GH ADV Model Solutions
Fall 2015

1. Learning Objectives:

2. The candidate will understand how to evaluate and apply techniques for claims utilization and disease management.

Learning Outcomes:

(2b) Estimate savings, utilization rate changes and return on investment as it applies to program evaluation.

(2c) Describe operational issues in the development of a study including acceptable methods for dealing with the issues.

(2f) Apply the actuarially adjusted historical control methodology.

Sources:

Managing and Evaluating Healthcare Intervention Programs, Duncan Chapters 8, 12

Commentary on Question:

Commentary listed underneath question component.

Solution:

a) Explain reasons why the CFO's ROI expectation is sub-optimal.

Commentary on Question:

Candidates typically did not do well on this part of the question. Responses were often off target – many candidates offered alternative measures to use, but the responses did not address why a 250% targeted ROI may be inappropriate. Candidates that did well on the question identified the shortcomings of using ROI as the sole metric, and provided supporting reasons why a high ROI target could fail to achieve optimal program results.

The CFO's ROI requirement is sub-optimal because:

- A program targeting such a high ROI will likely be sub-optimal at maximizing savings
- The 250% ROI is well in excess of what the company can reasonably be expected to receive from an alternative investment.
- A profit-maximizing organization would invest more in DM, reducing the ROI but increasing the expected total savings (assuming marginal savings still exceed a reasonable program target ROI and company hurdle rate).

1. Continued

- ROI is a financial metric, but DM programs have non-financial benefits (i.e. improved quality of life) that ROI may not capture but should be taken into consideration.

(b)

(i) Define false positives and false negatives in regard to this algorithm.

(ii) Describe risks involved with false positives and false negatives when managing members identified for this program.

Commentary on Question:
Well prepared candidates typically did well on this question. The majority of candidates were able to define false positives and false negatives. Candidates that did not receive full credit did not address problems associated with program management issues, or provided vague/general responses.

False negatives:
- Members who are missed by an identification algorithm
- Actually have a condition the program is intended to manage, but are not managed because they are not identified
- An issue for program management, because identifying members with a targeted condition is key to intervention and planning

False positives:
- Members who are falsely identified as having a chronic condition but actually do not have the condition.
- A greater issue for program measurement, because false positives are likely to have a lower average cost and including them in the chronic intervention population can overstate estimated savings from the program.
- Management issues can occur when limited program resources are allocated to intervention and management of individuals that are not good candidates for the program.

(c) List the subjective criteria that would be used to re-stratify the identified chronic members.

Commentary on Question:
List is all that was required for full credit, no description of the criteria is necessary.
Answers describing the criteria without exact terminology still received credit – purpose of the question is to test the understanding of what information is relevant to re-stratification.

1. Continued

- Accuracy of diagnosis
- Risk factors
- Intervenability of condition(s)
- Receptivity/readiness to change
- Self-management skills

(d) Calculate the estimated savings for the program. Show your work.

Commentary on Question:
Candidates typically did very well on this question. Many candidates used the simplified calculation and received full credit.

Baseline admissions/1,000 x utilization trend: 2,800/7*1.028 =		411.20
Minus actual admissions/1,000 (measurement period): 2,660/7 =	380.00	
Equals reduced admissions/1,000	31.20	
Multiplied by member years (in 1,000s) in measurement period		x 7
Equals avoided admissions	218.40	
Multiplied by trended unit cost		x
$10,000		
Equals estimated savings due to avoided admissions	$2,184,000	

Since there are the same number of chronic members in the baseline and the measurement period, candidates could simplify the calculation:

[(2,800*1.028) – 2,660]*10,000 = $2,184,000

2. Learning Objectives:

3. The candidate will understand how to formulate, calculate and evaluate carrier reserving techniques

Learning Outcomes:

(3a) Describe the types of claim reserves (e.g., due and unpaid, ICOS, IBNR, LAE, PVANYD).

(3c) Calculate appropriate claim reserves given data.

Sources:

Group Insurance CH 42 pg 708.

Commentary on Question:

The calculation required in this question required the candidate to look at the historical loss ratios and apply those to a more recent month. The majority of candidates simply took the average of the ultimate loss ratios for the first three quarters and applied it to the 3Q 2014 claims. However, in doing so the candidates did not take into consideration the 2nd lag month's loss ratio compared to the ultimate loss ratio which is required to calculate the correct reserve.

The question showed the premium as $150 PMPM but the claims were based on quarters. Therefore the quarterly premium is $450.

Solution:

(a)

(i) Describe the loss ratio method to calculate IBNR reserves.

(ii) Calculate the ultimate claims level for 3Q 2014, using the loss ratio method average from the first three quarters in 2013. Show your work.

Commentary on Question:

Part ii asked for the ultimate claims level for 3Q 2014, but many candidates calculated the reserve for this quarter instead of the ultimate claims level.

(i) IBNR = earned premium X target loss ratio – claims already paid
The target loss ratio is typically from pricing

(ii) First calculate cumulative paid amounts

2. Continued

		Incurred Quarter							
		1Q 13	2Q 13	3Q 13	4Q 13	1Q 14	2Q 14	3Q 14	4Q 14
aid Quarte	1Q 13	10							
	2Q 13	30	10						
	3Q 13	70	25	5					
	4Q 13	90	65	25	10				
	1Q 14	100	80	60	20	5			
	2Q 14	105	90	80	55	20	10		
	3Q 14	110	95	90	80	60	30	10	
	4Q 14	110	100	95	100	80	70	30	10

Then calculate the loss ratio for each of the first three quarters and for the 3Q14 by dividing each cumulative lag by the quarterly premium of $450.

		Incurred Quarter							
		1Q 13	2Q 13	3Q 13	4Q 13	1Q 14	2Q 14	3Q 14	4Q 14
aid Quarte	1Q 13	2.2%							
	2Q 13	6.7%	2.2%						
	3Q 13	15.6%	5.6%	1.1%					
	4Q 13	20.0%	14.4%	5.6%					
	1Q 14	22.2%	17.8%	13.3%					
	2Q 14	23.3%	20.0%	17.8%					
	3Q 14	24.4%	21.1%	20.0%				2.2%	
	4Q 14	24.4%	22.2%	21.1%				6.7%	

The loss ratio of the 2nd month lag compared to the ultimate loss ratio for the first three quarters is

.067/.244 = .273

.056/.222 = .250

.056/.211 = .263

The average of these three is .262. Applying this to the 3Q 2014 loss ratio of 6.7%

.067/.262 = .256 and multiplying the premium of $450 by this factor

450* .256 = $115.08 results in the ultimate claims level for the 3Q2014.

2. Continued

(b) Explain situations where the loss ratio method may be appropriate.

Commentary on Question:
Most Candidates completed this part of the question.

It is appropriate for new blocks of business, when there is not credible data for other methods, and to validate other reserving methods,

3. Learning Objectives:

2. The candidate will understand how to evaluate and apply techniques for claims utilization and disease management.

Learning Outcomes:

(2a) Describe, compare and evaluate care management programs and interventions.

(2b) Estimate savings, utilization rate changes and return on investment as it applies to program evaluation.

(2f) Apply the actuarially adjusted historical control methodology.

(2g) Calculate chronic and non-chronic trends in a manner that reflects patient risk.

Sources:

Managing and Evaluating Healthcare Intervention Programs, Duncan, Chapter 12 (pages 227-231),Chapter 16 (pages 317-320)

Commentary on Question:

This question tested the candidate's ability to describe the Actuarially-Adjusted Historical Control Method, apply the method, and analyze the results. The question was based on the study presented in Chapter 16 with numbers simplified for calculation.

Solution:

(a) Describe the Actuarially-Adjusted Historical Control Methodology for evaluating disease management programs.

Commentary on Question:

Most candidates had difficulty in describing the method. A basic description of the method was asked. Candidates typically attempted to give more complicated answers instead of giving a basic description of the method.

