

# GH CORC Model Solutions

## Spring 2017

### 1. Learning Objectives:

5. The candidate will understand how to prepare and interpret insurance company financial statements in accordance with IFRS & IAS.

### Learning Outcomes:

- (5h) Construct basic financial statements and its actuarial entries for an L&H insurance company.

### Sources:

GHC\_620\_13 Sources of Earnings Calculations - Group Life and Health

### Commentary on Question:

*Most candidates did not perform well on this question. Many candidates confused CALM requirements for SOE requirements.*

### Solution:

- (a) Describe the key drivers of volatility in earnings after issue for insurance products using:
- (i) The Canadian Asset Liability Method (CALM)
  - (ii) The simplifying approximation

Key drivers of volatility in earnings for:

- With CALM: Variance between (CALM) valuation assumptions and actual experience.
- Without CALM (simplifying approximation): Variance in the incidence of claims and related claims loss ratio.

- (b) Explain why source of earnings (SOE) analysis typically includes a distinction between first policy period and renewal periods for group insurance.

### Commentary on Question:

*Most candidates were able to distinguish the differences between first policy period and renewal period. Details on underwriting, commissions and expenses were needed for full marks.*

## 1. Continued

Distinction between first policy period and renewal periods:

- First policy period is the result of initial underwriting, likely with less reliable information.
- Renewal periods based on renewal underwriting, with more reliable information about the group.
- First policy period may have included competitive discounts.
- Expenses and commissions at issue might be larger, however typically more so for individual insurance rather than group.

- (c) List items typically included in an SOE analysis for renewal periods.

**Commentary on Question:**

*Most Candidates did well on this question and were able to list the SOE items in a renewal.*

SOE items in renewal period:

- Experience gain on claims
- Experience gain on net investment income
- Experience gain on commissions
- Experience gain on expenses
- Experience gain on fee income
- Experience gain on premium taxes
- Experience gain on reinsurance
- Changes in assumptions
- Management actions

- (d) Describe advantages and disadvantages of the two methods for reflecting reinsurance in SOE analysis.

**Commentary on Question:**

*Candidates did poorly on this question. Most candidates had challenges with distinguishing the two approaches (net and gross).*

Approach 1:

Calculate SOE entirely net of reinsurance

- Advantage: Simplest approach (conceptually).
- Disadvantage: Hides reinsurance impact on company's bottom line.
- Disadvantage: Company's data structure may make this approach challenging in practice.

## 1. Continued

Approach 2:

Calculate gross SOE including item for contribution from reinsurance

- Advantage: Reflects reinsurance impact on company's bottom line.
- Advantage: Experience gains/loss provides information about how reinsurance contracts are performing.
- Disadvantage: Company might know considerably less about the business reinsured than its own direct written business, therefore a very simple approach may be all that is feasible.

## 2. Learning Objectives:

4. The candidate will understand how to describe Government Programs providing Health and Disability Benefits in Canada.
6. Evaluate the impact of regulation and taxation on companies and plan sponsors in Canada.

### Learning Outcomes:

- (4b) Describe how private group insurance plans work within the framework of social programs in Canada.
- (6b) Describe the major applicable laws and regulations and evaluate their impact.

### Sources:

Mercer Benefits Legislation in Canada (GHC-600-16)

Morneau Shepell Handbook 15th Edition Chapter 17 Employment Insurance

Taccess Issue 2 (GHC-644-15)

### Commentary on Question:

*This question tests the candidate's knowledge of the employment insurance programs in Canada and its relation to an employee's earnings. In addition, the question tests the candidate's understanding of applying group benefits cost sharing arrangements in the most tax effective manner, given the current tax regulation system related to benefits.*

### Solution:

- (a) You provided a cost projection for a new short term disability plan. In the projection, the Employment Insurance premiums for employees in one of the associations changed at a different rate than for employees in the other association.

Explain possible reasons for the difference.

### Commentary on Question:

*Candidate should clearly explain their reasoning behind the premium difference. For example, just stating that average salaries are different is not sufficient. Should explain its relation to EI premiums.*

- The average salary of members in the academic group is different from that of the non-academic group. A larger proportion of members in the academic association are likely earning over the maximum insurable earnings, and therefore EI premiums for these individuals will likely not increase as salary increases. EI premiums will increase with earnings for those earning below the EI maximum insurable earnings.

## 2. Continued

- A qualifying STD plan may make the employer eligible for a premium reduction. There are 4 categories of qualifying plans and the reduction ranges may vary between the 2 associations if both implemented STD.
- (b) The university and associations have agreed that only the premium cost sharing under the plan will change: the university will pay 70% of the associated premiums for each benefit and employees will pay 30%.
- (i) Calculate the change in 2017 premiums to the employees for each of the academic and non-academic associations and explain why the changes may differ. Show your work.
  - (ii) Recommend a more tax effective cost sharing arrangement. Justify your response.
  - (iii) Critique your recommendation in part (ii) over the duration of the contract, including its impact on both academic and non-academic employees.
- (i) **Commentary:** Candidates must show the development of the total costs in 2017 under the current cost sharing arrangement and the new 70/30 arrangement. The impact can be expressed in total dollars, as a percent, per member per year, or PMPM. Must explain why the changes by group may differ to receive full points.

<b>ACADEMIC</b>	2014 Costs	2017 Costs		
Benefit	Total	Total	EE Portion	EE Portion (@70/30)
Life	\$505,000	\$505,000	\$0	\$151,500
LTD	\$4,270,000	\$4,270,000	\$1,067,500	\$1,281,000
Health	\$4,000,000	\$5,038,848	\$2,015,539	\$1,511,654
Dental	\$2,790,000	\$3,138,371	\$1,255,348	\$941,511
Decrease in costs = \$1,255,348 - \$941,511 = \$452,722				

<b>NON-ACADEMIC</b>	2014 Costs	2017 Costs		
Benefit	Total	Total	EE Portion	EE Portion (@70/30)
Life	\$524,000	\$524,000	\$0	\$157,200
LTD	\$4,432,000	\$4,432,000	\$1,108,000	\$1,329,600
Health	\$7,560,000	\$9,523,423	\$3,809,369	\$2,857,027
Dental	\$5,208,000	\$5,858,292	\$2,343,317	\$1,757,488
Decrease in costs = \$2,343,317 - \$1,757,488 = \$1,159,371				

## 2. Continued

- Changes differ for the two groups most likely because Life and LTD would be income-based benefits. Therefore, now that employees pay a portion of Life and LTD, the percentage impact of the change in employee costs is more for Academics than Non-Academics.

(ii) *Commentary: Candidates should recommend a cost sharing strategy for each benefit in accordance with current legislation and such that it is tax effective for the employee*

- LTD: The LTD benefit should be 100% paid by employer or employee. Under the proposed cost sharing, the employees and employer both pay a portion of the costs, the benefit received by members will be taxable but their contributions will be paid after tax. If 100% employer paid, benefit taxable, if 100% employee paid, benefit not taxable.
- Life Insurance: employer paid premium is a taxable benefit, therefore more advantageous to have a greater share of the premiums paid by employees, compared to health and dental.
- Health and Dental: The tax credit employees receive for contributing to EHC and Dental would be the amount in excess of 3% of their net income so they wouldn't get full value of the tax credit from EHC/Dental and depending on the cost and their income receive no value. Therefore, better for a greater share of premiums to be employer paid, compared to life insurance.

(iii) *Commentary: Candidates should relate response to answer in part (ii)*

- Differences in trend/growth for benefits may alter the cost sharing arrangement over time:
  - If employees are paying premiums for the salary related benefits (i.e. LTD and/or Life), they would be subject to the risk of salary increases on the premium rates.
  - If employees are paying a share of premiums for Health and Dental benefits, they would be subject to the risk of health and dental market trend rates
- If employers are paying the health and dental premiums, they are taking on the risk of the Government regulations with respect to drug prices/coverage

## 2. Continued

- Different plan experience between the benefits may lead to different increases/decreases on the per-benefit level – this could change the 70%/30% split over time depending on how rates change
- Cost sharing may change if the government alters the premium tax and sales tax levels for the benefits

### 3. Learning Objectives:

5. The candidate will understand how to prepare and interpret insurance company financial statements in accordance with IFRS & IAS.

