Signing SOA

Commentary on Question:

On part (a), virtually all candidates confused the real point of this section. The question asked for considerations when developing Medical Reserves. The objective was to discuss items specific to influences that affect medical claims such as trend, seasonality, large claims, paid vs. incurral dates and additionally, items such as combining blocks of business to get credible valuation cells.

The objective on part (b) was to create the calculation for IBNR. Ideally the candidate would have calculated the reserve two ways. One with the combined data and one with the data split between the High Deductible Health Plan and Copay Plan. Then candidate would have mentioned that the split reserve was more accurate and prevented under-reserving. Some candidates did do this correctly. Many, however, stopped after calculating the combined reserve.

Part (c) of the question was focused on the new regulations regarding SOAs. Ideally the candidate would point out the 6 sections along with some of the key details on the sections. Many candidates missed the additional details of the different sections.

Section (d) was a straight forward list question on the 14 Precepts of the Professional Code of Conduct. In some instances a brief description of the precept was expected. Most did quite well with this part. Additionally, some discussion of where the precepts were not followed was required.

7. Continued

Part (e) was also straight forward and the candidate was expected to list the requirements by the MAAA to sign an NAIC Statement of Actuarial Opinion. Most candidates did well with this section.

Solution:

- (a) Ability to systematically record incurred and paid dates and the difference between these dates across policies in a valuation cell defines lag patterns. There are fairly consistent lag patterns in the progression of claims from their incurred date. Ultimate dates smoothing methods exist to adjust the disruptions/large claims. Amount varies by nature of benefits and frequency of claims/seasonality.

Combining blocks of business to achieve credibility therefore requires that they exhibit similar patterns in reporting and processing trend. The technique also requires either earned premiums or exposed contracts to assist in calculations. These values help with certain volume adjustments and smoothing.

(b)

Total (and in SAO, in 000s)	151,968
CoPay Plans	67,799
HDHP	122,062
Total Revised	189,861
Difference	37,893

Under-reserved at year end due to differences in completion patterns.
More accurately if done separately.
Different products have different patterns.

- (c) No Table of Key Indicators
- Need to indicate if language used is prescribed language
 - Need to indicate type of opinion
 - Need to indicate if additional relevant comments

Identification Section

- Does not reference appointment
- Does not reference meeting qualifications to issue opinion

Scope Section

- Scope is limited to contract reserves
- Amount listed is as a contract reserve and not unpaid claim liability

7. Continued

Reliance Section

- Language unclear as to whether actuary is taking responsibility for data
- As a consultant, would normally expect reliance on data
- Attach reliance letter
- Need to include reference to reconciling with U & I Exhibit 2B

Opinion Section

- Statement B “stronger than” language is not appropriate
- Statement B does not include reference to purpose of statement
- Statement C should specify state
- Need reference to review U & I Exhibit 2B
- Need signature, date and address

(d) Precepts

1. Act honestly and with integrity
2. Qualified to do service
3. Satisfy applicable standards of practice
4. Communication clear and appropriate
5. Identify the principal for who the communication is issued
6. Timely disclosure to principal of all compensation received
7. Must avoid conflicts of interest
8. Try and ensure final product is not misused
9. Do not disclose confidential information unless authorized to do so
10. Use courtesy and respect
11. No false advertising of your services
12. Titles must be used in accordance which conforms with organizations rules
13. Try and resolve issue with other actuary before turning them in
14. Respond to actuarial boards in truthful and prompt manner

Mr. Fagan possibly in violation of:

Precept 2: Not mentioning he is qualified

Precept 4: Not being as clear as needed (no state mentioned, stronger than language not appropriate)

Precept 6: No compensation disclosure

(e) Qualifications

Three years of responsible actuarial experience

Can prepare SAOs for another actuary if you have less than three years experience, but that actuary must meet three year experience test

Document at least 30 hours of continuing education per year

Organized activity – at least 6 hours must be organized

Working with actuaries from different organizations

Professionalism – at least 3 hours must be on professionalism topics

7. Continued

General business courses – limited to 3 hours per year

Continuing education hours must be met in calendar year previous to issuing SAO

Continuing education must be relevant:

- Broadens/deepens understanding
- Expands knowledge of practice in related disciplines
- Facilitates entry into new area of practice
- Actuary's responsibility to be compliant

8. Learning Objectives:

2. Typical markets: Understands customer segments and how products are marketed to each.

Learning Outcomes:

- (2d) Compares the relationship between different marketing channels and the underlying needs of the consumers.

Sources:

Group Insurance, Chapter 1

Managed Care Handbook, Chapters 41-42

Individual Health, Chapter 10

Commentary on Question:

Most candidates addressed some of these issues (mass marketing, underwriting and agent use) but missed on the commission difference, partnerships, sales training/focus and need to expand Internet use. Some candidates spent time writing lists that did not answer the question directly.

Solution:

Group uses consultants and brokers, so they would need to change to more agents and some brokers. They will need to increase agent network and consider a captive agent force. They should consider direct sales through the Internet/telemarketing and also consider targeting associations or partnering with a financial institution.

Sales training will be needed on new individual products, stricter regulations and how to sell to the individual instead of an employer. Stricter underwriting rules are needed to avoid financial ruin, thus sales needs new expectations on the sales process.

Effort to bill the individual and Internet could be reworked to handle many administrative functions (sales relations, plan descriptions, enrollment, disclosures).

Mass marketing is needed (TV, radio, newspapers, billboards, Internet, etc.).

Commission structure should be different because no one would sell individual if it did not have a higher payout. Also, individual salespeople should have lower sales targets because of the effort involved.