- Objective criteria are used to determine which members will be included in the reference and intervention populations
- The periods need not be continuous; the measurements period may be adjacent to the baseline period, or not
- Equivalence between the reference and intervention period populations is assumed to result from the symmetric treatment of members in each period
- Generally the intervention program begins before or simultaneously with, the measurement period
- Savings are not measured directly. Instead they are derived as the difference between an estimated statistic projected from the baseline period and the actual statistic from the intervention period
- The key component of the actuarial methodology is the application of the trend factor that adjusts historical experience to an estimate of current period experience, absent intervention

3. Continued

- This methodology is an open group method, since a comparable (but not identical) population is selected according to the same criteria in each period.
- A closed group (or cohort) method uses the exact same population in both periods

(b) Calculate the estimated PMPM savings for each intervention year for the base-case and cohort populations. Show your work.

Commentary on Question:
This portion of the question was a straightforward calculation. Candidates were required to calculate the trend for years 1 and 2 and analyze the savings for both groups. Candidates tended to get this section correct.

Trend – Intervention Year 1 = \$190/\$175 – 1 = 8.6%
Intervention Year 2 = \$210/\$190 – 1 = 10.5%

Projected PMPM – Year 1 = \$445 *(1 +.086) = \$483.14
Year 2 = \$483.14 *(1+.105) = \$534.00

Savings PMPM - Base-Case Year 1 = \$483.14 - \$450.00 = \$33.14
Base-Case Year 2 = \$534.00 - \$480.00 = \$54.00

Cohort Year 1 = \$483.14 - \$455.00 = \$28.14
Cohort Year 2 = \$534.00 - \$490.00 = \$44.00

c) Evaluate the savings results by using an actual to expected analysis. Show your work.

Commentary on Question:
Candidates were expected to not only calculate the actual to expected results for each method but to also compare the reported savings between the two methods and explain the difference.

Base Case Group

Year 1: 1 - \$450/\$483.14 = 1 - .931407 = .06859
Year 2: 1 - \$480/\$534 = 1 - .898876 = .10112

Cohort Group

Year 1: 1 - \$455/\$483.14 = 1 - .941756 = .05824
Year 2: 1 - \$490/\$534 = 1 - .917603 = .08240

3. Continued

Comparative Savings – Greater Savings Shown using the Base-Case Method.

Year 1: .05824/.06859 - 1 = .8491- 1 = -.1509 or -15.1%
Year 2: .08240/.10112 – 1 = .8148 - 1 = -.1848 or -18.5%

Full credit given if 0.8491 and 0.8148 were calculated.

Alternative Calculation – Full Credit given if this method were used.

Comparative Savings

Year 1: $28.14 - $33.14 = -$5.00 - -$5.00/$33.14 = -15.1%
Year 2: $44.00 - $54.00 = -$10.00 - -$10.00/$54.00 = -18.5%

It was expected that the Cohort method would have an increase in savings due to an anticipated bias of "regression to the mean"

In actuality, the savings decreased using the Cohort method

Two potential reasons were given for this.

1. The 3-Month Claims-Free requirement for new chronic entrants is effective at minimizing the regression to the mean
2. The effect of including new members creates some bias because these members tend to be lower-cost than the rest of the cohort.

4. Learning Objectives:

4. The candidate will understand how to apply principles of pricing, benefit design and funding to an underwriting situation.

Learning Outcomes:

(4b) Evaluate the criteria for classifying risks.

(4e) Describe basic approaches to assigning claim credibility and pooling claims.

Sources:

Group Insurance, Bluhm, 6th Edition, Ch 37, pages 604-611

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) List factors that impact expected costs in the prospective rating period.

Commentary on Question:

Very few candidates were not able to list at least some valid factors for part (a)

The following are factors that impact expected costs:

- Current trends in medical cost and utilization
- Provider risk sharing and capitation arrangements
- Demographic changes
- Environmental and economic changes
- Benefit plan changes
- Changes in government programs and cost shifting across segments
- Anti-selection opportunities by insureds

(b) Describe methods to pool claims.

Commentary on Question:

Most candidates had knowledge of the various methods to pool claims.

The following five methods are used to pool claims

- Catastrophic claim pooling – removing large claims above a certain threshold
- Loss rate/rate increase limits – placing a limit on the loss ratio or the rate increase
- Credibility weighting – this method puts less weight on the groups experience if the group is not fully credible
- Multiyear averaging – this method uses more than one year of data to smooth out the pooling charge.
- Combination methods use a combination of any of the above methods

4. Continued

(c) Calculate the average per member per month (PMPM) pooling charge for the three options using prior year claims experience. Show your work.

Commentary on Question:
Many candidates did not calculate a PMPM amount in total for the three options. The question provides member months in total and so it isn't possible to calculate a PMPM for each policy option separately.

Claims above $50,000 threshold = ($25,000,000 + $2,500,000 + $1,000,000) = $28,500,000

To get a PMPM pooling charge you divide by member months with the following answer: $28,500,000/1,250,000 = $22.80

(d) Calculate the impact of using multi-year averaging on the pooling charge. Show your work.

Commentary on Question:
The question does not specify whether a weighted average should be used for the multi-year averaging. The model solution shows a straight average, but weighted average approaches are also valid. Many candidates only calculated a multi-year average PMPM without describing the impact compared to a single year approach.

Year t – 1) = $22.80 (see part c)
(Year t – 2) = ($7,500,000 + $750,000)/1,200,000 = $6.88
(Year t – 3) = ($22,500,000 + $2,250,000 + $1,000,000)/1,150,000 = $22.39
(Year t – 4) = ($5,000,000 + $500,000)/1,100,000 = $5.00

Average = (22.80 + $6.88 + $22.39 + $5.00)/4 = $14.27

The impact of using a multi-year averaging method is an $8.53 decrease to the pooling charge ($14.27 – $22.80 = $8.53 decrease)

(e) Recommend to your customer if they should use multi-year averaging on the pooling charge. Justify your answer.

4. Continued

Commentary on Question:
Most students had a valid recommendation with justification.

The PMPM pooling charges by year are volatile. I recommend using a multiyear averaging approach to smooth out the pooling charge.

5. Learning Objectives:

3. The candidate will understand how to formulate, calculate and evaluate carrier reserving techniques.

Learning Outcomes:

(3a) Describe the types of claim reserves (e.g., due and unpaid, ICOS, IBNR, LAE, PVANYD).

(3g) Demonstrate adequacy of the reserve.

Sources:

Group Insurance, chapter 43 page 718

Commentary on Question:

This question was meant to test the candidates understanding of timeline of reserves and making some observations and recommendations based on a sample calculation. In general, candidates performed very well on this question.

Solution:

(a)

(i) List and describe categories of long-term disability claim reserves.

(ii) Illustrate the timeline of the categories.

Commentary on Question:

Most candidates scored fairly well on part a. The illustration question was mainly testing that candidates understand the timeline of events, so even though a candidate didn't show the illustration exactly as shown below, all points were given for having all of the pieces in the correct order.

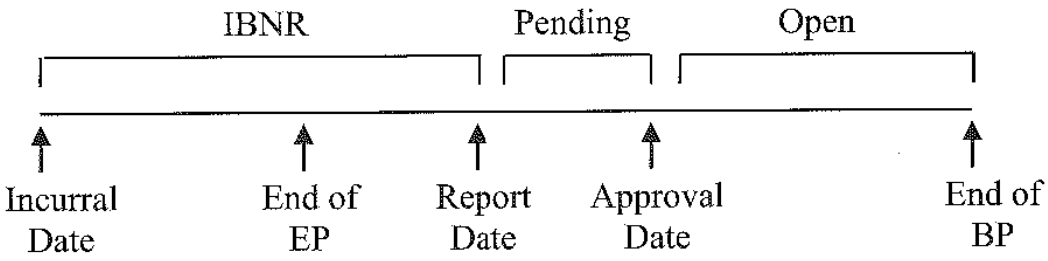
(i) *Open Claims* – These are claims that have benefits currently being paid. These benefits will be paid no longer than the benefit period

Pending Claims – These are claims that have been reported to the company but have not yet begun receiving payments. Payments may be held up waiting for approval from a claim manager, or they may still be within the elimination period

Incurred but not Reported Claims – These are claims for which the loss has already occurred (the person has become disabled or satisfied the LTC benefit requirements), but which have not yet been reported to the company

5. Continued

(ii)



(b)

(i) Calculate the total reserve sufficiency or deficiency. Show your work.