#### Learning Outcomes:

- (5b) Evaluate key financial performance measures used by L&H insurers for both short and long-term products.
- (5c) Project financial outcomes and recommend strategy to senior management to achieve financial goals.

#### Sources:

Group Insurance 7th (Bluhm/Skwire) Ch. 41

Case Study (Living Daylights)

#### Commentary on Question:

*Candidates generally did very well on this question. Most candidates were able to calculate the key performance measures, and identify and explain the year-over-year trends in these measures. Recommendations to CFO on trend assumptions were generally well-justified. Most candidates were able to construct the PMPM income statement accurately, although a small number of candidates forgot to divide the numbers by 12 (i.e., number of months).*

#### Solution:

- (a)
  - (i) Calculate the following performance measures for each of 2013 and 2014. Show your work.
    - Return on Equity
    - Total Leverage Ratio
    - Net Profit Margin
    - Total Asset Turnover
  - (ii) As part of annual budgeting and forecasting, the CFO would like to assess the performance measures from part (i) with a focus on:
    - Year-over-year trends in each performance measure from part (i)
    - Drivers of each trend
    - Recommended trend assumptions for 2015 projections

Draft a memo to the CFO addressing his requests. Justify your response.

### 3. Continued

Part i):

Living Daylights	2014	2013		
Total Leverage Ratio	2.68	2.94		
Net Profit Margin	10.6%	1.3%		
Total Asset Turnover	0.31	0.33		
ROE	8.9%	1.3%		
Total Leverage Ratio = Total Assets / Equity or Fund Balance				
Net Profit Margin = Net Income / Total Revenues				
Total Asset Turnover = Total Revenues / Total Assets				
ROE = Total Leverage Ratio x Net Profit Margin x Total Asset Turnover				

Part ii):

Living Daylights	2014	2013	Trend	Trend %
Total Leverage Ratio	2.68	2.94	(0.25)	-8.6%
Net Profit Margin	10.6%	1.3%	9.2%	699.0%
Total Asset Turnover	0.31	0.33	(0.01)	-4.4%
ROE	8.9%	1.3%	7.6%	598.1%
Drivers of Trends:				
<ul style="list-style-type: none"> <li>• ROE driven by significant increase in profit margin.</li> <li>• Profit Margin increase driven by significant increase in net income due to both increased revenue and decreased expenses. Both premiums increased and benefit expense decreased.</li> <li>• Total Leverage Ratio and Total Asset Turnover each decreased slightly.</li> </ul>				
2015 Projections				
<ul style="list-style-type: none"> <li>• Recommended Trend Assumptions: <ul style="list-style-type: none"> <li>○ Total leverage ratio = level (no change)</li> <li>○ Total asset turnover = level (no change)</li> <li>○ Net profit margin = 10% increase.</li> <li>○ ROE = 10% increase; resulting in ROE of 9.8%.</li> </ul> </li> <li>• Justification: <ul style="list-style-type: none"> <li>○ Another 600%-700% increase in net profit margin and ROE is unlikely.</li> <li>○ 10% increase in profit margin reasonable for Plan.</li> <li>○ Used simplistic assumption of no change for total leverage ratio and total asset turnover.</li> </ul> </li> <li>• Projection could be improved with better understanding of what drove the increased premium and decreased benefit expenses, and if it is one-time (such as a single large new plan win) or will continue (such as improved claims management).</li> </ul>				

### 3. Continued

- (b) The CFO has also asked you to assess Living Daylights' income statements for 2013 and 2014.
- (i) Describe the advantages and disadvantages of the PMPM income statement approach.
  - (ii) Construct a PMPM income statement for 2014. Assume 300,000 covered members. Show your work.
  - (iii) Calculate the year-over-year change in net income PMPM if 2014 covered members increased 20% over 2013. Show your work.
  - (iv) Explain any additional information you would request to make the PMPM approach more actionable.

#### Part i):

##### Advantages of PMPM IS

- Standardized unit consistent with how health plans are billed for insurance
- Isolated costs in standardized format provides for more actionable information

##### Disadvantages of PMPM IS

- Less well known among generalists/external audiences
- Still requires that the issues of reinsurance, commissions, investment income, medical management and capitation be addressed

#### Part ii):

Living Daylights	2014	PMPM
		\$\$\$s
Revenue		
Premiums	7,660	2.13
Other revenue	1,542	0.43
Total operating revenue	9,202	2.56
Net investment income	351	0.10
Net realized gains (losses) on investments	321	0.09
<b>Total Revenues</b>	<b>9,874</b>	<b>2.74</b>

### 3. Continued

Expenses		
Benefit Expenses	5,193	1.44
Commissions	1,149	0.32
General and administrative expense	735	0.20
Premium taxes	153	0.04
Interest expense	50	0.01
Amortization of other intangible assets	298	0.08
<b>Total Expenses</b>	<b>7,578</b>	<b>2.11</b>
Income before income tax expense	2,295	0.64
Income tax expense	1,251	0.35
<b>Net Income</b>	<b>1,044</b>	<b>0.29</b>

#### Part iii):

2014 membership = 300,000

2013 membership = 250,000 = 300,000 / 1.2

2013 Net Income = 125,000

2013 Net Income PMPM = 0.04 = 125,000 / 250,000 / 12

**Year-over-year change in PMPM Net Income = 0.25 = 0.29 – 0.04**

#### Part iv):

Additional information to request:

- Breakdown of Income Statement by plan type (e.g., Basic, Enhanced 1, Enhanced 2, Enhanced 3).
- Reinsurance
- Commissions
- Investment income
- Medical management Capitation

#### **4. Learning Objectives:**

1. The candidate will understand how to describe plan provisions typically offered under:
  - a. Group and individual medical, dental and pharmacy plans
  - b. Group and individual long-term disability plans
  - c. Group life short-term disability plans
  - d. Supplementary plans, like Medicare Supplement
  - e. Group and Individual Long Term Care Insurance
  
7. The candidate will understand and evaluate Retiree Group and Life Benefits in Canada

#### **Learning Outcomes:**

- (1b) Describe each of the coverages listed above.
  
- (1c) Evaluate the potential financial, legal and moral risks associated with each coverage.
  
- (7a) Describe why employers offer post-retirement and post-employment benefits.
  
- (7b) Determine appropriate baseline assumptions for benefits and population.
  
- (7c) Determine employer liabilities, service cost and expense for post-retirement and post-employment benefits for financial reporting purposes under IFRS and understand differences compared to US GAAP.
  
- (7d) Describe funding alternatives for post-retirement and post-employment benefits.
  
- (7e) Describe current issues faced by governments, employers and employees related to post-retirement post-employment benefits.
  
- (7f) Apply actuarial standards of practice to post-retirement and post-employment benefit plans.

#### **Sources:**

Morneau Shepell Chapter. 22  
GHC 632  
GHC 633  
GHC 648  
GHC 650  
Case Study

## 4. Continued

### Commentary on Question:

*This question tests the candidate's general understanding of year-end financial accounting disclosures under International Accounting Standard 19 (IAS19), post-retirement benefit plan design and the prescription drug cost landscape in Canada.*

*Candidates did not perform well on parts a, b, and d that focused on IAS19 but fared better on part c that focused on post-retirement benefits plan design changes and the prescription drug landscape in Canada.*

### Solution:

- (a)
- (i) Describe the classifications for actuarial gains and losses under IAS 19.
  - (ii) Calculate the actuarial gains and losses from the 2015 valuation based on your classifications in part (i).
- (i) Gains and losses must be classified as related to changes in demographic assumptions, changes in financial assumptions, and experience.
- (ii) Demographic: mortality, termination, claim costs ( $525,000 - 352,000 + 3,214,000 = 3,387,000$ ). Note claims costs could also be considered a financial assumption, either may earn points provided candidate justifies why.
- Financial: expense, discount rate, medical trend ( $-250,000 - 2,750,000 + 723,000 = -2,277,000$ ).
- Experience: census data, difference between actual versus expected benefit payments ( $1,650,000 + 400,000 = 2,050,000$ ).
- (b) Another Day's new Director of Finance wants to recognize only the annual cash cost of the post retirement plan in the financial statements. Outline an email refuting this position.