9. Learning Objectives:

3. Evaluate techniques for claims and disease management.

Learning Outcomes:

- (3g) Describe value chain analysis as it applies to the planning and management of disease management and other intervention analysis

Sources:

Managing and Evaluating Healthcare Intervention Programs, Duncan, 2008

Commentary on Question:

Candidates tended to have trouble getting full credit on Part (a), primarily due to not fully explaining the value chain analysis or by not providing supporting details to describe the components of the value chain. In Part (c), many candidates only wrote a one sentence answer, which is not enough to provide an adequate summarization of the published financial effectiveness of DM.

Solution:

- (a)
 - (i) Value chain analysis is the process of determining the value each component of a process adds to the overall process. The value chain analysis provides a framework for analysis of the different components.
 - (ii)
 - Data Warehousing – Includes data such as eligibility data and member conditions
 - Predictive Modeling – Provides risk ranking and identifies gaps in care
 - Intervention Development – Develop campaigns to deliver interventions; integrate with providers
 - Outreach/Enrollment – Determine staff management and caseload assignment, reach members, enroll members
 - Membership Coaching/Assessment – Coach members, refer members and graduate members from the program
 - Outcomes Assessment – Asses clinical, financial and operational outcomes
- (b)
 - Pros
 - Provides a framework for analyzing the effectiveness of various program components
 - Allows identification of interim measures of progress
 - Provides a focus on interventions and their objectives
 - Cons
 - Difficult to assess value of separate components
 - DM vendors often bundle services

9. Continued

(c)

- The reported ROI for disease management is estimated between 1.2 and 6.4.
- DM for asthma does not have significant support for effectiveness from studies.
- DM for diabetes has a large range of supported ROIs.
- DM for heart failure has a backing of literature for favorable financial effectiveness.

(d)

- Financial savings literature uses different research designs.
- Basis of financial savings may not be given – if given ROI but not program costs total savings cannot be calculated and compared.
- Timing of studies affects the results because of medical trend.
- Studies use different sample sizes and durations.
- Published studies tend to focus on clinical rather than financial effectiveness.
- There is publication bias, because studies that show negative results are less likely to get published.

10. Learning Objectives:

10. Evaluate the risks associated with health insurance.

Learning Outcomes:

- (10a) Evaluate the risk associated with a specific product, including
- Identify risks inherent in the product
 - Describe the types of analysis used to measure the risk
 - Discuss methods for mitigating the risks

Sources:

GH-C30-10 2006 SOA Health Spring Meeting Session 48PD “Risk Management for Individual Products”

Commentary on Question:

Many candidates did not answer part (a) with regard to Individual Disability Income Market and parts (b) and (c) with regard to the Individual Medical Market. This was a common mistake. Many candidates only focused on data accuracy/errors and data warehousing but failed to elaborate items in part (b). Candidates struggled with part (c). The most common mistake on part (c) included continuing the list from part (b) or listing accounting formulas.

Solution:

- (a) General Trends/Industry Trends

- Claim incidence coming down
- Morbidity improved considerably over the past 10 years
- Market Share/Competition
- Consolidation

Pricing Trends

- Pricing – Seeing rate increases due to interest rates dropping

Product Trends

- Liberalization of product benefit own occ and mental nervous

Underwriting Trends – for Fully Underwritten Business

- Consideration of new conditions included in Mental Nervous
- More challenging financial underwriting
- Focus on speeding up the underwriting process without sacrificing risk management

Underwriting Trends – for Guaranteed Standard Issue Business

- More pre-existing condition language
- More issue and participation limits

10. Continued

Claim Administration Trends

- Shifting burden of proof from claimant to insurer
- More review of Social Security submissions
- Increase controls, approval levels, technical strength in claim decision process
- Fraud and abuse

Medical/Vocational Rehab Trends

- More doctor to doctor interaction
- Help get people back to work faster (win/win)
- More field reps doing more face to face visits

Regulatory Trends/Legislative Trends

- Tougher litigation environment

Enterprise Risk Management Trends

- Concentration Risk
- Managing an extreme event like avian flu or terrorist attack

(b) Data Capture

- Data collect from the start of the selling process to the date of termination
- Capture the whole customer experience from beginning to end

Data Organization

- Datawarehouse/Single Source
- Consistent Data Definitions

Data Scrubbing and Validation

- Edit out data issues (Accuracy/Test Samples)
- Reconciliation/Fraud

Data Augmentation and Transformation

- External data
- Competitor information

Data Adjustments

- Pooling of large claims
- Allocate reserves down to member level

Data Organization

- Various Datamarts
- Pricing, underwriting, segment

10. Continued

Data Retention

- Many years of data

- (c) Lifetime Pricing Models
Logistic Regressions
Automatic Exception Reporting
Selection Models
- Drivers of Selection/Antiselection
- Demand Sensitivity Models
- Competitor Pricing
- Credibility and Confidence Intervals

11. Learning Objectives:

13. Understand an actuarial appraisal.

Learning Outcomes:

(13a) Describe applicable ASOPs and other guidelines

(13c) Describe an approach for preparing an actuarial appraisal.

Sources:

Insurance Industry Mergers and Acquisitions

The Actuary and Health Insurance M & A

The Actuary and Health Insurance M & A/ASOP #23

Insurance Industry M & A

Commentary on Question:

In general, in part (a) students handled this calculation appropriately. It is very important in calculation questions to show your formulas and steps to arrive at the final dollars. This allows the grader to provide maximum points in the event of a miscalculation.

In part (b), many students were able to properly identify some of the assumptions that would create differences in an actuarial appraisal. Along with each assumption, the question asked to EXPLAIN why each assumption could have an impact on the appraisal. Most students did not provide explanations of their assumptions and most students missed the intangible assumptions.

