

# GH ADV Model Solutions

## Fall 2017

### 1. Learning Objectives:

2. Evaluate and apply techniques for claim utilization management, care management, and population health management.

### Learning Outcomes:

- (2b) Estimate savings, utilization rate changes and return on investment as it applies to program evaluation.
- (2c) Describe the considerations in the design, implementation and evaluation of a care management program.
- (2g) Apply methodologies to reduce random fluctuation and maintain validity for disease management effectiveness studies.

### Sources:

Duncan, 14

Duncan, Appendix 16.2

Duncan 14.3

### Commentary on Question:

*Commentary listed underneath question component.*

### Solution:

- (a) Describe the requirements for a valid measurement of disease management (DM) program effectiveness for an employer group.

### Commentary on Question:

*This question was very broad and there are valid answers beyond what is provided in the below solution. Most candidates received at least partial credit for this part and in general did well.*

A valid measurement should include the following characteristics:

- The results should be plausible
- Scientific rigor/validity –
- Market acceptance
- Consumer understandability
- Ease of replicability and auditability

## 1. Continued

The study design should be practical and cost effective  
The results should be consistent and stable over time and customers  
Group size can impact the validity of the measurement  
Care must be taken when determining trend.

- (b) Describe the shortcomings of an admission-based methodology when measuring DM program effectiveness.

**Commentary on Question:**

*Most candidates received at least partial credit for this part.*

Admissions do not measure severity nor length of stay  
Emergency Room visits may be reduced instead of admissions  
Other costs are not measured by admissions such as physician visits, rx, outpatient  
The standard admission cost may be inappropriate for the avoided admissions  
Confounders such as regression to the mean or readmits should be considered.

- (c) List the issues and assumptions for conducting and evaluating a DM program study.

**Commentary on Question:**

*This question was very broad and there is a chart in the Duncan textbook that provided a nice summary. Many candidates did not provide the same detail as this chart, but credit was given for answers that overlapped with the below solution in some way.*

Below are issues and assumptions for conducting or evaluating a DM program study.

- The Study Design – population study, method for overcoming small populations, intervention study, baseline time period
- Population Definitions – chronic population, excluded population, multiple years, eligibility criteria
- Data issues – reconciliation, data exclusions, claims run-out
- Potential sources of bias – prevalence creep, trend bias, selection bias, geographic and product controls
- Tests of Equivalence – DRG distributions, provider distributions, age/sex distributions, in/out of network services.
- Trend – what method to be used, validation of trend
- Reporting – are the reports auditable
- Calculations – should be audited for accuracy
- Regression to the mean addressed

## 1. Continued

- (d) Calculate the standard deviation for a 20,000 member group. Show your work.

**Commentary on Question:**

*Many candidates did not get this correct even though there was an example in the book. In addition, many candidates had answers that showed the standard deviation was smaller when it is known that smaller populations result in a bigger variance or standard deviation.*

Formula = Std Dev (40,000) / square root (20,000 / 40,000)

Calculation = 4% / (20,000 / 40,000)<sup>0.5</sup> = 5.7%

## 2. 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 various methods of controlling costs and providing quality care-within pharmacy benefits.

### Sources:

Essentials of Managed Health Care, Kongstvedt, 6th Edition, 2013, Ch. 11

### Commentary on Question:

*This question tested the candidate's understanding of PBMs with a focus on spread pricing and being able to evaluate administrative fees that may be charged to plan sponsors.*

### Solution:

- (a) List the typical services offered by a Pharmacy Benefit Manager (PBM).

#### Commentary on Question:

*In general, candidates performed very well on this part.*

- Claims processing and management reports
- Community retail pharmacy provider networks
- Home delivery prescriptions (mail service pharmacy option)
- Specialty pharmacy distribution services
- Drug formulary development and management
- Pharmaceutical manufacturer contracting
- Customized pharmacy benefit design development and administration
- Clinical pharmacy programs, including drug UR and medication therapy management (MTM)

- (b) Describe:

- (i) Maximum Allowable Costs (MAC) list.

- (ii) Reasons a PBM uses multiple MAC lists.