(ii) Identify key findings of your analysis.

Commentary on Question:
The calculation portion of part b was answered differently based on how candidates treated discounting. Full credit was given for a correct answer, no matter how it was discounted. Most candidates were able to perform the calculation correctly.

(i)

Claim Duration	Reserve at January 1, 2014	Actual Payments	Valuation Interest	Reserve at December 31, 2014	**Gain**
7+	$750,000	$140,000	$22,500	$590,000	**$42,500**
6	$350,000	$69,000	$10,500	$256,000	**$35,500**
5	$355,000	$66,000	$10,650	$299,000	**$650**
4	$410,000	$70,000	$12,300	$354,000	**-$1,700**
3	$540,000	$79,000	$16,200	$489,000	**-$11,800**
2	$615,000	$82,000	$18,450	$567,000	**-$15,550**
1	$810,000	$108,000	$24,300	$757,000	**-$30,700**
All Durations	$3,830,000	$614,000	$114,900	$3,312,000	**$18,900**

5. Continued

(ii) Reserves in total appear to be adequate - the gain is greater than $0
Claims in the early durations appear to be inadequate – the gain is negative in years 1-4
Claims in the later durations appear to be more than adequate – the gain is positive in years 5+
Conservative assumptions in the later durations are masking the inadequacies in the early durations

(c) Recommend changes to the reserve assumptions. Justify your answer.

Commentary on Question:
Part c differentiated candidates. Candidates received credit for making reasonable recommendations based on their answers above. Even if a candidate didn't get part b correct, credit was given for part c, as long as their answer supported the results they had from part b.

Reduce claim termination rate assumptions in durations 1- 4 and increase termination rate assumptions in durations 5+. This will increase reserves in years 1-4 and decrease reserves in years 5+.

- Has claim termination experience declined in early durations? Consider reviewing claim management practices

Revise offset assumptions in the claim reserves. If Social Security offset assumptions are too aggressive in early durations, reserves will be understated. To keep reserves whole in total, reduce reserve margins in durations 5+.

6. Learning Objectives:

1. The candidate will understand how to evaluate the effectiveness of traditional and leading edge provider reimbursement methods from both a cost and quality view point.

Learning Outcomes:

(1c) Describe the credentialing and contracting process for providers.

(1f) Describe quality measures and their impact on key stakeholders.

Sources:

Essentials of Managed Health Care, Ch. 9, pages 231-240

Essentials of Managed Health Care, Ch. 10, page 250

Commentary on Question:

This question tested candidates' understanding of processes used to evaluate and manage provider performance. Candidates needed to demonstrate they not only understood the key concepts, but could also apply them to the situation laid out in part c of this question.

Most candidates were able to correctly list the key principals in preparing provider profiling reports and describe the principals to consider when seeking a change in behavior. However, many candidates struggled to apply these concepts in the development of a project plan in part c. It was anticipated that candidates would leverage their responses in parts a and b in the project plan in part c, however very few did. In addition, several candidates simply listed sequential steps in part c without providing a timeline as requested in the question.

Solution:

(a) List principles to follow when preparing provider profiling reports.

- Identify high-volume and costly clinical areas to profile
- Involve internal and external customers in development and implementation of the profile
- Compare results with published performance
- Report using a uniform clinical data set
- Consider onsite verification
- Require measures of statistical significance
- Establish thresholds for minimum sample size
- Use formal severity adjustment instruments

(b) Describe principles to consider when seeking to change physician practice behavior.

6. Continued

- Relationships matter, so approach discussions as a respectful colleague. Communicate often.
- Let the data speak for itself, don't draw conclusions for the providers. Obtain feedback from the provider.
- Leverage peers as much as possible as they are in a better position to influence practice patterns. Small group interactions are better for obtaining feedback and overcoming hurdles.
- Ensure peer leaders understand and communicate the program's goals. They should be able to answer questions about the program.

c) Develop a project plan (with timelines) to ensure the group adopts better clinical practices.

- Within next 2 weeks:
  - Identify a clinical staff member to lead the relationship and work with the provider group
  - Identify contact(s) with the providers
    - Could be specialists that already have efficient patterns of care
    - Ideally, want to identify clinicians that will have influence with their peers
- 2-6 weeks:
  - Have the physician peer leader share profile data / claims statistics, and ask for help explaining why data shows a change in costs / practice patterns

- First 6 months, and periodically thereafter:
  - Facilitate training / continuing education
  - Have contact(s) with providers lead practice changes and coach peers on being more efficient

- 6-12 months:
  - Review payment arrangements with providers and negotiate changes in contract terms to improve alignment between payment/incentives and efficiency of care

- After 12 months:
  - If specific physicians are noncompliant or resistant to change, institute coaching and discipline programs
  - Removal from network may be necessary in certain situations, but should only occur after coaching has been provided and other less disruptive approaches have been used

7. **Learning Objectives:**

2. The candidate will understand how to evaluate and apply techniques for claims utilization and disease management.

Learning Outcomes:

(2a) Describe, compare and evaluate care management programs and interventions.

(2c) Describe operational issues in the development of a study including acceptable methods for dealing with the issues.

(2e) 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 Chapters 3, 4, 6

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Describe the following medical and pharmacy care management interventions:

(i) Pre-Authorization

(ii) Concurrent Review

(iii) Case Management

(iv) Disease Management

(v) Pharmacy Drug Utilization Review

(vi) Medication Adherence

Commentary on Question:

Candidates performed fairly well on this part of the question. The most important concept was to provide a clear description of each one of the listed care management interventions. Candidates that failed to do this, for example stating that pre-authorization simply meant to get a service authorized before-hand, did not receive full credit.

(i) Pre-Authorization – requires a physician or hospital obtain approval from the health insurer prior to providing a service

(ii) Concurrent Review – monitoring a health plan member's care while that member is in an acute hospital or nursing home

7. Continued

(iii) Case Management and Specialty Case Management– Coordinating a member's care by a health care professional
(iv) Disease Management – System of coordinated health care interventions and communications for populations with conditions in which patient self-care efforts are significant
(v) Pharmacy Drug Utilization Review Programs – ensuring appropriate drugs are being used through generic substitution, therapeutic substitution, prior authorization
(vi) Medication Adherence programs- encouraging members to take certain prescriptions in an effort to reduce long term care costs

(b) Explain how the value chain method is used to implement a medication adherence based intervention program.

Commentary on Question:
A majority of the candidates only defined what the value chain method was which did not completely answer the question. To receive full credit candidates had to explain how each step could be used for implementing a medication adherence program. This could be accomplished by providing an example for each step that involved a medication adherence program. Also, simply listing the steps of the value chain method did not answer the question and did not receive any credit.

- Data warehousing – creation and maintaining of member and claim data warehouse so analysis can be performed. Includes gathering enrollment data, medical claims, pharmacy claims, and any other relevant data for the members.
- Predictive modeling – apply predictive models/target for intervention/risk rank, identify gaps in care, identify provider patterns. Specifically for medication adherence, are there certain members that are more adherent than others? Do different plan characteristics encourage adherence?
- Development of the Intervention – Development of the programs, interventions, and campaigns to deliver the interventions to target populations. What do you want to do to encourage adherence? Do you want the physician to encourage adherence, use a member phone call?
- Outreach and enrollment – contacting members and enrolling them in the intervention, along with continually contacting the members to ensure they stay enrolled
- Member coaching/assessment – perform assessments, maintain member enrollment, coach members. Are there early indicators encouraging changes to the program?