Most students provided the appropriate answer to part (c).

In part (d) students either picked the correct reinsurance arrangements for this solution or they listed forms of stop loss or other reinsurance arrangements (e.g. quota share). Students who correctly identified the reinsurance arrangements often provided the definition of the arrangement but didn't provide the advantages and disadvantages of each.

Solution:

(a)

	Year 0	Year 1	Year 2	Year 3
Member =			Proj Year 2 * 0.8	Year 2 New Proj *1.5
Members =		30,000	40,000	60,000
Premium (per member per Year) =				Year 3 = Year 2 * 1.12
Premium (per member per Year) =		1,200	1,340	1,501
Total Premium = Premium PMPY * Membership				
Total Premium		36,000,000	53,600,000	90,048,000

11. Continued

	Year 0	Year 1	Year 2	Year 3
Investment Income Yield		5%	6%	6%
Investment Income = Premium * Invest Income Yield				
Investment Income		1,800,000	3,216,000	5,402,880
Claims =			=Proj Year 1 *1.09	= Revised Year 2 *1.09
Expected Claims (pmpy)		960	1,046	1,141
Total Claims = Claim PMPM * Membership				
Total Claims		28,800,000	41,856,000	68,434,560
Reserves = 25% * Claims				
Reserves	6,000,000	7,200,000	10,464,000	17,108,640
Change in Reserve = Current Year Reserve - Prior Year Reserve				
Change in Reserves		1,200,000	3,264,000	6,644,640
Medical Management Expense		Proj Year 1 * 1.2	New Year 1 *1.25	New Year 2 *1.25
Medical Management Expense		1,800,000	2,250,000	2,812,500
Claims System Maintenance Expense		1,300,000	-	-
Executive Compensation		1,500,000	-	-
Non-Executive Compensation		1,000,000	1,020,000	1,040,400
Commission Expense = 2.5% * Total Premium				
Commission Expense		900,000	1,340,000	2,251,200
Advertising Expense		-	1,000,000	-
Acquisition Cost		10,000,000	-	-
Consulting Fee		150,000	-	-
Required Capital = 7.5% * Premium				
Required Capital	2,300,000	2,700,000	4,020,000	6,753,600
Change in Required Capital = Current Year Capital - Prior Year Capital				
Change in Required Capital		400,000	1,320,000	2,733,600

11. Continued

	Year 0	Year 1	Year 2	Year 3
Net Income = Revenue + Invest Income - Claims - Change in Reserves - Expenses				
Profit		(8,850,000)	6,086,000	14,267,580
After Tax Profit = Profit * (1 - Tax Rate)				
After Tax Profit		(5,531,250)	3,803,750	8,917,238
Distributable Cash Flows = After Tax Profit - Change in Capital				
Distributable Cash Flows		(5,931,250)	2,483,750	6,183,638
CAPM Discount Rate Formula:	Risk Free Rate + Beta * (Market Rate of Return - Risk Free Rate)			
			=	6.0%
Discounted Cash Flows = (Dist Cash Flows/ (1+ CAPM)^year)				
Discounted Cash Flows		(5,595,519)	2,210,529	5,191,901
Sum of Discounted Cash Flows		1,806,911		

- (b) A set of assumptions that is appropriate for one user may not be ideal for another due to difference in the following:

Taxation

- The acquiring company's tax situation will impact the attractiveness of acquiring another company.

Risk Based Capital

- The acquisition will require a capital investment. The company's RBC position will impact feasibility.

Company Size

- A company might feel that Hansbrough is too large to integrate with their own business.

Marketing Distribution Channels

- Hansbrough may have different products and different distribution channels than the Acquirer. This could limit the possible savings from a merge.

Ability to Negotiate and Secure Competitive Provider Reimbursement Arrangements

- An Acquirer might have felt that the acquisition could cause disruptions in Hansbrough's contracted providers. This could have an unforeseen increase to costs.

11. Continued

Effectiveness in Managing Health Care and Minimizing Health Care Claim Costs

- Another company might not have the expertise to manage the block of business that Hansbrough has.

Geographical Location

- If a company is not located in the same location they might not understand the specific business dynamics that Hansbrough deals with. There may also be risks of the merger not being approved due to uncompetitiveness.

Experience in Merging Purchased Blocks of Business with its Existing Operations

- Part of the reason to pursue a merge is for benefits of an integrated business, if those costs are not appropriately projected, the merge may be unprofitable.

The Strategic Value of Purchasing This Block of Business Relative to That Assessed by the Other Potential Buyers

- Another company might have viewed the deal as being beneficial, just not at the price desired by Hansbrough.

(c) ASOP #19

Description of the scope of the assignment and its intended use

Any reliances and limitations the actuary has placed on his product

A description of the business or entity being valued

The actuarial appraisal valued

The methodology and assumptions used

The validation techniques and results

Adjustments to value net worth and provisions for cost of capital

How federal income taxes were considered

ASOP #23

Source of the data

Whether data was reviewed and any limitations on the results

Reliance on data/information provided by others

Material judgmental adjustments or assumptions to the data

Limitations on use of the results due to uncertainty of data quality

Unresolved data concerns that could materially impact the results

Magnitude of any uncertainty/bias of the results due to the data quality

Conflicts that arose when complying with laws or regulations

(d) Assumption Reinsurance

Policyholder contracts are transferred from the seller's books to the buyer's books.

Policyholder notification is required.

Written consent by the policyholder is necessary to transfer the policy.

11. Continued

Advantages

This is the cleanest approach, since the ceding company is no longer part of the structure.