#### Commentary on Question:

*Some candidates failed to recognize that a MAC list is specific to generic drugs. Candidates receiving full credit for this question were able to explain the spread pricing concept in conjunction with using multiple MAC lists (for example, one list for a plan sponsor and another list for a pharmacy).*

## 2. Continued

- (i) A MAC list:
- Is a listing of the maximum reimbursement for generic drugs by drug type/strength
  - Determines the most the PBM will pay the pharmacy for the drug
- (ii) PBMs often use more than one MAC list: one list is used to pay network pharmacies and another list is used to guarantee maximum drug prices to plan sponsors. Spread pricing is the difference between what is paid out to pharmacies and what is guaranteed to plan sponsors. This is often retained as profit by the PBM. However, if the PBM doesn't meet the guaranteed prices, a financial penalty is paid to the plan sponsor.
- (c) Calculate an administrative fee for this product such that the PBM's total revenue is unchanged. Show your work.

### Commentary on Question:

*Most candidates received partial credit for this question, with well-prepared candidates being able to demonstrate the conversion of the plan sponsor cost to the AWP to correctly determine the PBM's costs. Full credit was awarded to candidates who calculated all three components of the new admin fee: 1) current admin fee; 2) rebates (which applied to brand formulary drugs only); and 3) the spread between plan sponsor's current costs and PBM's current costs.*

### Given:

Drug Category	Scripts per 1,000 members per year	Plan Sponsor Cost per script	Plan Sponsor Cost and Discounts	PBM Cost and Discounts
Generic	8,000	\$30	Average MAC per script: \$30	Average MAC per script: \$20
Brand - Formulary	1,000	\$300	AWP – 15%	AWP – 20%
Brand – Non-formulary	500	\$1500	AWP – 10%	AWP – 15%

### Calculate the current cost components:

Drug Category	AWP per script	Plan Sponsor Cost PMPM	PBM Cost per Script	PBM Cost PMPM
Generic	n/a	$30 \times 8000 / 12000 = 20$	20	$20 \times 8000 / 12000 = 13.33$
Brand - Formulary	$300 / 0.85 = 352.94$	$300 \times 1000 / 12000 = 25$	$300 \times (0.8 / 0.85) = 282.35$	$282.35 \times 1000 / 12000 = 23.53$
Brand – Non-formulary	$1500 / 0.9 = 1666.67$	$1500 \times 500 / 12000 = 62.5$	$1500 \times (0.85 / 0.9) = 1416.67$	$1416.67 \times 500 / 12000 = 59.03$

## 2. Continued

Drug Category	Spread PMPM	Rebates per script	Rebate PMPM
Generic	20-13.33 = 6.67	n/a	n/a
Brand - Formulary	25-23.53 = 1.47	30	30*1000/12000 = 2.5
Brand – Non-formulary	62.50-59.03 = 3.47	n/a	n/a

Under the requested product, the lack of spread and rebates need to be covered by the new admin expense.

New admin cost PMPM = Total spread PMPM + Rebate PMPM + Old Admin PMPM = (6.67 + 1.47 + 3.47) + (2.50) + 5 = 11.61 + 2.5 + 5 = \$19.11 PMPM

- (d) Recommend whether or not the PBM should quote this coverage. Justify your response.

**Commentary on Question:**

*Partial credit was granted for making a recommendation with weak or contradicting support, but in order to receive full credit, candidates needed to support their recommendation in a clear and consistent manner.*

*For candidates recommending not to quote this coverage, full credit was awarded for things such as: large increase in admin, disincentives to PBM for continuing to pursue cost mitigation efforts, market competitiveness, over-revealing discount positions, etc.*

*For candidates recommending the PBM quote this coverage, full credit was awarded for things such as: customer satisfaction, competitive pressure to be transparent, predictability in revenue stream, etc.*

Sample full credit response:

In order to maintain revenue and margins, the requested product would require an increase in admin fees of  $(19.11 / 5) - 1 = 282\%$ . Without further information I would recommend to decline to quote as this steep an admin fee increase might not be palatable to the plan sponsor.

### 3. Learning Objectives:

3. The candidate will understand and apply valuation principles for insurance contracts.

#### Learning Outcomes:

- (3f) Describe, calculate and evaluate non-claim reserves and explain when each is required.