7. Continued

- Outcomes Assessment – Measure the success of the intervention – clinical, financial and operational, as well as member experience. Did adherence increase? Increased adherence will lead to increased pharmacy costs, so are there offsetting medical cost savings? Did the members appreciate receiving this information?

(c) Explain actuarial issues when evaluating this intervention program for each of the following:

(i) Measurement Principles

(ii) Study Design

(iii) Risk Factors

Commentary on Question:
The reading lists major issues to address under each of these topics, and that is what the question was looking to test. Listing multiple items under one concept (i.e. multiple methodological issues) only received credit for methodological issues. Some candidates used lists that were irrelevant to the question being asked.

(i) Measurement Principles
   a. Reference population – What is the reference population that will be used to calculate savings. Typically recommended to use a control group to value savings but what about using the patients as their own control?
   b. Equivalent groups – Are these two groups really equivalent? Membership has increased so what kind of members have either left or come on?
   c. Exposure – Were the members in the intervention long enough?

(ii) Study Design Issues
   a. Causality – no control group so can you put all of the PMPM reduction to the outreach?
   b. Methodological issues - How were the members identified to be called? Was everyone open to being called, specific subset? Random vs non-random?
   c. Regression to the mean – tying to causality, are the members just reverting back to a "normal level" of claims in the second half of the year?

7. Continued

(iii) Risk Factors

a. Demographics – did the demographics stay the same in each period? Did healthier, younger patients come on mid-year that would reduce the overall risk score, thus reducing claims
b. Persistency – are members dropping off prior to being evaluated, thus reducing your overall number of adherent members?
c. Severity of Illnesses – Did the overall severity of these chronic conditions drop?
d. Contactability – Who was identified to call and at what time were they called. Is there an issue with the automated phone call that causes people to hang up?

(d) You have been tasked to improve the prior intervention program.

(i) Define Opportunity Analysis and explain its importance.

(ii) Explain how Opportunity Analysis improves the outcome if the prior intervention had the following member stratification techniques:

- Predictive score
- Condition specific
- Rules based approach

Commentary on Question:
Candidates, overall, performed well on this part of the question. The most common error included only defining opportunity analysis and not explaining the importance of its use.

(i) Define opportunity analysis

- Opportunity analysis is a data driven analytical process that extends traditional predictive modeling by matching opportunities within a client's populations to care management programs, products and services. The purpose is to demonstrate the potential clinical, financial, and humanistic improvements that could result from the application of an appropriate evidence based care management program.

7. Continued

(ii) Explain how it could be used to improve the outcomes of the prior intervention if the intervention had the following member stratification techniques:

a. Predictive Risk Score – Prevalence typically at the top of the list that although are high risk, are minimally intervenable. Opportunity analysis assigns a lower priority to these members.
b. Planners frequently focus on members with a specific condition in order to simplify the execution. This is negated by a high prevalence of co-morbidities Opportunity analysis favors programs that target members with common risk profiles, so co-morbidities are allowed.
c. Rules Based – typically rely on clinicians for identification of candidates which has been shown to have similar results as randomization. Again, opportunity analysis favors programs that target members with common risk profiles.

8. Learning Objectives:

1. The candidate will understand how to evaluate the effectiveness of traditional and leading edge provider reimbursement methods from both a cost and quality view point.

Learning Outcomes:

(1a) Calculate provider payments under standard and leading edge reimbursement methods.

(1b) Evaluate standard contracting methods from a cost-effective perspective.

Sources:

Kongstvedt, Essentials of Managed Health Care, Chapter 5, pp 89-91, pp 94-95, and pp 97-98

Commentary on Question:

This question addressed the provider reimbursement in a capitation arrangement, with a focus on adjustments that can be made to address provider concerns under capitation. The final portion of the question asked the candidate to list advantages and disadvantages of capitation and fee for service from a couple of different perspectives.

Most candidates did well on the calculation portion as well as the description of adjustments to the basic calculation. Candidates struggled the most with listing both advantages and disadvantages, as described below.

Solution:

(a) Calculate the payment to each primary care provider. Show your work.

Commentary on Question:

This portion of the question was intended to evaluate the candidate's understanding of the basic capitation calculation. Most students did well on this section. The most common mistake was pooling the three providers together. (The question specified that the withhold accounts were kept separate).

8. Continued

	(A)	*(B)*	*(C)*	*(D)*	*(E)*
	Capitation received (after withhold)	Withhold Account	Specialist Costs	Outpatient Costs	Deducted from withhold
	$100 * (1 - 40%)	$100 * 40%			*(C) + (D)*
Dr Smith	108,000	72,000	7,500	55,000	62,500
Dr Robinson	72,000	48,000	8,750	40,000	48,750
Dr West	126,000	84,000	10,000	65,000	75,000

	(E)	*(F)*	*(G)*
	Capitation received (after withhold)	Bonus Paid from Amt Remaining in Withhold	**Physician Pmt for the year**
	(A)	Max (0, *(B) - (D))*	*(E) + (F)*
Dr Smith	108,000	9,500	**117,500**
Dr Robinson	72,000	0	**72,000**
Dr West	126,000	9,000	**135,000**

(b) Describe changes to the capitation method to alleviate the concern.

Commentary on Question:
This portion of the question was intended to evaluate the candidates understanding of common adjustments made to the basic capitation calculation. For full credit, the student was expected to list at least 4 adjustments and give a brief description for each.

Most students did well on this section. The adjustments listed below were the most commonly listed. In addition to the adjustments listed below, students were given credit for other valid adjustments listed.

Adjustments that can be made:

- Adjust the capitation for demographic factor, to recognize that expected medical services vary by age and gender. Thus paying physicians more for members expected to require more services
- Adjust capitation rates for geographic factors to take into account the cost of services in each physician's local area
- Pool the providers together to smooth out some of the volatility
- Include stop loss reinsurance in the capitation arrangement
- Manage outlier claims separately to address the volatility due to a small number of higher cost members

8. Continued

- Apply health status adjustments to the capitation payments. Note that this can be difficult to implement well.

(c) Compare the advantages and disadvantages of FFS payment and capitation payment to:

(i) The health plan.

(ii) The primary care providers.

Commentary on Question:
This portion of the question was intended to evaluate the students understanding of the primary considerations in choosing between a capitation arrangement compared to the traditional fee for service arrangement. To receive full credit the student was expected to give a couple of advantages and disadvantages for FFS as well as for Capitation in each of sections (i) and (ii).

This was the section of the question where students struggled the most. The most common mistake made was only addressing FFS or Capitation, but not both. The second most common mistake was only listing advantages for capitation to the health plan, and only listing disadvantages of fee for service for health plans.

(i) **Health plan:**

	Advantages	**Disadvantages**
FFS	Better data	Subject to upcoding and churning
	Easier for physician to understand	Gives incentive for over-utilization
	Easier for member to understand	Balance billing for members
	Direct relationship between payment and resources used	Subject to unbundling of claims
	Gives incentive for members to receive all the services they need	Less predictable costs

8. Continued

Capitation	Physician assumes some of the risk	May strain relationship between health plan and provider
	Eliminates FFS incentive for over utilization	Public perception that it promotes under utilization
	Better aligns health plan and provider incentives	Health plan is at risk if provider becomes insolvent
		Less data is available to the plan

(ii) **Primary care providers**

	Advantages	**Disadvantages**
FFS	Physician does not assume any financial or service risk	Favors procedural treatment over cognitive treatment
	Easy to understand	Pressure from health plans to receive lower payment
	Close relationship between resources used and payment	Prevailing fees may not keep up with newer technologies
	Reward is immediate and tangible	Cash flow not as predictable
	Physicians caring for sicker patients receive more payment	Administrative cost of coding requirements
Capitation	If utilization is well managed providers receive a bonus	Financial risk
	Steady stream of income	Service risk
	No need to keep as detailed records for claims processing	Rewards are not immediate
		Exposed to an element of chance

9. **Learning Objectives:**

4. The candidate will understand how to apply principles of pricing, benefit design and funding to an underwriting situation.