Disadvantages

It is relatively uncommon due to the legal and regulatory complexity. There are some tax disadvantages.

Indemnity Coinsurance

The financial interest in the contracts is transferred to the assuming company, but the policies remain as policies of the ceding company.

Advantages

No requirement to notify the policyholders.
It can be accomplished quickly with no disruption to policyholders (other than potential service-related disruptions if policy administration is transferred).

Disadvantages

The ceding company remains in the middle of the transaction (which may be an issue if there are concerns about the ceding company's credit).
The assuming company credit is important because the ceding company retains the contractual obligation to the policyholder.

Modified Coinsurance

Similar to indemnity coinsurance, but the assets backing the liabilities remain with the ceding company.

Advantages

Assets are kept in a trust account so that the assuming company can retain control over the portfolio.

Disadvantages

Not commonly used for the sale of a block but may be used in some situations (such as the reinsurance of variable products).

12. Learning Objectives:

6. Evaluate financial performance measures for insurers for both short-term and long-term products.

Learning Outcomes:

- (6a) Assess key financial measures used by various entities (insurers, HMOs, provider-owned plans)

Sources:

Bluhm, Chapter 43

Higgins, Chapter 4

Commentary on Question:

Parts (a) and (b) involve knowing formulas. The material for this question only involved 5 pages of material and either candidates knew this material or they didn't. There was not much middle ground as students either did well or poorly on these parts. Part (c) involved material from a different book and so if a student did well on parts (a) and (b), this was no guarantee that they would do well on part (c). To do well on this question in total required the student to have a grasp of both formulas and the implications of the results of those formulas.

Solution:

- (a) $ROA = \text{Net Income}/\text{Asset} = \text{Net Income}/450 = 1.5\%$
Net Income = 6.75m
Net Income = Underwriting Income/Loss + Nonoperation Income
 $6.75\text{m} = -12\text{m} + \text{Nonoperation Income}$
Nonoperation Income = 18.75m
- (b) $ROE = ROA \times \text{Leverage ratio} = 1.5\% \times 21 = 3.15\%$
Sustainable growth rate = $ROE \times \text{retention rate}$
 $= 3.15\% \times \text{retention rate}$
- (c)
- (i) Too rapid growth can cause many problems such as the following:
- Inadequate reserve
 - Inadequate capital
 - Deterioration/worsening service quality
 - Inadequate internal system and distribution channel
 - Can't ensure quality and efficiency
 - Management can't catch up

12. Continued

(ii)

- Increase financial leverage
- Increase price
- Issue more equity
- Reduce dividends
- Outsource some assets supporting products
- Eliminate some marginal products
- Merge with another company that needs capital infusion

(iii) OLGA can't issue equity since it is a mutual company. They can't reduce dividends either for the same reason. I would recommend them to use the other strategies. They can increase price since they are experiencing an underwriting loss. They can eliminate some products that are losing money. They can also consider merging with another company, outsourcing some assets or borrowing more debt.

13. Learning Objectives:

11. Complete a capital needs assessment.

Learning Outcomes:

(11a) Calculate capital needs for a given insurer.

(11b) Assess capital needs against assets.

(11c) Determine actions needed to address issues identified by assessment.

Sources:

Group Insurance Chapter 19

GH-C121-10

Commentary on Question:

Part (a) was a relatively straightforward answer, but most candidates did not provide enough detail on what should be included in the “corrective plan” or did not adequately describe the levels. Some candidates also got the various levels confused (action vs. control).

Parts (b) and (c) had widely varying scores depending on whether a candidate got the right answer. For both parts, some candidates did not document their formulas; in particular many did not clearly identify how to calculate net income. Significant partial credit was given depending on where errors were made, but without showing the formulas it is difficult to know what was done. Answer must indicate how that result was derived (i.e. increase claims by 90%).

For part (b), many candidates did not demonstrate an understanding of what moving from a PPO or POS plan to an indemnity product implied; many did not adjust the claims accordingly. Some candidates did not adjust claims but provided narrative that claims should increase. Some candidates understood claims should increase but did not think enough information was provided and thus they made their own assumptions.

For both parts (b) and (c), many candidates did not clearly indicate whether the proposals were a good idea from a net income perspective or the impact on the RBC ratio. Partial credit was given for indicating whether or not it was a good proposal. Partial credit was given for the “wrong” answer if it would be correct given an incorrect calculation.

13. Continued

On part (d), there were a few common calculation errors made by candidates. Several candidates misinterpreted the \$5 million of large claims over \$1 million. The \$5 million was the total amount of these claims, not the amount over \$1 million, thus the reimbursement would only be \$1 million under the excess loss scenario. A common error on the coinsurance error was to apply the 15% administrative allowance to the underlying administrative costs instead of the ceded premium. Another error was to apply the 25% and 15% to the large claims only.

Most candidates did not pick up on the point of part (d) – the company was concerned about the volatility of large claims, not their RBC ratio or net income (unlike parts (b) and (c)). While credit was given for making a valid recommendation, not many students took the time to expand their explanations and pick up additional risk-related topic points.

Solution:

(a) Action Level is determined by comparing Total Adjusted Capital (TAC) to Authorized Control Level (ACL)

1. No Action

$TAC/ACL > 200\%$

2. Company Action Level

$200\% > TAC/ACL > 150\%$

Company must prepare a report for the regulator which:

- Identifies conditions that led to company's financial condition;
- Makes proposals to fix the financial condition.

If the company does not submit a financial plan, then the Regulatory Action Level is triggered.

3. Regulatory Action Level

$150\% > TAC/ACL > 100\%$

The company must prepare an action plan (as they did under #2).