#### Sources:

GHA-115-16: Individual Health Insurance, Bluhm, Leida, 2nd Edition 2015, Ch. 6 Reserves and Liabilities, pages 166-167 (Part A), 167-168 (Part B), 182 -183 (Part C)

#### Commentary on Question:

*Commentary listed underneath question component.*

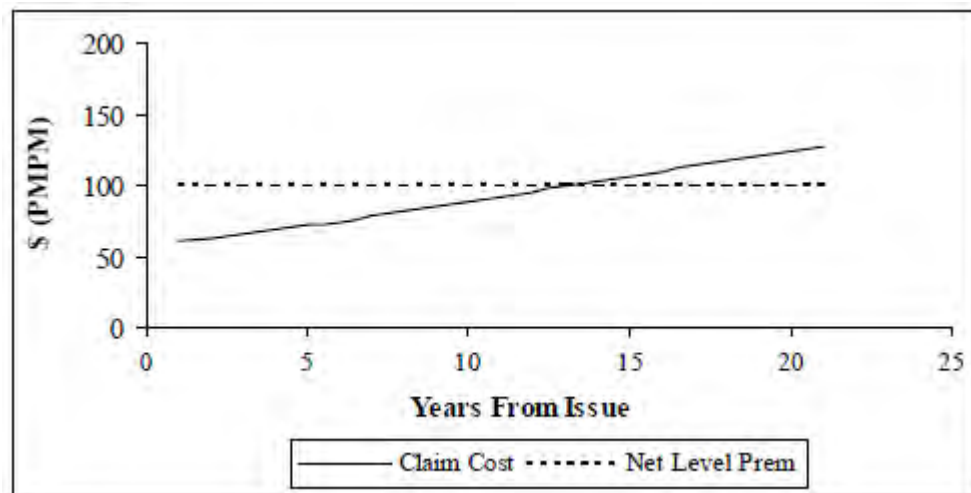
#### Solution:

- (a) Sketch and explain a graph to illustrate the need to hold policy reserves.

#### Commentary on Question:

*In general, candidates responded very well to this part of the question*

- Sketch:



- Policy reserves are needed to set aside some of the premiums received in earlier years (where premiums exceed expected claims) to pay for claims in later years. Since the claims in later years exceed the premium, it is necessary to have the policy reserves to pay for the claims.

### 3. Continued

- (b) Calculate the net level premium using the present value of claims. Show your work.

**Commentary on Question:**

*Candidates seemed likely to make any number of minor mistakes in this calculation. Please note that Graders carried answers into Part C so no additional points were deducted.*

Time	Persistence	Discount	Claims
0	1	1.000	\$ -
1	0.9	0.970	\$ 1,000.00
2	0.81	0.943	\$ 1,050.00
3	0.729	0.915	\$ 1,102.50

Premium \$ 914.16

Premium calculated as sumproduct of claims, discount, persistence for times 1-3 divided by sumproduct discount, persistence for times 0-2

- (c) At the end of year 2:
- (i) Calculate the prospective policy reserve. Show your work.
  - (ii) Calculate the retrospective policy reserve. Show your work.
  - (iii) Explain the difference between the two methods.

**Commentary on Question:**

*Many candidates believed both prospective and retrospective reserves should be equal. The key difference between methods is the 'basis' – either per original policy or per surviving policy.*

$$\begin{aligned}
 \text{Prospective Reserve}_{(t=2)} &= -\$914.16 \times (1+3\%)^0 \times 0.90^0 \\
 &\quad + 1102.50 / (1+3\%)^1 \times 0.9 \\
 &= \$49.16
 \end{aligned}$$



### 3. Continued

$$\begin{aligned}\text{Retrospective: Reserve}_{(t=2)} &= \$914.16 \times (1+3\%)^2 \times 0.90^0 \\ &+ (\$914.16 - \$1,000.00) \times (1+3\%)^1 \times 0.90^1 \\ &- \$1,050.00 \times (1+3\%)^0 \times 0.90^2 \\ &= \$39.77\end{aligned}$$

The difference between the two methods is that the first calculation is *per original policy issued in year one*, while the second calculation gives the reserve in year three *per policy still in force in year three*. In technical terms, the persistency assumption is adjusted in the “per in-force policy” formula to be conditional on policies that remain in force in year three.

- (d)
- (i) Define Pharr’s rule.
  - (ii) List the conditions that prevent a clean application of Pharr’s rule.