Memo needed to include the following or similar remarks to receive full marks:

- Accounting standards require that benefits that accumulate must be valued on an accrual basis.
- IAS 19 states that these benefits should be attributed to "periods of service under the plan's benefit formula, unless an employee's service in later years will lead to a materially higher level of benefit than in earlier years".

## 4. Continued

- (c) The Director of Finance would like to reduce the cost of the post retirement EHC plan. He suggests reducing the prescription drug coverage beginning January 1, 2017.
- (i) Describe the key drivers of prescription drug costs in recent years.
  - (ii) Describe legal and financial considerations related to the director's proposal.
  - (iii) Describe alternate cost containment strategies available to reduce the cost of the post retirement EHC plan.
- (i) Candidates were expected to provide answers similar to the following:
- Generic drug pricing has dominated discussion, but savings will only slightly mitigate the expected growth in overall drug costs, therefore, more changes are required.
  - Previously, drug costs increased with age. Now, very high cost recurring drugs are seen in relatively young people where they may be payable for many years.
  - Group health insurance is an annual contract and is subject to annual renewals taking into account previous drug claims experience. An insurer will typically charge premiums sufficient to cover any reoccurring drug costs that are reasonably foreseeable.
  - Current pooling approach designed to manage unknown one-off claims and is poorly suited to manage known, recurrent catastrophic claims.
  - Current pooling approach tends to lock sponsors with their current carrier.

However, no candidate provided answers as expected. The following represents an answer that would have received partial marks:

- Biologic Drugs – new high cost drugs with no generic equivalent
- Aging – older population has increased utilization
- Faster approval process getting new drugs to market
- Direct Consumer Marketing – manufacturers marketing directly to population through television, internet and newspaper advertisements
- Increased awareness and testing – increased medical testing from consumer awareness leading to increased utilization
- Specialty Drugs – new high cost drugs for recurring treatments.
- Manufacturer Offsets – Drug Manufacturer providing patients with funding to cover out-of-pocket costs from brand-name drugs that are covered up to the generic equivalent

## 4. Continued

- (ii)
  - Legal considerations – changing the benefit terms for existing retirees may have legal implications. Case law in Canada has ruled on the principle that a promise of retiree benefits vests at retirement.
  - Legal considerations – whether changes can be made depends heavily on how these benefits were communicated to employees (for example, do employee communications reference the employer’s ability to “modify, amend or terminate” benefits).
  - Additional legal considerations apply in the unionized context.
  - Liability considerations – because the plan has employees across Canada, provincial drug offset should be another consideration. Upon reaching retirement age (i.e. 65) depending on the province of residence, members could be entitled to benefits under the provincial drug plan which reduces the financial burden on the post retirement plan. Scaling the drug coverage may not achieve the expected savings.
  - Liability considerations – if coverage for current retirees cannot be reduced, this also limits the opportunity for decreasing the obligation.
  
- (iii)
  - Establishing or increasing existing eligibility requirements
  - Increasing user fees through higher deductibles/copays
  - Implementing annual or lifetime maximums
  - Greater efficiencies in management of the plan such as carrier consolidations or alternate funding arrangements
  - Introduce or increase employee premium contributions
  - Repricing premiums to ensure there is no subsidization by active employees
  - Eliminating post-retirement benefits
  
- (d) Another Day decides to replace the current post retirement EHC plan with a \$1,000 annual health spending account (HSA) for all employees retiring on or after January 1, 2017. This change is announced on January 1, 2016. Assume that all active employees currently eligible to retire will do so before January 1, 2017.
  - (i) Calculate the reduction in per capita claims costs as a result of this change. Assume that the current valuation results are based on actual claims experience over the past three years.

State your assumptions and show your work.

## 4. Continued

- (ii) Estimate the revised 2016 defined benefit cost using the reduced claims cost calculated in part (i). Assume the annual HSA allocation will increase based on the current EHC trend rate assumption and there are no other changes to the valuation assumptions.

State your assumptions and show your work.

- (i)
- Use claims data from Exhibit 5 in case study, combining over and under 65 data
  - Exclude pooled claims but include pooling charge
  - Assume average family size of 2.0
  - Any reasonable healthcare trend was accepted
  - Candidate needs to include admin charge, pooling charge (if pooled claims are excluded), and trend to midpoint of the valuation year
- 2012:  $(\$427,000 + \$77,000 - \$12,000) / (71+55+116*2+33*2) \times 1.12 \times 1.055 \times 1.08^4 = \$1,865$
- 2013:  $(\$457,000 + \$88,000 - \$43,000) / (75+67+123*2+35*2) \times 1.12 \times 1.055 \times 1.08^3 = \$1,631$
- 2014:  $(\$507,000 + \$113,000 - \$35,000 - \$5,000) / (87+84+133*2+46*2) \times 1.12 \times 1.055 \times 1.08^2 = 1,511$
- Average of the 3 years =  $\$1,865 + \$1,631 + \$1,511 / 3 = \$1,669$
- The cost per capita under the new plan will be a flat \$1,000
- The anticipated reduction in per capita claims cost will be  $1,000/1,669 - 1 = 40\%$
- (ii)
- As the change is announced on January 1, 2016, it must be recognized at this date.
  - The change affects future retirees, so the liability for actives not fully eligible should be reduced by 40%.
  - Other liabilities should remain unchanged.
  - Revised DBO at 1/1/2016:  
 $\$14,250,000 * (1 - 0.4) + \$1,150,000 + \$9,350,000 = \$19,050,000$
  - Curtailment that needs to be recognized immediately in 2016 P&L =  
 $\$24,750,000 - \$19,050,000 = \$5,700,000$

#### 4. Continued

- Reduction factor should apply to the entire 2016 SC, as the SC is attributed to actives who are not fully eligible:

$$\$1,900,000 * (1 - 0.4) = \$1,140,000$$

- Impact on interest cost =  $(-\$5,700,000 - \$760,000) * 4.1\% = -\$265,000$   
(assumes SC is BOY)

- Revised 2016 expense =

$$\$1,140,000 + (\$1,003,000 - \$265,000) - \$5,700,000 = (\$3,822,000)$$

## 5. Learning Objectives:

6. Evaluate the impact of regulation and taxation on companies and plan sponsors in Canada.

### Learning Outcomes:

- (6b) Describe the major applicable laws and regulations and evaluate their impact.

### Sources:

GHC-671-16: Guideline G4 – Coordination of Benefits Group Health and Dental

### Commentary on Question:

*Question aimed to test the correct order of benefit determination according to CLHIA guidelines, as well as the correct calculation methodology in such circumstances*

### Solution:

- (a) John went to the dentist for a filling in 2012, with a total claim amount of \$225. This was the family's first claim for 2012.
  - (i) Calculate the amount reimbursed for John's filling under each plan. Show your work.
  - (ii) The insurer for Jill's plan is considering a change in policy that would only cover the amount up to the reasonable and customary (R&C) charge. The R&C charge for fillings is set at \$175.

Calculate the change, if any, in the amount from part (i) that would be reimbursed under each plan. Show your work.
- (i) -Jack's plan is first payer because his birthday occurs earlier in the year (month/day)  
-Jack's plan pays  $(\$225 - \$10) \times 80\% = \$172$   
-Jill's plan would have paid  $(\$225 - \$0) \times 85\% = \$191.25$   
-The payment from Jill's plan is capped at the unpaid amount of \$53
- (ii) -No change to the amount paid from Jack's plan  
-Under the proposed policy, Jill's plan would have paid  $(\$175 - \$0) \times 85\% = \$148.75$   
-The payment from Jill's plan is still capped at the unpaid amount of \$53  
-Therefore, there would be no change to the reimbursement from Jill's plan under the proposed policy

## 5. Continued

- (b) Calculate the amount reimbursed under each plan and the total out of pocket cost. Show your work.