The State Insurance Commissioner must examine the insurers business and operations (that he/she deems necessary).

State Insurance Commissioner must also issue appropriate corrective orders to address the financial problems.

4. Authorized Control Level

$100\% > TAC/ACL > 70\%$

Regulator may take control of the Insurance Co.

Same Controls exist as under levels 2 and 3.

Insurance Commissioner makes the decisions.

13. Continued

5. Mandatory Control Level

70% > TAC/ACL

Regulator is required to take control of the company.

(b)

(i)

	PPO	POS	Total
Revenue	\$42,167,000	\$35,821,000	\$77,988,000
Adjusted Claims Formula = Adjusted Claims (no discount) = claims/(1-discount)	\$59,736,583	\$52,217,293	\$111,953,876
Administrative Costs w/o Care management and Provider Contracting = Other Admin	\$5,425,050	\$5,425,050	\$10,850,100
Net Income = Total Revenue – Total Costs New Net Income	-\$22,994,633	-\$21,821,343	-\$44,815,976

(ii) This significantly deteriorates the net income of TIC.
Reduced administrative costs are more than offset by increased claims costs through loss of provider discounts.
This proposal is not recommended.

(iii) This proposal would eat into surplus as it has a significant negative impact on the bottom line.
This would effectively reduce the TAC, thus moving BIC closer to a regulatory action level.
This proposal would also increase the ACL by increasing the underwriting risk as the managed care adjustment factor used in the RBC formula for pure indemnity products is higher than for PPO and HMO products.

(c)

(i)

Original 2009	PPO	POS	Total
Membership	100,000	100,000	200,000
Revenue PMPM = Total Revenue / Members Revenue PMPM	\$421.67	\$358.21	\$389.94
Claims PMPM = Total Claims / members Claims PMPM	\$358.42	\$287.20	\$322.81
Admin PMPM = Total Admin / members Admin PMPM	\$63.25	\$70.25	\$66.75
Variable Admin PMPM = 40% * Admin PMPM Variable Admin PMPM	\$25.30	\$28.10	\$26.70
Fixed Admin - Total = Admin PMPM * 60% * Membership Fixed Admin - Total	\$3,795,030	\$4,215,030	\$8,010,060

13. Continued

Adjusted 2009	PPO	POS	Total
New Membership = Prior Membership * 1.2 New Membership	120,000	120,000	240,000
New Revenue = Revenue PMPM * 0.9 * Total Membership New Revenue =	\$45,540,360	\$38,686,680	\$84,227,040
New Claims = Claims PMPM * Membership Claims	\$43,010,340	\$34,463,413	\$77,473,753
New Variable Admin = Variable Admin PMPM * Membership Variable Admin	\$3,036,024	\$3,372,024	\$6,408,048
New Fixed Admin = Old Fixed Admin Fixed Admin	\$3,795,030	\$4,215,030	\$8,010,060
Net Income = Total Revenue - Total Costs Net Income	-\$4,301,034	-\$3,363,787	-\$7,664,821

- (ii) The Net Income in this situation deteriorates again.
If the sales person wants to reduce premiums to increase membership he will need to drive a larger membership growth to make the change profitable.
A reduction of premium along with a benefit reduction that would decrease claims would be helpful for profitability.
Another change that could help would be to reduce admin expenses.

- (iii) Similar to (b), this scenario would reduce surplus thus reducing the TAC/ACL ratio.
This scenario increases total premium and claims which would increase the insurance risk component of the formula thus increasing the ACL.
This is not recommended.

(d)

(i)

Income Impact

Excess Loss Quote

Ceded Prem

$\$7 * (200,000) = 1,400,000$

Ceded Clms

excess of the 4 clms over \$1M each 1,000,000

net impact on Income (400,000)

Original Income 76,439

Restated Income credit for restated or
(323,561) impact

13. Continued

Quota Share

Ceded Prem	25% of prem	= .25 * 77,988,000 = 19,497,000
Ceded Clms	25% of claims	= .25 * 64,561,461 = 16,140,365
Allowance	15% of ceded prem	<u>2,924,550</u>
		net impact on Income (432,085)
		Original Income 76,439
		Restated Income (355,646) ^{credit for restated or impact}

(ii) RBC Impact

There is no Other UW Risk for TIC.

Claim Experience Fluctuation Risk = Incurred Claims × Risk Factor
× Managed Care Risk Adjustment

Underwriting Risk Factors are determined by Underwriting Revenue Tier (Net Earned Premium).

The factor is determined as a weighted average of premiums by category. Factors are tiered by amount of premium.

The major impact of the reinsurance transactions will be on H2 Underwriting Risk.

Incurred Claims will be reduced in both cases but by a much larger amount for the coinsurance treaty.

Because premiums are lowered the underwriting risk factor will be raised (all Comprehensive business).

No impact on Manage Care factor under coinsurance treaty, but it could impact the excess treaty depending on if the ceded claims were in the POS or the PPO plan.

H2 will be decreased in either case but more in the case of the coinsurance treaty.

Because H2 in decreased ACL is lower so the TAC to ACL ratio (aka RBC) will be increased.

(iii) Stated goal is to protect against claims larger than \$1M not raise RBC levels.

The excess loss treaty would protect against large \$1M spikes in claims. Coinsurance doesn't help as much.

The excess loss would have had a smaller impact on income in 2009.

Recommend the excess loss.

14. Learning Objectives:

10. Evaluate the risks associated with health insurance.

Learning Outcomes:

- (10a) Evaluate the risk associated with a specific product, including
- Identify risks inherent in the product
 - Describe the types of analysis, used to measure the risk
 - Discuss methods for mitigating the risks

Sources:

The Managed Health Care Handbook, Chapter 46

Commentary on Question:

Many candidates confused the objective of the question with a similar area of the syllabus which discussed operational issues for disease management programs.