**Commentary on Question:**

*Candidates struggled with this question.*

- (i) Pharr’s Rule says that if actual experience unfolded exactly matching pricing assumptions then the actual reported loss ratio would equal the lifetime anticipated loss ratio if 1) increases (decreases) in policy reserves are added to (subtracted from) the incurred claims that year and 2) an interest adjustment must be made to claims, to account for that year’s interest earnings on reserves assumed in the reserving process.
  - (ii) Use of the preliminary term reserve method (or any modified reserve method) and the limitations of statutory claim costs cause disruptions in a simple application of Pharr’s rule.
- (e) Recommend:
- (i) Whether or not to hold a policy reserve.
  - (ii) The amount of the reserve to hold, if any.

Justify your response.

**Commentary on Question:**

*Candidates in general did a good job of providing a recommendation, an amount and a justification.*

### **3. Continued**

- It is subjective whether you hold a reserve depending on prior responses within Question 3.
- Based on the model solution, a strong response would be: “Yes, I recommend holding a policy reserve. This reserve in year 2 would be equal to the previously calculated prospective reserve of \$49.16”
- Note other responses could receive partial or complete credit depending on prior responses within this question.

#### 4. 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.
2. Evaluate and apply techniques for claim utilization management, care management, and population health management.

#### Learning Outcomes:

- (1d) Understand accountable care organizations and medical patient home models and their impact on quality, utilization and costs.
- (2a) Describe, compare and evaluate care management and population health programs and interventions.

#### Sources:

The Road to Accountable Care

#### Commentary on Question:

*Candidates generally did poorly on Parts A and C, with candidates struggling on part C in particular. The Road to the Accountable Care describes these capabilities and gives examples for each, but most candidates didn't identify the capabilities or give examples and describe how those help the ACO.*

#### Solution:

- (a) Describe how the Affordable Care Act has impacted accountable care organizations (ACOs).
  - ACA wants to award providers for sustainable cost – incentive programs
  - Provisions allow the federal government to test new payment models for Medicare
  - The Accountable Care movement was fostered by the ACA
- (b) Describe the incentive structure created by the Medicare Shared Savings Program.

#### Commentary on Question:

*Candidates generally did well on this part as they understood the mechanics for the MSSP savings calculations.*

- (i) One sided shares gains 50/50 with CMS
- (ii) Two sided gives more gains to ACO, but is at risk of losses.
  - Savings percentage tied to quality, versus a benchmark.
- (iii) Two requirements for shared savings include
  - Must report on (33) quality metrics – not important number of metrics – more important at the mention of quality
  - Must meet a savings hurdle of 2% for larger ACOs and 4% for smaller ACOs

## 4. Continued

- (c)
- (i) The key capabilities of building a system of population health management for ACOs.
  - (ii) An example of how each capability helps the ACO with its performance and savings goals.

### **Commentary on Question:**

*On part (ii) below, candidates could have provided many different examples for each capability. The below examples would have received full points for this question, but aren't the only examples that received points.*

- (i)
  - Care redesign to improve the delivery and coordination of care
    - Focuses on strengthening primary care
    - Focuses on transition from hospitals to post-acute care
  - Care management of patients with costly, complex needs
    - Involves individualized approach (in-person/telephone visits)
  - Patient and family engagement and patient activation initiatives
    - Involves engaging patients to identify lifestyle goals or treatment changes
  - Integrated data and analytics
    - Capability to identify patients who could benefit from more care management
    - Identify patients at risk of hospital admission
  - Supportive payment models and financial incentives
    - Capitation provides greatest flexibility
    - Shared risk-model is more feasible
- (ii)
  - Care Redesign – by assigning the beneficiaries to a PCP within the ACO, the PCP can coordinate their care ensuring that it is appropriate and not duplicative
  - Care management - If the ACO assigns a case manager to high-risk individuals, this case manager can communicate with the member via phone and keep track of progress toward care goals
  - Patient and Family engagement – If the ACO keeps the patient and family as active participants, they are more likely to follow through on their care plans and contribute to performance/savings goals
  - IT and data integration – Providers can use electronic health records to track test results, eliminating the need for multiple tests
  - Supportive Payment Models – When the providers are financially at risk, they are more likely to comply with initiatives, saving future costs

## 5. Learning Objectives:

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

### Learning Outcomes:

- (4b) Understand, evaluate and apply various risk adjustment mechanisms.