Learning Outcomes:

(4d) Recommends strategies for minimizing or properly pricing for risks.

Sources:

GHA-108-13

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Describe the techniques an underwriter can use when medically underwriting a policy.

Commentary on Question:

Well-prepared candidates received full credit by identifying each technique and providing elaboration. Less-prepared candidates simply listed the techniques or focused on describing limitations pre- and post-ACA.

Denial

- Affords the health plan the greatest protection
- May not be allowed by law
- For some conditions, lesser action does not afford sufficient protection

Rider-Out (Exclude) Conditions

- Health coverage may be issued without coverage for specific conditions
- May be difficult to execute
- Only effective for medical conditions for which treatment is localized and complications in other parts of the body are unlikely

Rating Class

- Underwriters may choose to charge a rate that is higher (or lower) than the standard rate
- Can be effective as long as the additional premium is not high enough to generate sufficient adverse selection

Pre-Existing Condition Limitation

- Indicate that the health plan will not pay for conditions which existed prior to the start of coverage
- Often the limitation has time limits
  a) Time period after the start of coverage during which the condition would not be covered

9. Continued

b) The "look-back" period, the time period prior to the start of coverage during which a condition must have been treated to invoke the limitation

(b) Calculate how much claim costs change if twice as many non-underwritten individuals were present in your block. Show your work.

Commentary on Question:
There are multiple acceptable responses dependent upon how the candidate places the 150 individuals. As a result, candidates performed very well and received full credit.

Solution #1	Number	Cost as a % of Average
Underwritten Individuals	700	20% ÷ 85% = 24%
Non-Underwritten Individuals	300	80% ÷ 15% = 533%
Total	1000	(700 ÷ 1000) x 24% + (300 ÷ 1000) x 533% = 177%

Average claim costs increase 77% if the relative percentage of Non-Underwritten Individuals doubles.

If candidate assumed there are 150 additional Non-Underwritten Individuals added to the block, there are two additional acceptable responses:

Solution #2	Number	Cost as a % of Average
Underwritten Individuals	850	24%
Non-Underwritten Individuals	300	533%
Total	1150	(850 ÷ 1150) x 24% + (300 ÷ 1150) x 533% = 156%

Solution #3	Number	Total Costs
Underwritten Individuals	850	20%
Non-Underwritten Individuals	300	80% x 2 = 160%
Total	1150	20% + 160% = 180%

9. Continued

(c) Explain the importance of managing this underwritten mix in your block.

Commentary on Question:
Well-prepared candidates were able to describe the consequences of failing to manage the underwritten mix. Less-prepared candidates simply regurgitated the results from part (b).

- Underwritten individuals have lower claim costs which help keep your business:
  - Competitive/Fair Prices
  - Profitable

- Lack of underwriting may lead to rate increases and potential death spiral

10. Learning Objectives:

2. The candidate will understand how to evaluate and apply techniques for claims utilization and disease management.

Learning Outcomes:

(2b) Estimate savings, utilization rate changes and return on investment as it applies to program evaluation.

(2h) Apply methodologies to reduce random fluctuation and maintain validity for disease management effectiveness studies.

Sources:

Managing and Evaluating Healthcare Intervention Programs, Duncan, Chapter, 15 (pages 305-307)

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Calculate the PMPM savings of the DM program. Show your work.

Commentary on Question:

Most candidates used the appropriate trends and calculated the correct savings PMPM.

Calculate the projected chronic PMPM without intervention using the risk adjusted non-chronic trend (6%)
1.06 * $500 = $530

Calculate the risk adjusted PMPM for the first year of the intervention (4%)
1.04 * $500 = $520

Calculate savings:
$530 - $520 = $10

(b) Explain how trends can be misused when calculating DM savings.

Commentary on Question:

Most candidates commented on the difference between adjusted vs. unadjusted trends, but failed to tie the difference of these trends to the DM savings calculation.

10. Continued

The unadjusted trend is sometimes used to calculate the savings, but will overstate the savings.

Unadjusted trend for non-chronics is overstated because risk scores usually increase over time.

Unadjusted trend for chronics is understated because risk scores usually decrease over time.

(c)

(i) Explain chronic prevalence creep and how to adjust for it.

(ii) Explain how the adjustment impacts chronic and non-chronic trend.

Commentary on Question:
Many candidates did not fully understand the concept of chronic prevalence creep. They incorrectly described it as simply the increase of chronic members in relationship to the entire population. Candidates thought that to eliminate its effects, one should risk adjust. Most candidates missed that the requalification adjustment would bring the chronic and non-chronic trends closer together.

(i) Prevalence creep is created by "false positives" where a member satisfies chronic definition in the first year, but not the subsequent year. Adding a requalification adjustment so that a member has to meet the qualifications in the subsequent year will help eliminate prevalence creep.

(ii) The requalification adjustment brings chronic and non-chronic trends closer together, but the non-chronic trend is still higher than the chronic trend.

11. Learning Objectives:

2. The candidate will understand how to evaluate and apply techniques for claims utilization and disease management.

Learning Outcomes:

(2a) Describe, compare and evaluate care management programs and interventions.

(2c) Describe operational issues in the development of a study including acceptable methods for dealing with the issues.

Sources:

Managing and Evaluating Healthcare Intervention Programs, Duncan Chapter 7

Commentary on Question:

Overall straightforward question to test care management programs and intervention. Full credits were given for listing and explaining care quality properties, codes limitations, % compliance formula along with evaluation that program is increasing compliance, and identifying four relevant savings statistic concerns. Some candidates mistakenly used the total member/population as denominator to calculate % compliance. Some provided incorrect reasoning by connecting with % member with heart attack by year for part (c), which was the identifier for making sure that the person was placed on a statin in this particular program. While credit was not lost nor granted for identifying the rate of heart attack has not decreased, this was an identifier for program enrollment rather than the statistic for program success, so heart attack prevalence was the incorrect metric for calling out program success.

Solution:

(a) Explain major properties of quality of care.

Commentary on Question:

Full credit was given for listing all 6 properties of quality of care with sufficient descriptions. Partial credit was given for simply listing the categories, or for recalling and describing only some of these properties. Below is a sample answer that would receive full credit.

- Effectiveness (or Appropriateness) – achieving good health outcomes / based on best medical practice
- Efficiency – Minimize waste
- Equity – Providing health care of equal quality to those who may differ in personal characteristics other than their clinical condition or preferences for care.
- Patient Centeredness – reflect patients' needs (or values, or preferences) / provide education and support
- Safety – both actual and potential harm
- Timeliness – Minimizing delays

11. Continued

(b) Explain limitations that exist when using diagnosis or procedure codes to assist in determining quality of care.

Commentary on Question:
Full credits were given for explaining 4 or more of these limitations. Partial credit was given for reflecting parts of this type of response.

- Can be ambiguous – not enough detail to fully determine what was done or what the real issue is / severity not reflected / unknown co-morbidities that may exist / outcome unknown
- Error exist – can be inaccurate / fraud / upcoding
- EMRs have created the "copy and paste" issue that goes beyond standard errors
- Source of Data affects interpretation – encounter data from a provider's EMR may be different than the encounter interpreted by the payer data (might also be described as differences / inconsistencies in how providers code)
- Patience Compliance – relies on the patient's behaviors / unknown adherence

(c) Evaluate whether or not the program is having a positive impact. Show your work. Justify your answer.

Commentary on Question:
Full credit was given for calculating correct answer with correct evaluation. Partial credits were given either for calculating all 4 years % compliant correctly but providing wrong evaluation. Partial credit was given if the prior year heart attack number was used. As mentioned above in more detail, some candidates mistakenly used the total member/population as denominator and provided wrong evaluation of program success.

- 2011 % Compliant = 500/9000 = 5.6%
- 2012 % Compliant = 1000/10000 = 10%
- 2013 % Compliant = 2300/11500 = 20%
- 2014 % Compliant = 4900/13000 = 37.7%
- % Compliant increases significantly each year, so having a positive impact.