For candidates that were able to properly identify the operational issues, many did not provide adequate detail in describing corrective actions which could be taken to overcome the operational issues. The source material provided specific actions which could be taken; many candidates offered up generalities (i.e., “Fix Pricing”) which were not detailed enough to receive full credit.

Solution:

- (a) Are you undercapitalized?
Was enrollment overestimated?
Were premiums set below the actual cost of care?
Were premiums set too high?
Was underwriting done?
Are you addressing/controlling adverse selection?
Are IBNR methods/calculations appropriate?
Are accounts receivables and membership being reconciled?
Is management producing reports and can they understand them?
Are IT Systems working properly?
Are providers educated and re-educated?
- (b) To overcome undercapitalization, an MCO has several options. The organization should ensure actuaries are developing premium and costs appropriately. The organization could also get more capital or increase premiums. To reduce costs, the organization could reduce admin via layoffs or outsourcing, or reduce claim costs via fee reductions or shifted risk to providers.

To overcome overestimated membership projections, the organization should eliminate high optimism in forecast/sales numbers. To do this, the organization should not rely on inexperienced sales/marketing to develop estimates. It can also make sure forecasting is done correctly and fix any mistakes. Finally, it should not base the future on just past growth pattern that can't be replicated.

14. Continued

To overcome premiums set under the cost of care, the MCO could increase premiums or lower expenses.

To overcome premiums set too high, the MCO could decrease premiums and research why premiums were set too high initially.

To achieve underwriting goals, the MCO should ensure they are following regulations allowed by law. It should confirm the right data is being collected and passed on to underwriting and that current guidelines are not being neglected. It can implement new automated tools/processes to underwrite and ensure there is good and sufficient communication between underwriting and sales.

To control adverse selection, the MCO can check where its premiums are in relation to competitors and make sure rates are set properly for multi choice environment (dual option loads).

To address any IBNR method/calculation issues, the MCO should use data from own lag studies and MIS reports and fix problems in claim processing or reporting.

To ensure accounts receivable and membership being reconciled, the MCO should reconcile larger accounts more frequently and try to automate this.

To improve management reports, make sure new managers are trained on reports and they report on the right things at the proper time interval.

To ensure IT Systems working properly, the MCO should get rid of manual workarounds and get rid of multiple systems (from acquired companies). It can also involve IT managers in strategic planning and design flexible IT systems so it can change quickly and at low cost.

To ensure providers educated and re-educated, the MCO should get orientation for new ones and support existing providers with continuing education.

15. Learning Objectives:

6. Evaluate financial performance measures for insurers for both short-term and long-term products.

Learning Outcomes:

- (6b) Project financial outcomes and recommend strategy to management to achieve financial goals

Sources:

Group Insurance, Bluhm, Chapter 37

Commentary on Question:

Question 15 was primarily a list type question with analysis/synthesis required for part (c)(iii). A minority of candidates misidentified the correct syllabus source, answering instead from Higgins Chapters 2 thru 4. Candidates that identified the correct portion of the syllabus, Group Insurance Chapter 37, were mostly able to reproduce the major components of the lists contained therein. Many candidates did not provide explanation or supporting detail of the listed items, thus foregoing potential grading points. Part (c)(iii) required students to select a forecasting method appropriate for the assignment in the question setup.

Solution:

- (a) Forecast serves as a basis for developing company strategy.
 - Impacts pricing, product development, marketing and sales strategyForecast can give guidance for assignment of resources and prioritization of initiatives.
Forecast provides metrics for monitoring performance and tracking significant deviations from expectations.
Forecast is a key component for capital management and reporting RBC, surplus allocation, asset and liability management.
Forecast can be used to assist in assigning bottom line responsibilities and management compensation.
Forecast provides guidance to a company's public (directors, investors, policyholders).
Vision of company's future presented to:
 - Investors if the company is public;
 - Policyholders in a mutual company.
- (b)
 1. The diagnosis and treatment of illnesses and conditions.
 2. The diagnosis and treatment of illnesses and conditions.
 3. Insurer payments for reimbursement of diagnosis and treatment.
 4. Company actions related to marketing, sales and enrollment.
 5. Company actions concerning rating and benefits.
 6. Consumer and provider behavior in the presence of financing for diagnosis and treatment.
 7. Regulatory impacts.

15. Continued

(c)

(i) Regression & Smoothing Techniques

- Typically uses historical data (ed. Rolling 12 month values).
- Practice can range from simply fitting a line to complex exponential smoothing.
- Season effects can be reflected but usually no assumptions about direct correlation across time periods is used.
- Methods are almost completely dependent on information content of historical data so actuary may need to adjust.
- Method can be valuable when little is known about the future of a process.
- Method can be used to create baseline forecast around which adjustments can be made for different scenarios.

Stochastic Time Series Methods

- An extension of regression using serial correlation.
- Most health insurance data will require logarithmic or other transformations to satisfy linear conditions of these models.
- If stable marketplace and with proper segmenting of data, can produce accurate models.
- Models can also produce confidence interval around outputs.

Judgmental Methods

- Usually start with most recently observed data and apply percent changes to each input value.
- Assumptions based on mixture of historical data, judgment and knowledge of upcoming company actions.
- Provide ample opportunity to incorporate prospective information not included in observed experience.
- Work best when coupled with detailed structure of starting data.