### Sources:

Group Insurance, Ch. 33. Pages 588-591

### Commentary on Question:

*Commentary listed underneath question component.*

### Solution:

- (a) Define:
  - (i) Risk Assessment.
  - (ii) Risk Adjustment.

### Commentary on Question:

*Candidates often earned full points on part (a); but seemed to spend more time on this section than was necessary. A clear and concise definition received full credit.*

- (i) Risk Assessment – The process of risk scoring members (or risk model)
  - (ii) Risk Adjustment – The process of adjusting payments on the basis of risk assessment
- (b) Calculate ABC Insurer’s ACA risk adjustment transfer amount for 2016. Show your work.

### Commentary on Question:

*Some candidates did not include the applicable formulas. This significantly impacted point totals, especially when candidates struggled with certain steps. Candidates on average achieved just over half of the points. The market figures already included Insurer ABC in the figures.*

## 5. Continued

Relative risk = plan level (PLRS x IDF x GCF)/ market level (PLRS x IDF x GCF)

$$= (1.10 \times 1.05 \times 0.98) / (1.16) \\ = 0.976$$

Relative rating factors = 1.10

Average market premium = \$400

Transfer PMPM = (Relative Risk – Relative Rating Factors) \* Ind. Market Avg. Premium

$$= (0.976 - 1.10) * \$400 \\ = -\$49.69$$

Transfer amount = Transfer PMPM \* Plan MM

$$= -\$49.69 * 42,000 \\ = -\$2,086,966$$

Payable amount of \$2.09 Million

- (c) Describe the issues insurers encountered during the first year of ACA risk adjustment.

### **Commentary on Question:**

*Many candidates struggled to identify the main points below. Candidates who were able to provide the additional sub-points were able to get closer to, or achieve full credit.*

- First, despite significant technical challenges and an ambitious timeline, over 99.5% of issuers were able to submit the data necessary to calculate reinsurance and risk adjustment transfers. Successful calculation of these amounts does not imply accuracy of data, however, and a number of issuers experienced challenges in this regard.
- Next, according to the CMS analysis, issuers that enrolled high-risk individuals received risk transfer payments as intended under the ACA risk adjustment program.
  - These included issuers that enrolled a large share of HIV/AIDS patients,
  - And had a history of serving members enrolled in the former state-run high risk pools.
- Finally, the risk adjustment program is designed such that the sum of payments and charges net to zero within a state and within an ACA risk pool (that is, individual, small group, and catastrophic).

The average transfers (either positive or negative) were approximately 10% of total annual premium for the individual risk pool, 6% for the small group risk pool, and 21% for the catastrophic risk pool. These figures serve to underline the importance of these transfers, and indeed of the risk adjustment program itself.

## 5. Continued

- (d) Construct a response to the CEO's email to confirm or refute the conclusion. Justify your response.

**Commentary on Question:**

*Candidates often scored the most points on this section. Also, candidates who scored highly on section (b) often did well on this section. Similar to part (a), the expectation is clear and concise communication.*

- Client does not account for plan relativities to market
- Wrongly assumes risk score >1.00 means risk transfer receivable
- Client does not account for rating formula components
- Client actually has risk adjustment payment, not receivable

## **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:**

- (1a) Calculate provider payments under standard and leading edge reimbursement methods.
- (1b) Evaluate standard contracting methods from a cost-effective perspective.
- (1c) Describe the credentialing and contracting process for providers.
- (1d) Understand accountable care organizations and medical patient home models and their impact on quality, utilization and costs.

### **Sources:**

Essentials of Managed Health Care, Kongstvedt, 6th Edition, 2013, Ch. 4 (Pages 57 – 83), 10 (Pages 244 – 245)

Provider Payment Arrangements, Provider Risk, and their relationship with cost of healthcare

GHA-102-13: Evaluating Bundled Payment Contracting

### **Commentary on Question:**

*This question tests the candidate's understanding of provider contracting and the administrative aspects of contracting and determining the applicable contract amounts. Candidates generally did well on the portions that were primarily recall. The final recommendations were weak.*

### **Solution:**

- (a) Compare and contrast for an IPA and a PCMH:
  - (i) The organizational structure.
  - (ii) The contracting considerations with a health plan.