**Commentary:** *Some candidates struggled with the calculation, often neglecting to calculate the amount reimbursed from the plan as if it had been the first payer (using net amount not reimbursed from prior plan for the calculation instead).*

*-The plan of the parent with custody of the child pays first – since Jill doesn't have dental coverage, none of the claim is paid*

*-The plan of the spouse of the parent with custody of the child pays second*

*-The payment from Chris' plan is  $\min\{\$1,000, (\$2,500 - \$25) \times 75\%\} = \$1,000$*

*-The plan of the parent without custody of the child pays third*

*-The payment from Jack's plan is  $\min\{\$2,500 - \$1,000, \min\{\$1,000, (\$2,500 - \$10) \times 80\%\}\} = \$1,000$*

*-The plan of the spouse of the parent without custody of the child pays last*

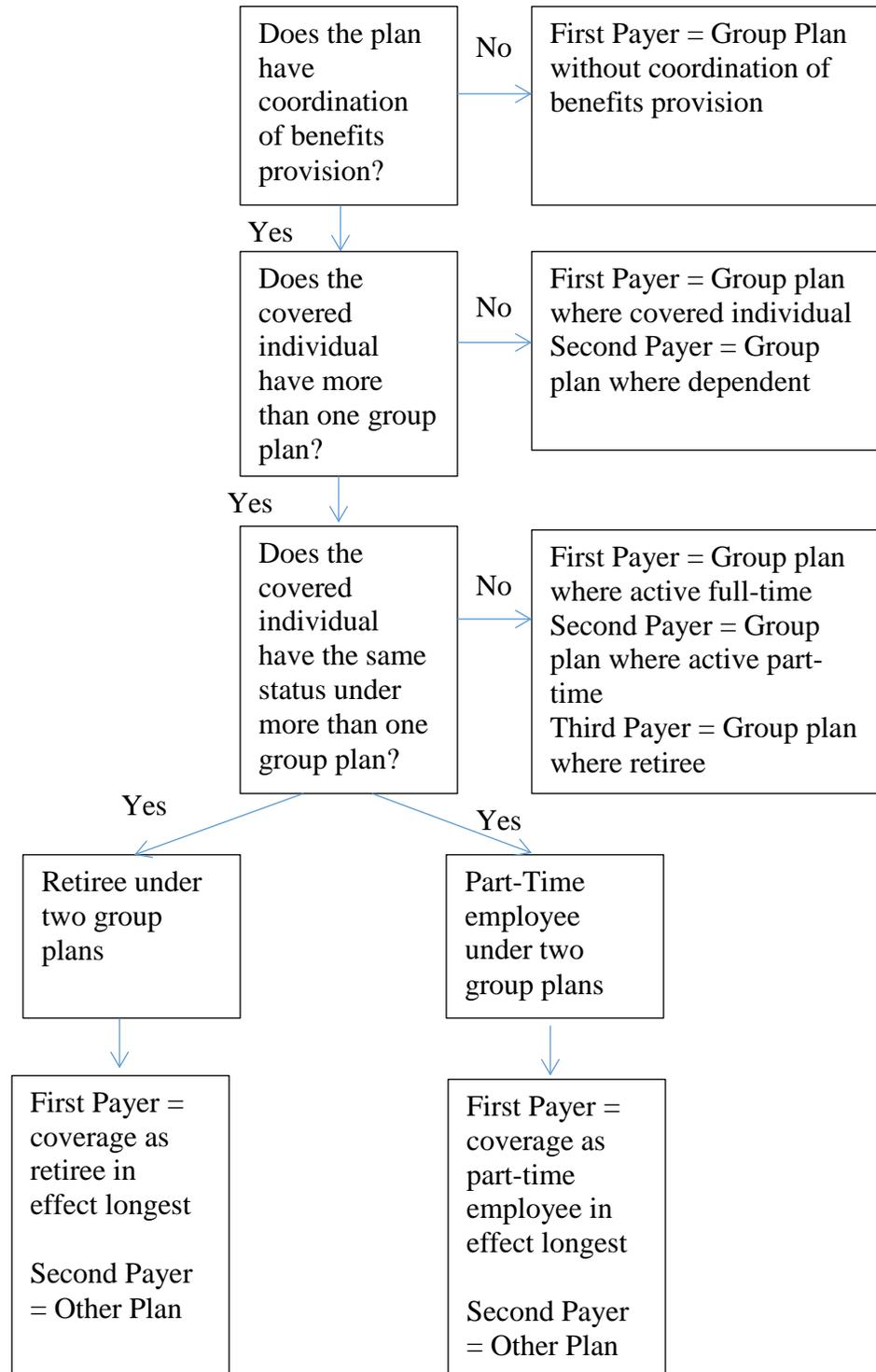
*-The payment from Ruth's plan is  $\min\{\$2,500 - \$1,000 - \$1,000, \min\{\$1,500, (\$2,500 - \$0) \times 100\%\}\} = \$500$*

*-The full amount of the claim is paid through the group plans, therefore there is no out-of-pocket cost*

- (c) Sketch a decision tree outlining the order of benefit determination for a Covered Individual.

**Commentary:** *Many candidates did not present the information in a decision tree format*

**5. Continued**



## 6. Learning Objectives:

4. The candidate will understand how to describe Government Programs providing Health and Disability Benefits in Canada.

### Learning Outcomes:

- (4b) Describe how private group insurance plans work within the framework of social programs in Canada.

### Sources:

Morneau Shepell Handbook of Canadian Pension and Benefit Plans, 16th Edition  
Chapter 17.

### Commentary on Question:

*This question is designed to test candidates' knowledge of Canadian federal funding and its impact on provincial health plans costs. This question is not about drivers of healthcare cost increase. Most candidates were not able to answer the question correctly.*

### Solution:

- (a) Based on these tables the CFO makes the following comments:

- (i) *"I find it hard to believe that overall, public program health care costs are increasing at 6% per year. I feel it is much higher!"*

Explain why the overall increase is 6% in each of 2013/14 and 2014/15.

- (ii) *"For BC, there have been 5% and 0% increases in transfers for each of 2013/14 and 2014/15, respectively. I find this hard to believe given our per capita benefit costs increased at 6% and 10% over the same periods!!"*

Explain why there would be differences in cost increases under the BC public health care program versus Lombard's EHC plan.

- (iii) *"In 2014/15, there is a huge increase in funding that Alberta is receiving while BC remains flat. There must be favoritism!!!"*

Explain the reason for disparity in 2014/15 percentage change in transfers to BC and Alberta.

### Commentary on Question:

*This is not the increase in the cost of provincial health care; rather, it is the increase in funding provided by the federal government.*

## 6. Continued

(i) Total CHT cash transfers were initially set at fixed amounts for fiscal years 2004-2005 and 2005-2006. In accordance with the prescription of the Federal-Provincial Fiscal Arrangements Act. They are then increasing at a nominal annual rate of 6 percent until fiscal year 2013-2014. In 2014-2015, the overall 6% remains in place, but the method of allocating by province will change.

(ii) Lombard's EHC plan and BC's public plan cover different benefits. The Lombard plan would mainly cover aspects such as drugs and paramedical practitioners, while the public plan would be mainly focused on hospital and physician costs. As a result, it is difficult to compare the year over year increases.

Further, Lombard's per capita claims cost is based on actual claims experience, while the public sector increase is solely related to federal funding and is based on a pre-determined formula dependent on factors such as per capita portion of CHT.

(iii) Change in the approach to calculating transfers – different allocations by province. Currently on the basis of equal-per-capita total CHT entitlement (including tax points and cash transfers). Starting with fiscal year 2014-2015, they will be allocated on the basis of equal-per-capita CHT cash Transfers.

Historically, the CHT was comprised of both tax points and cash components, which took into account the relative wealth of provinces. Starting in 2014–15, CHT funding has been based on population size and allocated on an equal per capita cash basis only.

The province that will end up in the best position is Alberta, who can expect virtually no change to the cumulative CHT cash transfers it will be receiving over the entire 25-year projection period as it will see its CHT cash transfer increase substantially in 2016.