Simulation

- Can be constructed to any degree of stochastic treatment or complexity.
- As starting point, can be employed around subjective probability distribution of annual increases.
- Correlation among inputs can be defined to guide sampling.
- Monte Carlo techniques frequently used for sampling.
- For long-tailed distributions, stratified sampling may be preferred.
- Can be built directly around scenarios the actuary wishes to test making verbal interpretations of numeric results easier.

15. Continued

(ii)

Dimension	Regression	Stochastic	Judgmental	Simulation
Accuracy of Timing	Low	Low	Medium to High	High
Stochastic Treatment	Low	Medium	Low	High
Allowance for Prospective Information	Low	Low	High	High
Judgment	Medium	Low	High	Medium to High
Integration/Consistency	Low	Low	Varies	High
Complexity	Low	Medium	Low to Medium	High

- (iii) Judgmental methods are good at integrating information about future changes.
Simulation methods are good at integrating information about future changes.
Accuracy is dependent on level of detail in content and structure of model.
Judgmental methods may struggle with allowing for interactive effects of processes.
Simulation can incorporate interactive effects and relationships directly.
Regression method is overly dependent on historic experience continuing into the future.
Stochastic Method is overly dependent on historic experience continuing into the future.

16. Learning Objectives:

4. Formulate and evaluate insurer claim reserving techniques.

Learning Outcomes:

- (4a) Describe the types of claim reserves (e.g., due and unpaid, ICOS, IBNR, LAE, PVANYD).
- (4b) Explain the limitations and applications of the various valuation methods:
 - Lag methods
 - Tabular methods
 - Case reserves
 - Projection methods
 - Loss ratio methods

Sources:

SN GH-C102-07: Health Reserves, pages 10-11, 20-27

Commentary on Question:

Candidates generally did well on parts (a) and (b). Very few were able to answer part (c). In part (c), many candidates did not explain their reasoning for why PAD increases Days of Claims Payable and could barely answer part (i) at all.

Solution:

- (a) Claim Reserves (Apply to All Products)
 1. PV of amounts not yet due on claims (PVANYD), PV of claims related to medical treatment or disability after validation date on claims including before validation date (open claim)
 2. Reserve for future contingent benefits (deferred maternity or similar benefit) for extended benefits remaining in effect after normal termination
 3. Resisted Claims, claims for known litigation

Claim Liabilities (Apply to All Products)

1. Due and unpaid (D & U): Processing completed but no payment made yet
2. In course of settlement (ICOS): Processing completed but liability not fully determined (pending, resisted, 1 point each)
3. Incurred but unreported (IBNR): Insurer not yet received initial notice of claim
4. Loss adjustment expense (LAE): Liability of admin costs associated with adjudicating claims
5. Pending claim reserve

Premium Deficiency Reserves (GRB HMO product)

- To account for inadequate premium revenue

Disabled Life Reserve (GRB Disability product)

16. Continued

Active Life Reserves (GRB Disability products)

1. Unearned premium reserve: To account for premiums received for insured periods beyond ending accounting date
2. Advanced premiums: Premiums collected for a period of coverage beginning after the accounting date
3. Uncollected premiums: Due and unpaid premiums for periods beyond the statement date
4. Deferred premiums: Reserve for the uncollected portion of the net premium when mean policy reserves are used

Policy Reserves (GRB Disability product)

- Used when claim costs increase by policy duration – “levelized premium policies”

(b) Case Reserves

- Estimate ultimate liability amount for each claim and then subtract amounts already paid
- Also called examiner’s method or average claim size method
- Often used for large claims or claims in litigation
- Used with Hospital claims and disability claims
- Most likely to be used for GRB disability since claim likely to be large and long duration, could also be used for large HMO claims

Projection Method

- Develop expected PMPM, multiply by membership and subtract paid claims
- May be appropriate for GRB’s HMO product since it is new and sufficient data not available

Tabular Method

- Commonly used for PVANYD by applying continuances table deemed to be predictive of future claim liabilities
- Most appropriate for GRB disability product since known claims with long tail to apply continuance table information

Loss Ratio Method

- Develop LR, multiply by premium, subtract paid claims
- May be appropriate for GRB’s HMO product since it is new and sufficient data not available

Development Method

- Lag method
- Most appropriate for SGMI HMO product since well established

16. Continued

(c)

- (i) The derivation of the liability
The level of confidence in assumptions:

- Interest
- Mortality
- Morbidity

Impact of lapse rates on premium/profitability

- (ii) As PAD increases, days of claims payable increases

$$\text{Days payable formula: days of claims} = \frac{\text{claims payable}}{(\text{total claims} / 365)}$$

(d) Step 1: Flip the triangles (or at least figure out that their flipped and accumulate

Amounts in thousands		Month Incurred				
		Jan	Feb	Mar	Apr	May
Month	0	\$1,800	\$1,600	\$1,500	\$1,700	\$1,500
Paid	1	\$2,400	\$2,700	\$2,600	\$2,100	
	2	\$1,500	\$1,200	\$1,175		
	3	\$625	\$975			
	4	\$0				

		Month Incurred				
Lag		Jan	Feb	Mar	Apr	May
0		\$1,800	\$1,600	\$1,500	\$1,700	\$1,500
1		\$4,200	\$4,300	\$4,100	\$3,800	
2		\$5,700	\$5,500	\$5,275		
3		\$6,325	\$6,475			
4		\$6,325				

Amounts in thousands		Month Incurred				
		Jan	Feb	Mar	Apr	May
Month	0	\$250	\$180	\$220	\$250	\$280
Paid	1	\$300	\$200	\$260	\$200	
	2	\$150	\$90	\$95		
	3	\$75	\$50			
	4	\$0				