### **Commentary on Question:**

*Most candidates did well on this part*



## 6. Continued

	IPA	PCMH
Organizational Structure	<ul style="list-style-type: none"> <li>• Legal entity of IPA contracts with physicians and then in turn contracts with payers</li> <li>• IPA may be able to accept financial risk</li> <li>• IPA could carry out UM and QM functions</li> </ul>	<ul style="list-style-type: none"> <li>• Based on an organizational structure around PCPs</li> <li>• Coordinate all care for patients</li> <li>• Focused on providing patient centered quality care</li> </ul>
Contracting Considerations	<ul style="list-style-type: none"> <li>• IPA has a stronger hold in negotiations, as it controls a significant portion of the delivery system</li> <li>• A payer's ability to select/de-select individual physicians is much more limited with an IPA</li> <li>• PCMH needs to consider payment/incentives tied to quality</li> </ul>	

- (b) List the capabilities of a contract management system.

**Commentary on Question:**

*Most candidates did well on this question.*

- Identify network gaps
- Track recruiting efforts
- Generate new contract blanks
- Store copies of different versions
- Track and report contract changes
- Track and manage permissions and sign-offs
- Store images of signed documents
- Support an entirely paperless process
- Early notification or reminders for upcoming actions such as recredentialing
- Direct electronic feed of required demographic information
- Direct electronic feed of market-facing systems
- Be searchable on multiple attributes

- (c) List the healthcare administration data sources and formats.

**Commentary on Question:**

*Very few candidates listed the formats of the data sources.*

## 6. Continued

- Medical claims: (ANSI) X12 837
  - Pharmacy claims – submitted in a format maintained by the National Council of Prescription Drug Programs
  - Eligibility information
  - Electronic Medical Records
- (d) Describe the key data fields required to reprice claims to the Medicare fee schedule.

**Commentary on Question:**

*Many candidates listed the components of the Medicare payment formula instead of describing the data fields.*

- Place of service – place of service indicates which fee to use. (Facility vs non-facility).
  - CPT/HCPCS – Procedural information and level of service information provided by evaluation and management codes
  - Modifier Code – Medicare has different fees for professional and assistant surgeons.
  - Provider zip code - The geographic practice cost index is dependent on provider zip and captures price variations for different localities
  - Service date - incurred date.
- (e)
- (i) Propose a professional payment rate that maximizes PG's profit. Assume no change to the total bundled payment rate. State your assumptions and justify your response.
- (ii) Propose a rate where PG should walk away from the negotiation. Justify your response.

**Commentary on Question:**

*Many candidates proposed payment rates that would maximize the profit of the insurer rather than the physician group. Very few candidates considered that PG is a high quality physician group when developing their recommendation. Since this was a recommendation, the solution below is one possibility, but not the only correct answer.*

- (i) Profit maximization:
- PG is a high quality provider group and should be paid at the high end of the current payment schedule.
  - To maximize profit the payment rate should be at  $19\% * \$30,000 = \$5,700$

## 6. Continued

(ii) Rate floor:

- Given that PG is a high quality provider, they should not accept a payment proposal that is less than the average of 15%.  $15\% * \$30,000 = \$4,500$  should be the rate at which PG should walk away.

## 7. Learning Objectives:

3. The candidate will understand and apply valuation principles for insurance contracts.

### Learning Outcomes:

- (3a) Describe the types of claim reserves (e.g., due and unpaid, ICOS, IBNR, LAE, PVANYD).
- (3b) Explain the limitations and applications of the various valuation methods.
- (3c) Calculate appropriate claim reserves given data.

### Sources:

GHA-115-16: Individual Health Insurance, Bluhm, Leida, 2nd Edition 2015, Ch. 6 Reserves and Liabilities

ASOP 5

### Commentary on Question:

*This question was testing the candidates understanding of the triangulation method, as well as their ability to critique this method. Overall candidates did fairly well on this problem. Common mistakes are provided below within each part.*

### Solution:

- (a) Describe the methods used for estimating incurred claims, according to Actuarial Standards of Practice.