(b) Calculate the overall percentage change in Canada Health Transfers for each of 2015/16, 2016/17, and 2017/18. Show your work.

Increases remain at 6% in 2015/16 and 2016/17.

In 2017/18, CHT will grow in-line with a 3-year moving average of nominal GDP, with a minimum level of 3%. Based on this, the expected increase would be  $(2.40\% + 1.50\% + 1.10\%)/3$ , which is less than 3% so the increase would be 3%.

## 6. Continued

- (c) Outline a memo highlighting concerns about how the change in Canada Health Transfer payments will impact provinces, employers and employees across Canada using BC as an example. Your response should reference the following:
- Specific figures based on your prior responses and the information provided, and
  - Various funding mechanisms available to provinces.

**Commentary on Question:**

*Expectation was that the candidate would understand and illustrate that changes in the funding would have differing ripple effects on each party.*

For provinces, this will reduce inflow of funds so they will require other sources – cost shifting, taxes, increases to BC MSP, reduction of coverage, etc.

For employers, if they provide coverage for BC MSP, this would increase their costs. Further, as cost-shifting occurs, much would go directly to employer sponsored plans. Taxes could also potentially be applied or adjusted on employers.

For employees, they will be out of pocket for costs that are transferred but not covered by the province or the employer. Further, they could see increases in taxes, premiums, or reduction in plan design, etc.

## 7. Learning Objectives:

5. The candidate will understand how to prepare and interpret insurance company financial statements in accordance with IFRS & IAS.

### Learning Outcomes:

- (5b) Evaluate key financial performance measures used by L&H insurers for both short and long-term products.

### Sources:

GHC\_612\_13 Simple CALM Example  
Group Insurance (Bluhm/Skwire) Ch. 35

### Commentary on Question:

*This question tests CALM related knowledge, including listing the key principles and performing a simplified CALM calculation.*

*Candidates either performed very well or poorly, depending on their familiarity with the topic.*

### Solution:

- (a) Define CALM and list its general principles.

CALM = Canadian Asset Liability Method

The CALM method defines reserves to be the amount equal to the carrying value of the insurance enterprise's assets that, taking into account the other pertinent items on the balance sheet, will be sufficient without being excessive to discharge the enterprise's obligations over the term of the liabilities for its insurance policies (including annuity contracts), and to pay expenses related to the administration of those policies.

All elements that can impact the financial results should be included in the valuation. The general principles that should be adhered to are as follows.

- Liabilities should be computed on a going-concern basis.
- The actuary should use expected experience in the valuation, but with a separate provision for adverse deviation (PfAD) whenever an assumption about the future is required.
- All acquisition costs, without arbitrary limits, should be incorporated in the computation of actuarial liabilities.
- Most costs should be included, except for income taxes, marketing overhead, and shareholder transfer.
- Surrender privileges and policy lapsation should be considered.

## 7. Continued

(b) Calculate the interest provision for adverse deviation (PfAD). Show your work.

Invested assets CF	Cash	Short term int rate	Short term CF	Inv assets + Cash CF	Reserve CF	Net CF
1,000	x	2.0%	1.02x	1000 + 1.02x	1,000	1.02x
1,100	1.02x	2.0%	1.02 <sup>2</sup> x	1100 + 1.02 <sup>2</sup> x	1,250	1.02 <sup>2</sup> x - 150
1,200	1.02 <sup>2</sup> x - 150	2.0%	1.02 <sup>3</sup> x - 153	1047 + 1.02 <sup>3</sup> x	1,500	1.02 <sup>3</sup> x - 453 = 0
		Solve for x at the end, $1.02^3 x - 453 = 0$ , $x = \mathbf{\$427}$ cash backing reserves				
		Calculate final reserve (1% interest rate):				
Invested assets CF	Cash	Short term int rate	Short term CF	Inv assets + Cash CF	Reserve CF	Net CF
1,000	x	1.0%	1.01x	1000 + 1.01x	1,000	1.01x
1,100	1.01x	1.0%	1.01 <sup>2</sup> x	1100 + 1.01 <sup>2</sup> x	1,250	1.01 <sup>2</sup> x - 150
1,200	1.01 <sup>2</sup> x - 150	1.0%	1.01 <sup>3</sup> x - 152	1048 + 1.01 <sup>3</sup> x	1,500	1.01 <sup>3</sup> x - 452 = 0
		Solve for x at the end, $1.01^3 x - 452 = 0$ , $x = \$438$				
		<b>Interest PfAD = \$11</b> = \$438 - 427 (no change in invested assets therefore can look at the change in cash)				

## 8. Learning Objectives:

6. Evaluate the impact of regulation and taxation on companies and plan sponsors in Canada.

### Learning Outcomes:

- (6b) Describe the major applicable laws and regulations and evaluate their impact.

### Sources:

GHC 632 pgs. A738-739

GHC 647

Blumberg Ontario 2014 budget

Lawson Lundell

L01: Group Insurance, Skwire, 7th Edition, 2016 - Ch. 12 Group Disability Income Benefits

### Commentary on Question:

*Overall, candidates have demonstrated a reasonable understanding of the LTD plan design and the approaches that the government can take to secure self-insured LTD claims.*

*Candidates did not do well on part a in that many did not demonstrate that claims incurred prior to July 1, 2014 will remain under a self insured approach where the employer holds a liability (reserve) on the financial statements until all the claims have been paid out (and expensed in year of payment).*

### Solution:

- (a) Describe how the change in legislation will impact Kearny's financial statements for pre and post July 1, 2014 claims. Assume post July 1, 2014 benefits are provided through an insured LTD arrangement.
  - (a) Pre claims: No change in method. Remains a defined benefit liability. Will just run out liability & expense until all claims are recovered and liability and expense are zero.
  - (b) Post claims: Changes to defined contribution arrangement. Expense = premiums paid in year and liability = zero.

If legal and constructive obligation to pay the benefits does not move to insurer (either directly or indirectly), then it is still a defined benefit (e.g. if insurance arrangement is hold harmless. In this case there is no change to the method, but may be able to offset insurer's reserves against the liability)

## 8. Continued

- (b) Describe other options that were available to the Ontario government to help secure self-insured LTD claims, and any limitations of these approaches.

Enhance disclosure requirements

(a) Help Canadians with uninsured plans better understand that their LTD plans are not insured, as well as the implications that this has on their financial security

(b) Limitations: does not address issue of protecting LTD benefits should plan sponsors become insolvent

Increase priority status of disabled employees during bankruptcy

(a) Increase likelihood that disabled employees get access to available funds during bankruptcy proceeding

(b) Limitations: does not fully address fundamental issue of protecting LTD payments, as it does not ensure that there are in fact funds available in the event of an employer's bankruptcy

Require plan sponsors to establish reserves under separate disability fund

(a) Requiring this with the same actuarial requirements as insured plans would meaningfully improve the protection of LTD payments

(b) Limitations: would need to be protected from other creditors of the plan sponsor. Would need province to establish regulator and supervisory framework. Still does not fully protect LTD claimants in the event of a plan sponsor bankruptcy

- (c) Revise the plan design to align with typical provisions in an insured LTD plan. Justify your response.

- Covered employees – No Issue
- Benefit amount – 80% of monthly earnings is too high, especially on a non-taxable basis. May need to revise to something closer to 60% or a graded benefit
- Maximum benefit amount – Insurers will not offer unlimited as this may be too much risk. More likely to set a cap – anywhere from \$4,500 to \$10,000 for example but main point is that candidate recognizes a maximum would be set by insurer
- Definition of disability – A full Own Occ disability plan is not common – more likely that insurer will require Own Occ for 24 months followed by Any Occ for remainder.
- Elimination period – more common to be 3 months or 6 months
- Benefit offsets – some other offsets may be applied in addition to CPP such as additional income from working while disabled

## **8. Continued**

- Tax status – no issue
- Cost of living adjustments – typically linked to inflations – a fixed 5% is not common and if it were fixed it would likely be lower Increase likelihood that disabled employees get access to available funds during bankruptcy proceeding

## 9. Learning Objectives:

3. Evaluate and recommend an employee benefit strategy.

### Learning Outcomes:

- (3a) Describe employer's rationale and strategies for offering employee benefit plans.
- (3c) Recommend an employee benefit strategy in light of an employer's objectives.