(d) Propose questions that should be asked to improve the calculated savings statistic.

Commentary on Question:
Full credits were given for providing 4+ questions for savings statistic. Sample categories or question types are provided below.

11. Continued

- Is this measure evidence based? In other words, does the increasing percentage of compliant members actually translate into improved quality for the members? Widely accepted method?
- Cost basis questions: heart attack cost, program cost, statin cost
- Trend questions
- Medication adherence questions
- Benchmark/reference population questions, adjustments needed
- Expected second heart attack rate questions
- included or excluded member questions
- Changing risk questions
- Changing membership questions (new entrants, etc.)
- Member identification questions

12. Learning Objectives:

1. The candidate will understand how to evaluate the effectiveness of traditional and leading edge provider reimbursement methods from both a cost and quality view point.

Learning Outcomes:

(1e) Evaluate the effectiveness of pharmacy benefit manager on controlling costs and providing quality care.

(1f) Describe quality measures and their impact on key stakeholders.

Sources:

Essentials of Managed Health Care, Chapters 11 and 12, especially pages 271-273, 275-277, 291-293

Handbook of Employee Benefits, pages 228-231

Commentary on Question:

This question addressed the role of care management programs and their impact on the cost and quality of care, with a focus on prescription and behavioral health benefits. Candidates generally did well on the mathematical section (part D). Performance on the other parts of the question was mixed. It was common for candidates to do very well on one part but not provide a complete answer for other parts. Candidates tended to struggle more with the behavioral health portions than with the prescription drug portions of the question.

Solution:

(a) Describe how care management programs improve quality.

Commentary on Question:

This part asked candidates to describe the impact of care management programs on quality of care. Candidates were expected to recognize that both overuse and underuse of services can impair quality and that care management programs seek to address both concerns. Some description/detail was required to earn full credit. Most candidates correctly identified the concerns about overuse of services and provided some detail. Relatively few candidates identified the concern with underuse of services.

Care management programs seek to reduce costs and optimize outcomes. They reduce overuse of services by encouraging or requiring prior authorization or 'stepped' approaches to receiving expensive or risky treatments, or treatments that are not clearly 'best practice.' They can also address underuse of services by encouraging preventive care, advising care teams of appropriate services/tests that should be performed, and can use financial incentives to encourage providers to adopt best-practices.

12. Continued

(b) List and describe types of care management programs for:

(i) Prescription benefits

(ii) Behavioral Health (BH) benefits

Commentary on Question:
This part was intended to assess candidates' understanding of types of care management programs. Most candidates did well in identifying specific programs for prescription benefits and provided fairly detailed descriptions. Candidates struggled with identifying types of programs used with behavioral health benefits, and quite a few candidates instead listed types of behavioral health services / settings of care.

(i)

- Drug utilization review
  - Can be prospective, concurrent, or retrospective
  - Reviews claims to identify and correct inappropriate or unsafe utilization, and questionable prescribing practices
- Disease management
  - Case management and care coordination across all benefits
  - Intended to monitor and encourage appropriate adherence and utilization
- Medication treatment management (MTM)
  - Services to optimize therapeutic outcomes and reduce adverse events
  - Typically used with Medicare Part D beneficiaries with high drug costs; includes many components to fully manage pharmaceutical utilization and optimize care/outcomes

(ii)

- Telephonic Utilization Management
  - Care managers review cases with providers
  - Objective is to identify the most appropriate level of care
- Utilization Review
  - Occurs when treatment is requested and at periodic intervals
  - Assesses treatment and quality; includes planning for care after discharge
- Precertification
  - Required review of certain types of services/providers
  - Helps ensure right setting and appropriate providers are used

12. Continued

c) Compare and contrast the objectives of care management for:

(i) Prescription benefits

(ii) Behavioral Health (BH) benefits

Commentary on Question:
This part was intended to assess candidates' understanding of the objectives/purposes of care management programs. Description of the purpose of the program and not merely a description of what the program does was required for full credit. Candidates generally focused more on the impact to cost than the impact to quality. Candidates also did not provide as much detail as was expected for this section, and in particular struggled with the objectives for behavioral health benefits.

Care management programs for both types of benefits seek to minimize cost while optimizing outcomes. They strive to ensure that appropriate care is provided. Care management programs do not always reduce utilization as sometimes reducing utilization will actually increase overall costs.

Programs for prescription benefits focus on avoiding adverse interactions, ensuring compliance with drug regimens, and ensuring members use the most appropriate and effective drugs for their needs. Patient education is one component of care management programs.

Programs for behavioral health benefits focus on identifying the most appropriate setting and intensity of care. Given the chronic nature of most behavioral health conditions, care management programs often includes patient and provider education and communication and care plans to ensure that conditions can be brought under control and kept under control to avoid expensive (and dangerous) flare-ups/recurrences in the future.

(d) Calculate the savings your company should expect from each program individually and in total. Show your work.

Commentary on Question:
This part was intended to evaluate candidates' ability to assess the impact of care management programs on medical costs. Candidates generally did well on this part. The most common reasons candidates did not receive full credit is that they did not identify the cost associated with each specific program, or they neglected to consider the interaction between programs when all are implemented together. While it was anticipated that candidates would work in PMPMs, answers in other 'units' – most commonly PMPY or per 1000 members per year – were equally acceptable.

12. Continued

- Medical Provider Contracting
  - 10% reduction in IP UC = 10% * 150 PMPM = $15 PMPM
  - 20% reduction in OP UC = 20% * 300 PMPM = $60 PMPM
  - Total impact = 15 + 60 = $75 PMPM
- Rx Formulary
  - 10% reduction in utilization and UC indicates that costs will be 90% * 90% or 81% of current; savings are 19% of current costs
  - 19% * 300 PMPM = $57 PMPM
- Rx Step Therapy
  - 20% reduction in utilization and 10% reduction in UC indicates that costs will be 80% * 90% = 72% of current
  - Savings = 28% * 300 PMPM = $84 PMPM
- Prior Authorization
  - 20% reduction in IP Util = 20% * 150 PMPM = $30 PMPM
  - 50% reduction in OP Util = 50% * 300 PMPM = $150 PMPM
  - Total impact = 30 + 150 = $180 PMPM
- BH Network
  - Inpatient costs will be 50% * 50 = 25% of current; savings = 75% * 50 PMPM = $37.50 PMPM
  - Professional costs are reduced by 60%; savings = 60% * 15 PMPM = $9 PMPM
  - Total savings = 37.50 + 9 = $46.50 PMPM
- Total if all are adopted:
  - New IP = 90% * 80% = 72% of current; savings = 28% * 150 = $42 PMPM
  - New OP = 80% * 50 = 40% of current; savings = 60% * 300 = $180 PMPM
  - New Rx = 90% * 90% * 80% * 90% = 58.32% of current; savings = 41.68% * 300 = $125.04 PMPM
  - New BH IP = 50% * 50% = 25% of current; savings = 75% * 50 = $37.50 PMPM
  - New BH OP = 40% of current; savings = 60% * 15 = $9 PMPM
  - Total savings = 42 + 180 + 125.04 + 37.50 + 9 = $393.54 PMPM

(e) Evaluate how each care management approach will impact quality.

Commentary on Question:
This part was intended to evaluate candidates' understanding of the impacts different types of cost and care management approaches have on members and overall quality. A variety of responses were acceptable but candidates needed to evaluate (a qualitative assessment) the impact of each program on quality and not merely describe what the program does. Candidates tended to either do well on this part or provided cursory responses with little to no consideration of how members and care quality would be impacted.