#### Commentary on Question:

*In general candidates did well on part a. Partial credit given for describing each method. Simply listing each item without a description was given no credit.*

#### A) Development Method—

- a. This method is appropriate and widely used for short-term benefits having processed claims (i.e., not capitation) and may also be appropriate for long-term claims.
- b. It typically requires monthly (or quarterly) claim summary reports split by period of incurral and period of processing.
- c. Estimates the percentage or amount of completion needed to project all future yet unrecorded claims accruable to the valuation period, for each block of business.

## 7. Continued

### Tabular Method—

The tabular method is generally used for known long-term claims and may be required by regulatory standards to estimate the unpaid claims liability using life annuity values, continuance probabilities, or commutation function tables.

### Other Methods—

Multiplying the number of reported claims by the average size of previously closed claims;

Multiplying projected cost per unit by exposure units;

Multiplying projected cost per service by service counts;

Multiplying earned premium by an estimated loss ratio

- (b) Calculate the reserve as of 12/31/2016 for claims incurred for the second half of 2016 using the triangulation method. Show your work.

### Commentary on Question:

*Several candidates used an averaging methodology instead of calculating the completion factors themselves. Also numerous candidates used July's factors as the completion factors. Partial credit was given in both of these scenarios.*

### B) Put claims on cumulative basis

Cumulative Paid	Incurred					
	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16
Jul-16	50	-	-	-	-	-
Aug-16	350	40	-	-	-	-
Sep-16	750	340	70	-	-	-
Oct-16	950	790	570	30	-	-
Nov-16	1,020	990	1,070	530	50	-
Dec-16	1,060	1,070	1,270	930	650	200

## 7. Continued

Develop completion ratios

Completion Ratios	Incurred					
Paid	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16
Jul-16	0.143					
Aug-16	0.467	0.118				
Sep-16	0.789	0.430	0.123			
Oct-16	0.931	0.798	0.533	0.057		
Nov-16	0.962	0.925	0.843	0.570	0.077	
Dec-16	1.000	na	na	na	na	na

Calculate completion factors

Completion Factors, Final	Incurred					
Paid	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16
Jul-16	0.047					
Aug-16	0.330	0.036				
Sep-16	0.708	0.306	0.049			
Oct-16	0.896	0.710	0.400	0.024		
Nov-16	0.962	0.890	0.750	0.427	0.033	
Dec-16	1.000	0.962	0.890	0.750	0.427	0.033

## 7. Continued

Calculate reserve as ultimate claims less cumulative paid claims

Cumulative and Ultimate Paid Claims	Incurred					
	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16
Paid	1,060	1,070	1,270	930	650	200
Ultimate	1,060	1,112	1,426	1,240	1,521	6,082

Final reserve = \$7,261

- (c) Describe shortcomings of the triangulation method.

**Commentary on Question:**

*Most candidates did very well on this piece.*

- Assumes past claim runout pattern is representative of the future one, which may not always be the case.
- Unexplained fluctuations in the claim payouts may inappropriately skew reserve estimates.
- When working with months closer to the current time, where there is less actual data to base the estimates, the most complete months may only have a fraction of total claims paid at the time of the analysis. This could provide a very small sampling of the ultimate total payout.

- (d)
- Calculate the revised reserve as of 12/31/2016, using the claim cost method to replace the non-credible claims PMPMs. Show your work.
  - Recommend an alternative credibility threshold. Justify your response.
  - Calculate the revised reserve under this new threshold. Show your work.

**Commentary on Question:**

*Partial credit was given for various PMPM substitution values. Most candidates did fairly well on this part. Common mistakes were using July ultimate PMPM as the proxy for the non-credible months and using paid PMPMs. Instead of recommending a new credibility threshold, several candidates recommended smoothing techniques. Several candidates also proposed using a credibility threshold lower than the original 35%. These scenarios received partial credit.*

## 7. Continued

- (i) Calculate ultimate PMPMs with results from triangulation method

Ultimate PMPM	Incurred						
	Paid	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16
Dec-16	\$	\$	\$	\$	\$	\$	\$
	88.33	92.66	118.87	103.32	126.71	506.84	

Recognize that completion factor for December 2016 is below threshold  
 Calculate average PMPM for July – Nov '16: \$105.98 PMPM  
 Replace non-credible December 2016 ultimate PMPM with \$105.98 PMPM  
 Calculate IBNR using resulting ultimates