### Sources:

Canadian Handbook of Flexible Benefits, McKay, 3rd Edition, Chapter 7

The Handbook of Employee Benefits, Rosenbloom, 7th Edition, Chapters 7, 25, 32

### Solution:

- (a) Explain the advantages of a health savings account over other forms of individual accounts in the United States.

*Commentary: Candidates generally performed well on this part, and were able to list benefits of a health savings account. A variety of answers was acceptable, with some of the most common responses included below. Since the question asked candidates to explain, more than a one word list was expected. For example, if candidates just listed the word "rollover" without explanation, no credit was awarded. Some candidates included information on spending accounts in Canada, which was not asked for.*

In the United States, an HSA has the following advantages:

- HSA allows contributions from both employee (EE) and employer (ER)
    - By contrast, HRA only allows ER contributions, and FSA usually is only EE contributions via salary reduction
  - Unused HSA funds carry over from year to year indefinitely
    - By contrast, FSAs are "use it or lose it" each year
  - HSA funds can be used for more than just qualified medical expenses, though a 20% penalty tax applies
  - HSA funds can be invested and grow tax free
  - HSA funds are portable to EE if they change jobs
- (b) Compare and contrast major features of health spending accounts in Canada with health savings accounts in the United States.

## 9. Continued

**Commentary:** *Since this portion of the question was the bulk of the points, it was expected that candidates included more than one topic for comparison. Candidates needed to clearly state the specifics of how each item worked in Canada and the US. Partial credit was given if a candidate correctly identified a detail for one country, but not the other. Blanket statements that were stated to apply to both countries where the information was wrong in one country did not receive any credit. Candidates did not have to include everything below, but these were some examples of acceptable answers.*

There are several aspects of these accounts that vary between Canada and the US.

### 1. Who Can Contribute

CANADA: Usually, only ER. But bonus-eligible EE's may allocate some bonus towards it

US: EEs and ERs may contribute. An HSA requires an HDHP

### 2. Taxability of payments

CANADA: Payments not taxable to recipient (except Quebec), if structured properly

US: tax-free distributions for qualified medical expenses

### 3. Taxability of contributions

CANADA: Employer contribution is tax deductible

US: Contributions and interest earnings not taxable

### 4. When elections of contribution is made

CANADA: Annual election amount made in advance (irrevocable). Exceptions for changes in family status

US: EEs may prospectively elect, revoke, or change salary-reduction elections at any time during the plan year

### 5. Carryover

CANADA: Choice for unused end of year balances: 1) roll over unused balances for up to one more year; any year one amounts remaining at the end of year two are forfeited. 2) roll over unpaid claims; any eligible expenses in excess of the balance in one year may be paid out in the subsequent year once that year's contribution is made, up to the account balance

US: funds in the account can be carried from one year to the next

### 6. Unused funds

CANADA: Unused deposits/accruals to terminated EEs revert to the ER

US: funds are fully owned by the employee (do not revert to ER)

## 9. Continued

7. Ability to use to pay premiums

CANADA: Can use to pay insurance premiums (medical, dental, other health, vision)

US: Limited use to pay insurance premiums (LTC, COBRA, Medicare, unemployment benefits)

- (c) Determine the required deductible to meet management's stated objectives. Ignore exchange rate and pricing differences between Canada and the United States. Show your work.

**Commentary:** *Candidates were often not awarded full credit because nearly all candidates missed that the physician claims in Canada would be covered by the province, so many started the problem with an incorrect amount for the total claims in Canada. Partial credit was awarded if the process was correct but the claims starting point was incorrect. Other candidates made errors in the application of the health spending or health saving accounts when calculating the employee and employer cost share.*

In Canada, the physician and hospital claims are covered by the province, so there is no cost to the employee or to the employer. The cost is only the prescription drug claims of \$1,500.

Employee pays deductible of \$1,000 + 20% of the remaining \$500 = \$1,100. Then they use their health spending account of \$500 and will only be out-of-pocket \$600.

Thus, the EE share is  $\$600 / \$1,500 = 40\%$  and ER share is 60%

To maintain this in the US, we need to set the deductible of the US plan so that the employer costs are 60% of the total claims of \$9,500 = \$5,700.

Therefore, with a \$2,500 health savings account contribution, the employer share =  $(\$9,500 - \text{deductible}) * 80\% + \$2,500 = \$5,700$

Solving for the deductible, deductible must = \$5,500

## 10. Learning Objectives:

1. The candidate will understand how to describe plan provisions typically offered under:
  - a. Group and individual medical, dental and pharmacy plans
  - b. Group and individual long-term disability plans
  - c. Group short-term disability plans
  - d. Supplementary plans, like Medicare Supplement
  - e. Group and Individual Long Term Care Insurance
2. The candidate will understand and recommend a manual rate for each of the coverages described in Learning Objective 1.

### Learning Outcomes:

- (1a) Describe typical organizations offering these coverages.
- (2c) Calculate and recommend assumptions.
- (2e) Identify critical metrics to evaluate actual vs. expected results.

### Sources:

*Group Insurance*, Bluhm Chapter 38;  
*Essentials of Managed Health Care*, Kongstvedt Chapter 2

### Commentary on Question:

*The question was trying to test candidates' knowledge of medical trends, managed care overlays, and how the overlays can impact trend through calculations.*

### Solution:

- (a) List the components of medical trend.

**Commentary:** *This was straight from a list on pages 632-633 of "Group Insurance."*

- General macro-economic factors that drive medical costs (the force of trend)
- Changes in the characteristics of the covered population, including demographics and health status
- The structures of the carrier's provider contracts and the changes in that structure
- Changes in utilization due to managed care initiatives
- Benefit and cost sharing provisions, and changes in those provisions
- Random fluctuations

## 10. Continued

- (b) Describe the most common types of managed care overlays.

**Commentary:** *List and descriptions are from page 28 of “Essentials of Managed Health Care.” Candidates needed to include descriptions for full credit.*

- General Utilization Management- companies offer a menu of UM activities selected by employers or insurers
- Large case management- to assist employers and insurers with very costly cases. Includes screening, collection of information, monitoring, assistance in managing the case, and negotiating provider payments
- Specialty Utilization Management- utilization review for specialty services
- Disease Management- focus on specific common, chronic diseases rather than utilization more broadly
- Rental Networks- networks of contracted providers within markets
- Workers’ Compensation Utilization Management- standard UM and some unique aspects involved with workers’ compensation benefits

- (c) Determine which program Insurer XYZ should implement in 2016 and which program(s) will be in-force in 2017. Justify your position and show your work.

**Commentary:** *To receive full credit, candidates had to compare each program to the baseline scenario to ensure there was actual savings. Candidates also had to take implementation costs into account, and make final recommendations for 2016 and 2017. A common mistake was using the Allowed PMPMs as the cost instead of calculating a unit cost.*

### **Before Program A changes:**

#### **Emergency Room**

$$2016 \text{ Util} = 300 * (1 + 0) = 300$$

$$2015 \text{ Unit Cost} = 30 * 12 * 1000 / 300 = 1,200$$

$$2016 \text{ Unit Cost} = 1,200 * (1 - 0.01) = 1,188$$

$$2016 \text{ PMPM} = 300 * 1,188 / 12,000 = \$29.70$$

#### **Urgent Care**

$$2016 \text{ Util} = 6,000 * (1 + 0.02) = 6,120$$

$$2015 \text{ Unit Cost} = 100 * 12 * 1000 / 6000 = 200$$

$$2016 \text{ Unit Cost} = 200 * (1 + 0\%) = 200$$

$$2016 \text{ PMPM} = 6,120 * 200 / 12,000 = \$102.00$$

## 10. Continued

### **After Program A changes:**

#### **Emergency Room**

$$2016 \text{ Util} = 300 * (1 + 0) * (1 - 30\%) = 210$$

$$2015 \text{ Unit Cost} = 30 * 12 * 1000 / 300 = 1,200$$

$$2016 \text{ Unit Cost} = 1,200 * (1 - 0.01) = 1,188$$

$$2016 \text{ PMPM} = 210 * 1,188 / 12,000 = \$20.79$$

#### **Urgent Care**

$$2016 \text{ Util} = 6,000 * (1 + 0.02) + 90 = 6,210$$

$$2015 \text{ Unit Cost} = 100 * 12 * 1000 / 6000 = 200$$

$$2016 \text{ Unit Cost} = 200 * (1 + 0\%) = 200$$

$$2016 \text{ PMPM} = 6,210 * 200 / 12,000 = \$103.50$$

$$2016 \text{ Savings} = (\$29.70 + \$102.00) - (\$20.79 + \$103.50) = \$7.41 \text{ PMPM}$$