		Jan	Feb	Mar	Apr	May
0		\$250	\$180	\$220	\$250	\$280
1		\$550	\$380	\$480	\$450	
2		\$700	\$470	\$575		
3		\$775	\$520			
4		\$775				

\$775 \$520 \$575 \$450 \$280

16. Continued

Step 2: Calculate CCFs

Amounts in thousands		Month Incurred				
		Jan	Feb	Mar	Apr	May
Month	0	28.46%	24.71%	28.44%	44.74%	100.00%
Paid	1	66.40%	66.41%	77.73%	100.00%	
	2	90.12%	84.94%	100.00%		
	3	100.00%	100.00%			
	4	100.00%				

Amounts in thousands		Month Incurred				
		Jan	Feb	Mar	Apr	May
Month	0	32.26%	34.62%	38.26%	55.56%	100.00%
Paid	1	70.97%	73.08%	83.48%	100.00%	
	2	90.32%	90.38%	100.00%		
	3	100.00%	100.00%			
	4	100.00%				

2nd triangle is completing faster since CCFs higher

(iii)

Seasonality	Provider Reimbursement Methods
Product/Benefit Design	Medical Management
Differing Claim Payment Systems	Large Claims
Backlog in Claims Processing	Demographic Differences (Growing/Shrinking)

17. Learning Objectives:

9. Evaluate the impact of regulation on company/plan sponsor financial management.

Learning Outcomes:

- (9b) Compare the primary federal regulations with which an employer must comply when offering benefit plans.

Sources:

The Managed Health Care Handbook, Chapter 67

Group Insurance, Chapter 14

Group Insurance, Chapter 16

Commentary on Question:

In part (a), many candidates did not give enough detail about how states establish HIPAA guaranteed access.

In parts (b) and (c), many candidates confused the objective and answered the tax regulations on employee benefits. For candidates who correctly identified tested materials, many did not provide adequate detail.

Solution:

- (a) HIPAA eligibility requirement:
 - Have 18+ months of creditable coverage from a group health plan
 - Be ineligible for group health coverage, Medicare Parts A or B, Medicaid
 - Have elected & exhausted COBRA or similar state-mandated continuation coverage

For eligible individuals, HIPAA guarantees access to coverage.

States have 2 alternatives for establishing guaranteed access:

1. Individual market insurers must accept eligible individuals without preexisting condition exclusions (federal fallback).
 - Insurers must offer all currently marketed policies or as few as 2 if those are designed & marketed to a cross-section of individuals in the market.
 - Rates are not limited by HIPAA.
2. State alternative mechanism - A state-submitted plan that meets specified standards.
 - Must give eligible individuals a choice without pre-ex condition exclusions.
 - At least one option must provide comprehensive or standard coverage.

17. Continued

For eligible individuals, HIPAA guarantees the renewability of individual market health insurance policies.

- Nonrenewal is allowed for nonpayment, fraud or misrepresentation, or insurer market exit.
- Nonrenewal also allowed if individual no longer lives in the network plan's service area or where the insurer does business.
- Individual insurers are also required to provide certificates of creditable coverage.

- (b) Role: Consumer Protection - Protect Employees from abuse in employee benefit plans

Federal

1. McCarran-Ferguson Act delegates most authority to states unless a specific federal statute preempts state authority.
2. ERISA provides that state regulation of insurance doesn't apply to benefits provided directly by an employer as part of an employee welfare plan.
3. HIPAA requires self-funded plans to comply with portability and privacy and security protections. Applies to both fully-insured and self-insured plans, but does not prevent states from imposing more stringent standards on insured plans.
4. Other Legislation:
 - Age Discrimination in Employment (ADEA)
 - Balance Budget (BBA)
 - Consolidated Omnibus Budget Reconciliation (COBRA)
 - Family Medical Leave (FMLA)
 - Newborns & Mothers Health Protection (NMHPA)

State

State laws require disclosure to the potential customer of key features of the insurance policy and policy language is regulated.

1. State reasonableness laws require that some types of policies include certain benefits or do not include certain exclusions and that benefits aren't unfair, unjust, inequitable or discriminatory.
2. States may impose premium rate restrictions to ensure "fairness" and prohibit discrimination among classes of policyholders.

Role: Solvency - Ensure insurers have enough capital to protect against adverse deviations in experience.

17. Continued

Large State

Handled thru NAIC Life & Health Insurance Guaranty Association Model Act, and NAIC Health Reserves Guidance Manual

- Minimum capital requirement (RBC requirement)
- States reserve requirements

- (c) In Canada, companies can choose to be licensed federally and thus federal legislation applies.
1. Financial soundness and solvency
 - Federal: Minimum Continuing Capital and Surplus Requirements - sets minimum and expected capital levels
 2. Investment limitations
 - Federal - 1999 Supervisory Framework, which outlines a process for assessing safety and soundness of regulated financial institutions
 3. Corporate Powers
 - Provincial Insurance Act:
 - Rights and obligations of insured and beneficiary
 - Designation of beneficiaries
 - Content of contracts and member certificates
 - Administration of contract/payment of premiums
 - Payment of claims
 - Requirements on termination
 - Requirement on takeover/change of carrier
 - Provinces have attempted to keep insurance legislation uniform to avoid inconsistencies
 4. Minimum standards for group insurance
 - Federal Canadian Life and Health Insurance Association (CLHIA) if no provincial legislation
 - Provincial legislation takes precedence if covering same matters
 - Insurer must issue plan description to members
 - Conversion continuation privileges without evidence of insurability
 - Change of insurer rules ensure members do not lose coverage when group coverage replaced
 5. Ensure equal treatment without discrimination
 - Human Rights Code