12. Continued

- Medical Provider Contracting
  - No impact on quality of care if there is no change in the network
  - If network is composed of higher than average quality providers, quality of care will improve
  - Provider contracts could include incentives that require compliance with care management programs/efforts, further improving quality
- Rx Formulary
  - Narrow, closed formularies are likely to lead to member dissatisfaction
  - If designed to discourage use of less safe/effective drugs, quality could improve
- Rx Step Therapy
  - Restricting access to more expensive medications is likely to lead to member dissatisfaction
  - If members can't get the right drugs in a timely manner, quality will deteriorate
  - But if implemented correctly and plan responds promptly to requests for patients to move to the next step, there may not be much of an impact on quality
- Prior Authorization
  - Assuming the purpose is to ensure an independent review of the appropriateness of drugs/services with high potential for complications, quality should improve
  - Should also improve quality if this is tied into an overall care management approach/strategy that helps tailor care to a member's individual needs
- Behavioral Health Network
  - Similar to medical contracting, but more important to coordinate care across settings/providers and ensure access standards are met and collaborative providers are included
  - If designed well, quality will improve

13. Learning Objectives:

3. The candidate will understand how to formulate, calculate and evaluate carrier reserving techniques.

Sources:
GHA-103-15 Health Reserves, pages 21-24, 28

Commentary on Question:
Commentary listed underneath question component.

Solution:
(a) Describe necessary characteristics for the development method to work well.

Commentary on Question:
Candidates did very well describing the characteristics for the development method to work well. Many summarized the below points well.

- Ability to systematically record an incurred date and a payment date as each claim is adjudicated and paid. The difference between these dates across policies in a valuation cell defines the lag pattern.
- Fairly consistent lag patterns in the progression of claims from their incurred date to a date on which they are ultimately paid in full. Methods exist to smooth and adjust patterns for some disruptions, but the inherent payment pattern cannot be too erratic.
- Incurred periods should have a relatively short duration relative to the ultimate run-out. Monthly periods typically are used for medical claims. Quarterly periods are often used for disability and may even work for large blocks of term life coverage. Annual periods are usually limited to some property/casualty coverages in which run-out may last for years. Longer incurral periods also create complications due to the impact of inflationary or operational changes.
- A sufficient volume of business must be included in a given valuation cell to obtain reasonable stable results. This amount varies by the nature of the benefits and the frequency of claim. Combining blocks of business to achieve credibility therefore requires that they exhibit similar patterns in reporting and processing.
- The technique also requires either earned premiums or an exposed contract count to assist in the calculations. These values help with certain volume adjustments and with the smoothing of statistical fluctuations described in more detail below.

13. Continued

(b) Calculate the IBNR reserve as of August 31, 2015. Show your work.

Commentary on Question:
Candidates generally did well on calculation of completion factors. However, many added extra steps of calculating age-to-age factors and then age-to-ultimate factors.

Calculate completion factors by making ratios of cumulative payments to-date by duration over the total ultimate payment of $4,640:

Paid Through	Cumulative Paid Claims for January	Completion Factor
January	$650	0.140
February	$2,450	0.528
March	$3,700	0.797
April	$4,400	0.948
May	$4,700	1.013
June	$4,825	1.040
July	$4,625	0.997
August	$4,640	1.000
Total	$4,640	

Apply completion factors from January pattern to cumulative payments by incurred month:

Month Incurred	Completion Factor (a)	Cumulative Payments (b)	Ultimate Payment (c) = (b) / (a)	IBNR (d) = (c) - (b)
August	0.140	$550	$3,926	$3,376
July	0.528	$4,350	$8,238	$3,888
June	0.797	$5,530	$6,935	$1,405
May	0.948	$5,425	$5,721	$296
April	1.013	$4,300	$4,245	-$55
March	1.040	$4,905	$4,717	-$188
February	0.997	$4,680	$4,695	$15
January	1.000	$4,640	$4,640	$0
Total		$34,380	$43,118	**$8,738**

The IBNR reserve as of August 31st, 2015 is $8,738M.

13. Continued

(c)

(i) Determine the sufficiency or deficiency of the August 31, 2015 IBNR as of December 31, 2015. Show your work.

(ii) Describe potential reasons for the sufficiency or deficiency.

Commentary on Question:
Candidates generally had a harder time with answering part c. There were multiple ways to calculate the answer for part (i) and many candidates performed more calculations than necessary. Several did monthly calculations of reserve adequacy but still came up with the overall correct result. For part (ii) many candidates mentioned that January wasn't a good representation of future payment patterns or that smoothing techniques should have been used. Many candidates had a hard time coming up with multiple potential reasons.

(i) Sum the ultimate payment in chart as of 12/31: paid claims of $46,730 + IBNR of $5,050 = $51,780
Sum of ultimate payment as of 8/31 (from part b): $43,118
Reserve sufficiency/(deficiency): 43,118 – 51,780 = -$8,662
The reserves were deficient by $8,662M

--OR--

Initial IBNR – Payments – Current IBNR
Initial IBNR (from part b): $8,738
Payments: $46,730 – $34,380 = $12,350
Current IBNR: $5,050
Reserve sufficiency/(deficiency): $8,738 – $12,350 – $5,050 = -$8,662
The reserves were deficient by $8,662M

(ii)

- Low credibility on most recent completion factors (ie less than 40% completion factors)
- Using only the January payment pattern may not be a good representation of future payment patterns.
- No smoothing of completion factors was used.
- For a new block of business, the loss ratio method may be more appropriate.
- Change in speed of processing claims.
- Negative claim payments may not have continued.

14. Learning Objectives:

4. The candidate will understand how to apply principles of pricing, benefit design and funding to an underwriting situation.

Learning Outcomes:

(4d) Recommends strategies for minimizing or properly pricing for risks.

Sources:

GHA-108-13: Medical Underwriting: Approaches and Regulatory Restrictions (Shreve-Milliman Research Report)

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Recommend an underwriting technique. Justify your recommendation.

Commentary on Question:

Candidates that did well on this part of the question knew the underwriting techniques and could justify their answer. There were several accepted answers as long as the justification backed up the recommendation. Commentary on the disease states and how they affect cost in the short and long term was needed for full justification credit.

Member 1: Exclusion clause for the claims related to the tumor removal in years 0 and 1 and then rate up the member for their higher than average cost. The tumor is a one-time high cost event and should not be used to rate for future costs.

Member 2: Denial of this member. The member has much higher than average cost (even without Diabetes) which suggests high risk and potential deterioration of costs due to comorbidities. Even if we used a pre-existing condition rider and tried to rate this member up, it is probably still cost prohibitive.

Member 3: Pre-existing condition rider for heart disease related claims. Their non-heart disease related claims are below the average population. Heart disease has potential to cause other health complications, but the member doesn't seem to have any other problems currently causing high claims.

(b) Calculate the premium based on your recommendation. Show your work.

Commentary on Question:

Candidates generally did well on this part as long as they followed their recommendations in Part A. We accepted both aggregate premium calculations and individual premium calculations depending on the UW technique recommended. For example, if rating up the member was recommended, aggregate premium calculation wouldn't receive credit.

14. Continued

Since we are rating up certain members, each member will have their own premium.

Premium = (Average Claims for years 0,1,2)/(1-Expense Load – Margin)
Premium Member 1 = ((125*3)/3)/(1-.2-.5) = 166.67
Premium Member 2 = 0 due to denial of insurance
Premium Member 3 = ((95*3)/3)/(1-.2-.5) = 126.67

15. **Learning Objectives:**

4. The candidate will understand how to apply principles of pricing, benefit design and funding to an underwriting situation.

Learning Outcomes:

(4a) Understand the risks and opportunities associated with a given coverage, eligibility requirement or funding mechanism.

(4b) Evaluate the criteria for classifying risks.

(4e) Describe basic approaches to assigning claim credibility and pooling claims.

Sources:

Group Insurance, Bluhm, 6th Edition, CH 26, 27, 37.

Commentary on Question:

This question addresses topics and issues that an actuary is likely to encounter when quoting large groups. The question also tests knowledge that an actuary should have when his/her client wants to introduce choice among their plan members.

Solution:

(a) Define criteria used to screen, approve and classify large group prospects.

Commentary on Question:

In order to get the maximum points allowed on this question, candidates must have listed the major items of the model solution.
Many candidates did well in that part of the question.
Candidates that did not score well in that question are those that did not list the expected items..