Implementation costs: \$3.00

Net savings: \$4.41

### **Before Program B changes:**

#### **IP Facility**

$$2016 \text{ Util} = 750 * (1 - 0.005) = 746.25$$

$$2015 \text{ Unit Cost} = 375 * 12 * 1000 / 750 = 6000$$

$$2016 \text{ Unit Cost} = 6000 * (1 + .03) = 6,180$$

$$2016 \text{ PMPM} = 746.25 * 6,180 / 12,000 = \$384.32$$

#### **Skilled Nursing Facility**

$$2016 \text{ Util} = 600 * (1 + 0) = 600$$

$$2015 \text{ Unit Cost} = 50 * 12 * 1000 / 600 = 1000$$

$$2016 \text{ Unit Cost} = 1000 * (1 + .015) = 1,015$$

$$2016 \text{ PMPM} = 600 * 1,015 / 12,000 = \$50.75$$

#### **Home Health**

$$2016 \text{ Util} = 200 * (1 + 0) = 200$$

$$2015 \text{ Unit Cost} = 3.50 * 12 * 1000 / 200 = 210$$

$$2016 \text{ Unit Cost} = 210 * (1 + .015) = 213.15$$

$$2016 \text{ PMPM} = 200 * 213.15 / 12,000 = \$3.55$$

## 10. Continued

**After Program B changes:**

**IP Facility**

$$2016 \text{ Util} = 750 * (1 - 0.005) = 746.25$$

$$2015 \text{ Unit Cost} = 375 * 12 * 1000 / 750 = 6000$$

$$2016 \text{ Unit Cost} = 6000 * (1 + .03 - .01) = 6,120$$

$$2016 \text{ PMPM} = 746.25 * 6,120 / 12,000 = \$380.59$$

**Skilled Nursing Facility**

$$2016 \text{ Util} = 600 * (1 + 0) = 600$$

$$2015 \text{ Unit Cost} = 50 * 12 * 1000 / 600 = 1000$$

$$2016 \text{ Unit Cost} = 1,000 * (1 + .015 - .01) = 1,005$$

$$2016 \text{ PMPM} = 600 * 1,005 / 12,000 = \$50.25$$

**Home Health**

$$2016 \text{ Util} = 200 * (1 + 0) = 200$$

$$2015 \text{ Unit Cost} = 3.50 * 12 * 1000 / 200 = 210$$

$$2016 \text{ Unit Cost} = 210 * (1 + .015 - .01) = 211$$

$$2016 \text{ PMPM} = 200 * 211 / 12,000 = \$3.52$$

$$2016 \text{ Savings} = (\$384.32 + \$50.75 + \$3.55) - (\$380.59 + \$50.25 + \$3.52) = \\ \$4.26 \text{ PMPM}$$

Implementation costs: \$2.00

Net savings: \$2.26

Implement Program A in 2016 as it has a higher net savings amount. In 2017, both programs should be in force, as the 2016 savings from A is enough to cover maintenance cost and Program B's implementation cost.

## 11. Learning Objectives:

1. The candidate will understand how to describe plan provisions typically offered under:
  - a. Group and individual medical, dental and pharmacy plans
  - b. Group and individual long-term disability plans
  - c. Group short-term disability plans
  - d. Supplementary plans, like Medicare Supplement
  - e. Group and Individual Long Term Care Insurance
2. The candidate will understand and recommend a manual rate for each of the coverages described in Learning Objective 1.

### Learning Outcomes:

- (1c) Evaluate the potential financial, legal and moral risks associated with each coverage.
- (2a) Identify and evaluate sources of data needed pricing, including the quality, appropriateness and limitations of each data source.
- (2c) Calculate and recommend assumptions.
- (2d) Calculate and recommend a manual rate.

### Sources:

Group Insurance, Skwire, 7th Edition, Chapter 22 Estimating Dental Claim Costs;

Individual Health Insurance, Leida, 2nd Edition, Chapter 2 The Products

### Commentary on Question:

*This question was testing the candidate's knowledge of individual dental pricing, including the risks, data sources and calculation of costs given utilization experience under a dental product structure.*

### Solution:

- (a) Explain why dental insurance is typically only offered in the group market.

**Commentary:** *The majority of the candidates correctly identified anti-selection, but did not discuss the tax advantages associated with group products.*

Anti-selection: Individuals are aware of their dental needs and will wait to obtain insurance until they need services. This is less of an issue in the group market.  
Tax advantage: Group dental products are paid for with pre-tax dollars unlike individual.

## 11. Continued

- (b) List the risks Your Eyes faces in entering the individual dental market and describe strategies available to Your Eyes to mitigate these risks.

**Commentary:** *Candidates did well on this question and the majority were able to provide both risks and mitigation strategies.*

Risks:

- Pent-up demand
- Anti-selection

Strategies:

- Waiting periods
- Pre-existing condition exclusions (missing tooth)
- Prior authorization for expensive procedures
- Least Expensive Alternative Treatment (LEAT)

- (c) List the data Your Eyes could use to price the individual dental plan.

**Commentary:** *In general candidates understood the question, but some candidates listed rating factors rather than data sources.*

- Competitor rate filings
- Own group experience
- Milliman Guidelines (utilization)
- ADA survey of dental fees
- Reinsurers/TPAs

- (d) Determine which network management will elect, assuming that 90% of all services are performed by preferred providers regardless of the network. Show your work.

**Commentary:** *For the most part, candidates had a reasonable understanding of the basic cost utilization calculation. Some areas that candidates missed were using the correct discounts, application of coinsurance and copayments, and dental class identification for the services.*



## 12. Learning Objectives:

2. The candidate will understand and recommend a manual rate for each of the coverages described in Learning Objective 1.

### Learning Outcomes:

- (2e) Identify critical metrics to evaluate actual vs. expected results.
- (2f) .Describe the product development process including risks and opportunities to be considered during the process.
- (2g) Apply actuarial standard of practice in evaluating and projecting claim data.

### Sources:

Skwire page 28 – 35; ASOP 23 & ASOP 25; case study pages 31 - 33

### Commentary on Question:

*Commentary specific to each part is included below*

### Solution:

- (a) Calculate the actual-to-expected total claims ratio for each of 2008, 2009 and 2010. Show your work.

**Commentary:** *Many candidates were successful using Exhibits 4 and 5 in the case study. Candidates receiving full credit for part A correctly:*

- *Calculated and used attained age to look up expected claim costs in Exhibit 5*
- *Increased the attained age for each policy in 2009 and 2010*
- *Adjusted for policy 10's \$180 a day benefit*
- *Calculated the A/E ratio in total for each year, summing all policies*

## 12. Continued

Policy	Issue Age	Issue Year	Benefit Level	Gender	Attained Age		
					2008	2009	2010
4	52	1993	2	male	(2008-1993)+52 = 67	68	69
6	57	1996	2	male	69	70	71
10	45	2000	3	female	53	54	55

Policy	Expected Claims			Units of Benefit	Expected Claims		
	2008	2009	2010		2008	2009	2010
4	0	0	0	1	305.24	381.56	496.02
6	17,000	4,000	0	1	496.02	645.71	871.71
10	0	0	10,000	\$180/100 = 1.8	755.3 x 1.8 = 1,359.54	1,373.13	1,386.86
<b>Total</b>	<b>17,000</b>	<b>4,000</b>	<b>10,000</b>		305.24 x 1 + 496.02 x 1 <u>+ 755.3 x 1.8</u> = <b>2,160.80</b>	<b>2,400.40</b>	<b>2,754.59</b>

**2008 Actual / 2008 Expected = 17,000 / 2160.80 = 787%**

**2009 Actual / 2009 Expected = 4,000 / 2400.40 = 167%**

**2010 Actual / 2010 Expected = 10,000 / 2754.59 = 363%**

- (b) Identify LTC's current phase in the product development cycle and list the remaining phases. Justify your position.

***Commentary:** Many candidates incorrectly stated that the current phase was Assess, stating that Thunderball was currently calculating and reviewing A/E ratios. Partial credit was given for providing reasonable justification for an incorrect phase of the product development cycle. Candidates did not receive full credit if they did not justify their position. Additionally, some candidates mistakenly listed phases of the underwriting cycle.*

The current phase is Revise and Innovate. Thunderball is trying to decide what to do next because financial performance and sales have not been as expected. They are looking to revise which means starting to innovate.

The other phases include design, build, sell and assess.

## 12. Continued

- (c) As a product manager, John is concerned that Thunderball's LTC product will be replaced with a better, less expensive product in the market. Describe five steps John should take to adapt Thunderball's LTC product to avoid obsolescence and recommend specific actions John should take for each of the steps.

**Commentary:** *Many candidates were successful in describing the product revision, idea generation, and market assessment steps and actions.*

John should take the following steps:

- Assess the product and consider revision. Changes to product features, design and pricing may be required.
  - Understand the strategic goals of the company.
  - Conduct idea generation and consider:
    - The consumer demand for long term care
    - Requesting feedback from the Marketing and Sales departments
    - Looking for a possible competitive advantage
  - Idea screening – Review initial ideas with management to ensure consistency with corporate goals.
  - Conduct a market assessment and consider:
    - What exists in the market today?
    - The product objective
    - The regulatory environment
- (d) Critique John's Certification and propose any changes needed to comply with the referenced ASOPs.

**Commentary:** *Many candidates performed well on this part of the question. Candidates who received full credit provided critiques and recommended changes specific to John's memo, rather than listing general requirements of the referenced ASOPs.*

ASOP 23 sets requirements for data quality. John failed to disclose his data source nor review his colleague's data. As John can be held responsible for errors or unreasonable assumptions, he should disclose his reliance on Jane's data and list his qualifications.

ASOP 25 dictates requirements for credibility procedures. John relied on Montana data which only included 12 historical claims, which is not credible to produce reasonable results. John should use nationwide data for more credibility or use some blend of Montana with nationwide data.

### 13. Learning Objectives:

2. The candidate will understand and recommend a manual rate for each of the coverages described in Learning Objective 1.

#### Learning Outcomes:

- (2a) Identify and evaluate sources of data needed pricing, including the quality, appropriateness and limitations of each data source.
- (2c) Calculate and recommend assumptions.
- (2e) Identify critical metrics to evaluate actual vs. expected results.
- (2f) .Describe the product development process including risks and opportunities to be considered during the process.

#### Sources:

GHC-105-14 Pricing considerations for pharmacy benefit programs

#### Commentary on Question:

*Part (a): Candidates were expected to iterate through a series of options and calculate result savings of each copay alternatives. In addition, they are expected to select a best option and explain why. Many candidates were only able to provide only one option that meets savings target. Some candidates provided alternative copays in fractional numbers, but when rounded to the nearest whole number, the result was out of the required range.*

*Part (b): To receive full credit, a candidate should know that drugs rebates are usually applied to WAC, while discount rates are applied to AWP. They should also know that WAC is at 80% of AWP, which was indicated in the question. Only a few candidates were able to use WAC in their calculations.*

#### Solution:

- (a) Nova wants to see the cost impact of implementing a two-tier formulary that would have saved Nova between \$450,000 and \$500,000 in 2015. Recommend alternative copays and calculate the resulting savings. Justify your recommendation. Show your work.

B: brand copay

g: generic drug copay

B and g should be integers; and  $B \leq 2g$ .

### 13. Continued

1. Try  $B=2g$

$$\begin{aligned} \text{Total savings} &= 183,000*(g - 5) + 16,000*(B - 5) \\ &= 183,000*(g - 5) + 16,000*(2g - 5) \end{aligned}$$

The total savings is expected between 450,000 and 500,000

$$450,000 \leq 183,000*(g - 5) + 16,000*(2g - 5) \leq 500,000$$

$$\Rightarrow 6.72 \leq g \leq 6.95. \text{ No integer value found for } g$$

2. Try  $B=2g - 1$

$$\begin{aligned} \text{Total savings} &= 183,000*(g - 5) + 16,000*(B - 5) \\ &= 183,000*(g - 5) + 16,000*(2g - 1 - 5) \end{aligned}$$

The total savings is expected between 450,000 and 500,000

$$450,000 \leq 183,000*(g - 5) + 16,000*(2g - 1 - 5) \leq 500,000$$

$$\Rightarrow 6.75 \leq g \leq 7.03. \text{ generic copay could be } 7 \text{ and brand copay could be } 13$$

3. Try  $g=7$ ;  $B = 13$ : total saving = 494,000; within expected range;

4. Try  $g=7$ ;  $B = 12$ : total saving = 478,000; within expected range;

5. Try  $g=7$ ;  $B = 12$ : total saving = 462,000; within expected range;

Keep generic as low as possible to encourage use of less expensive drugs and has maximum savings (7/13 fits this best)

(b) Determine which rebate offer will maximize cost savings for DrugsRUs. Show your work.

If Drug A is preferred

Drug	AWP per script	Rebate Offer	Scripts	Copay	Discount	Dispensing Fee	WAC to AWP	WAC per script
Drug A	\$350	38.00%	0.750	\$30	15%	\$1	80%	\$280 = \$350*0.8
Drug B	\$250	0%	0.250	\$60	15%	\$1	80%	\$200 = \$250*0.8

Drug A

$$\text{Allowed cost} = (350 * (1 - 15\%) + 1) * 0.75 = 223.875$$

$$\text{Rebate} = 280 * 38\% * 0.75 = 79.8$$

$$\text{Member Paid} = 30 * 0.75 = 22.5$$

$$\text{Plan Paid} = 223.875 - 79.8 - 22.5 = 121.575$$

### 13. Continued

Drug B

$$\text{Allowed cost} = (250 * (1 - 15\%) + 1) * 0.25 = 53.375$$

$$\text{Rebate} = 0$$

$$\text{Member Paid} = 60 * 0.25 = 15$$

$$\text{Plan Paid} = 53.375 - 15 = 38.375$$

Total Plan cost when drug A is preferred is  $121.575 + 38.375 = 159.95$

If Drug B is preferred

Drug	AWP per script	Rebate Offer	Scripts	Copay	Discount	Dispensing Fee	WAC to AWP	WAC per script
Drug A	\$350	0%	0.40	\$60	15%	\$1	80%	\$280 = \$350*0.8
Drug B	\$250	13%	0.60	\$30	15%	\$1	80%	\$200 = \$250*0.8

Drug A

$$\text{Allowed cost} = (350 * (1 - 15\%) + 1) * 0.4 = 119.4$$

$$\text{Rebate} = 0$$

$$\text{Member Paid} = 60 * 0.4 = 24$$

$$\text{Plan Paid} = 119.4 - 24 = 95.4$$

Drug B

$$\text{Allowed cost} = (250 * (1 - 15\%) + 1) * 0.6 = 128.1$$

$$\text{Rebate} = 200 * 13\% * 0.6 = 15.6$$

$$\text{Member Paid} = 30 * 0.6 = 18$$

$$\text{Plan Paid} = 128.1 - 15.6 - 18 = 94.5$$

Total Plan cost when drug B is preferred is  $95.4 + 94.5 = 189.9$

Savings are better when Plan A is a preferred plan. This will save \$30 more per script.