- Age and gender
  - Age is a highly correlating factor with future mortality and morbidity.
  - Gender mix impacts both life and health claim costs, and composite age-gender factors are good predictors for several specific medical conditions such pregnancy and heart disease.
- Location or area
  - There are significant differences regional and local differences in health care practices and prices.
- Type of industry
  - Particularly important for disability insurance.
  - Some industries expose employees to health hazards or to high stress levels, while other industries have higher than expected costs because of benefit entitlement attitudes or close to proximity and access to health care system.

15. Continued

- Financial stability
  - Financial strength and credit rating are important risk criteria.
  - Business downturn often lead to reduction in staff and it can result in dramatic shifts in demographic factors.
  - Anticipated layoffs may produce a spike in disability claims and in utilization of elective medical and dental procedures.

- Ease of administration
  - Large groups have economies of scale, but offset that with added complexity.
- Participation level
  - Higher participation leads to lower antiselection.
  - Insurers usually require that the employer pay a minimum portion (such as 50%) of the premium to keep the cost attractive for healthier employees.
- Carrier persistency
  - Installation and setup of a very large group account can be extremely expensive, and competitive pricing pressures do not allow room to recoup these costs in the first or second contract year.
  - Should carefully review a prospective client's track record of persistency with their prior carriers.
- Plan design
  - Must assess the relative value and effectiveness of all available plan designs, utilization controls and health care delivery systems in order to anticipate the impact of employee choice.
- Other considerations
  - ERISA
  - HIPAA
  - ACA

(b) Explain considerations related to the development of large group proposals.

Commentary on Question:
In order to get the maximum points allowed on this question, candidates must list and explain the major items.
Few candidates did well in this part of the question.

- Large group RFP'S are often large, with lengthy questionnaires and highly detailed financial exhibits.
- Most large case RFP's include specifications for the proposed plan designs which are frequently highly customized.
- The underwriter must address plan design, funding arrangements, and enrollment patterns that may be unique to a group.

15. Continued

- Thoughtful underwriting requirements and caveats are as important as careful rate analysis.
- A well designed risk-sharing agreement should include a fair formula and reasonable caveats.
- For jumbo groups, client-specific adjustments to expense charges may become more refined.
- Very large groups often have less perceived need for insurance protection, so the quality and price of administrative services take on even more importance as the size of the group increases.
- Performance standards can cover the gamut of services and customer outcomes, but most often deal with the speed of accuracy of claim processing and customer service, including average call waiting times and issue resolution speed.

(c) Describe alternative funding arrangements available in the market.

Commentary on Question:
In order to get the maximum points allowed on this question, candidates must have listed the funding arrangements and briefly describe each of them.
Most candidates did well in this part of the question.
Candidates that did not score well in that question are those who did not list the funding arrangements with a brief description.

- Reserveless plan
  - Insurer foregoes premium payments in return for a contractual promise by the policyholder that they will pay reserves needed when contract terminates (called ‘’terminal’’ premium).
  - The premium savings is a one-time reduction, future premiums will be higher than those of the first year.
- Fully-insured plan
  - Insurer bears immediate risk of adverse experience, as well as the profit in case of favorable experience.
  - Insureds have the security of the insurer being claim guarantor.
  - Premium tax will be payable, thus increasing the cost of providing benefits.
- Self-insured plan
  - The employer is the primary risk-taker.
  - Most self-insured plans will contract with an insurance company or independent administrator to administer the plan.

15. Continued

- Minimum premium contract
  - The expected claims portion of the premium goes to a fund that is used thereafter by the insurer to pay claims.
  - Insurer is liable for excess amounts.
  - Avoids premium tax in many jurisdictions (Except California).
- Stop-loss contract
  - Provide for insurance of claims in excess of a particular level.
  - Specific stop-loss insures the claims of individuals under the contract.
  - Aggregate stop-loss attachment points are usually expressed in terms of a multiple of expected claims.
- Retrospective premium arrangement
  - Policyholder takes over some or all of the aggregate claim risk in exchange for reduced risk charges and lower up-front premiums.
  - If experience is worse than anticipated, there would be an additional premium due up to an agreed-upon limiting amount.
  - If experience is better than anticipated, there might be a refund payable to the policyholder or its RSF, or the policyholder might just keep the initial reduction.

(d) Describe advantages and disadvantages of self-funding an employee benefit plan.

Commentary on Question:
In order to get the maximum points allowed on this question, candidates must list the advantages and the disadvantages of self-funding.
The vast majority of candidates did well in this part of the question.
Candidates that did not score well in that question are those who did not list the advantages and the disadvantages of self-funding.

- Advantages of self-funding
  - Cost savings
    - Premium tax is avoided, employer can minimize insurer risk and retention charges and the administrative costs are sometimes lower.
  - Plan design flexibility
    - Not subject to insurer offerings or State mandated benefits
  - Claims management
    - Sponsor can hire own TPA to administer the plan and pay claims
  - Cash Flow
    - Sponsor's cash position is improved because the sponsor holds IBNR reserves
  - Investment Income
    - Sponsor can earn investment income on reserves and cash flows that can be used to lower future contributions.

15. Continued

- Disadvantages of self-funding
  - No risk transfer
    - If losses under the self-funded plan exceed expectation, the plan sponsor is liable for the additional costs
  - Budgeting
    - Monthly claims fluctuation must be managed and cash flows can be unpredictable
  - Administration complexity
    - Sponsor must arrange for all the services needed and must make sure that all selected vendors can work together effectively.
  - Legal liability
    - Sponsor may become legally liable for actions taken by the benefit plan that adversely affect covered employees

(e) Calculate the projected claims costs for the following year for the:

(i) Comprehensive program. Show your work.

(ii) Choice program. Show your work.

Commentary on Question:
In order to get the maximum points allowed in this question, the candidates must have calculated the correct answer.
Many candidates scored well in this part of the question.
Candidates that did not score well in this question are those who did not correctly calculate the Total Projected Cost for each program or show adequate work.

(i) Comprehensive Program

Projected Costs = Prior Year Claims Experience Per Employee
x Projected Enrollment x Trend
= 10,000 x 60,000 x 1.05
= 630,000,000

Projected Cost PMPM
= 630,000,000 / (60,000 x 12)
= 875.00

15. Continued

(ii) Choice Program

PPO Projected Costs = Prior Year Claims Experience Per Employee x Relative Benefit Value x Provider Discount Savings x Selection Factor x Trend x Projected Enrollment
= 10,000 x 1.05 x 1.10 x 1.20 x 1.05 x 10,000
= 145,530,000

HMO Projected Costs = Prior Year Claims Experience Per Employee x Relative Benefit Value x Provider Discount Savings x Selection Factor x Trend x Projected Enrollment
= 10,000 x 1.00 x 0.95 x 1.05 x 1.05 x 20,000
= 209,475,000

EPO Projected Costs = Prior Year Claims Experience Per Employee x Relative Benefit Value x Provider Discount Savings x Selection Factor x Trend x Projected Enrollment
= 10,000 x 0.95 x 0.85 x 0.90 x 1.05 x 30,000
= 228,926,250

Total Projected Costs = PPO Projected Costs + HPO Projected Costs + EPO Projected Costs
= 145,530,000 + 209,475,000 + 228,926,250
= 583,931,250

Projected Cost PMPM
= 583,931,250 / (60,000 x 12) = 811.02

(f) Recommend a program to your customer. Justify your answer.

Commentary on Question:
In order to get points in this question, the candidate must recommend a program to monitor experience and justify its rationale.
Many candidates scored well in this part of the question.
Candidates that scored well are those who recommended one program to monitor experience and explained its rationale.

15. Continued

- The Choice Program is recommended for the following reasons:
  - The projected cost of the Choice Program is lower.
  - It allows employees to select the best plan that suits their needs while encouraging consumerism among members.
  - Offering choice increases employee satisfaction since they can see its employer as a leading edge employer.