	Incurred						Total	Final Reserve
	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16		
Paid	1,060	1,070	1,270	930	650	200	5,180	
Ultimate	1,060	1,112	1,426	1,240	1,521	1,272	7,631	2,451

- (ii) Alternative should be between 50-75% per text – candidate will choose a number and provide justification. For example: a higher threshold will better control the fluctuations that can occur in recent months.
- (iii) Calculate new average PMPM, excluding November: \$100.80 (Any answer between 50-75% will yield the same calculation)

	Incurred						Total	Final Reserve
	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16		
Paid	1,060	1,070	1,270	930	650	200	5,180	
Ultimate	1,060	1,112	1,426	1,240	1,210	1,210	7,257	2,077



## 8. Learning Objectives:

2. Evaluate and apply techniques for claim utilization management, care management, and population health management.

### Learning Outcomes:

- (2a) Describe, compare and evaluate care management and population health programs and interventions.
- (2b) Estimate savings, utilization rate changes and return on investment as it applies to program evaluation.

### Sources:

Duncan 10

### Commentary on Question:

*Commentary listed underneath question component.*

### Solution:

- (a)
  - (i) Describe the three types of study design methods for disease management (DM) program evaluation.
  - (ii) List examples of each study design method.

### Commentary on Question:

*Students generally knew the three classifications of study design methods, and almost all students were able to list examples of each study design method. Overall students did fairly well on this part.*

*Many students mentioned the control group in Control Group methods without describing what this group is. Many students indicated the control group is the same group of people before implementing the DM program.*

*Many students mentioned not using the control group in Non-Control Group methods without describing what the methodology used under these methods.*

## 8. Continued

### 1. Control Group methods

Control group methods utilize an intervention group that receives the DM program and non-intervention group (the control group) that does not. Membership in the control group is matched to membership in the intervention group to establish equivalence between the two populations.

Examples include

- a. Random Control Group Method
- b. Geographic Control Group
- c. Temporal Control Group Method
- d. Participant as their own Control Method

### 2. Non-Control Group Methods

Non-control group methods are population methods that only involve a single population. These methods rely on estimation of population characteristics without the DM program to determine the improvement as a result of the DM program.

Examples include

- a. Services avoided method
- b. Clinical improvement method

### 3. Statistical Methods

Statistical methods do not rely on population characteristics, but instead use purely statistical techniques to determine the impact of the DM program.

Examples include

- a. Time Series Method
- b. Regression Discontinuity Method
- c. Benchmark Method

- (b) Recommend a DM program study design method. Justify your response.

#### **Commentary on Question:**

*This question assessed students on their ability to evaluate information against the requirements for the various study methods above. In order to receive full credit, students were required to sift through the provided information, identify the appropriate study method, and explain why that study method was appropriate as well as why other more preferred methods could not be used.*

## 8. Continued

*Many students incorrectly identified this study data as suitable for a temporal control method. However, temporal control methods/the actuarially adjusted historical control method require equivalence of both the intervention population and the non-intervention population. The non-intervention population is used to infer trends. The problem provided only for equivalence of the intervention population. The fact that trend from the non-intervention population is not equal to the 4% trend provided in the problem suggests that these populations are indeed not equivalent. Partial credit was given to students who identified population equivalence in support of use of a temporal control method in their response.*

I recommend a services avoided method. Since we have population equivalence for the intervention population and trend in the absence of the DM program, we have all the data necessary to conduct this kind of analysis. This study design is well-understood by stakeholders, though there are still concerns around the selection of service trend.

Control group studies are preferred, but the data given does not provide enough information to determine a statistically valid control group. The data does not provide sufficient detail for a statistical method.

- (c) Calculate the total savings of the DM program. Show your work.

**Commentary on Question:**

*Students generally understood the concept of calculating savings, though many students approached this as they would approach a savings calculation for a temporal control group method. Partial credit was given for students who did not calculate appropriate values for one portion of the solution as long as the other portions were calculated appropriately using the inaccurate value.*

$$\text{Total Savings} = \text{Avoided Services} * \text{Service Cost}$$

$$\begin{aligned} \text{Service Cost} &= \text{Total Cost of Managed Services/Managed Service utilization} \\ &= 9,350,000/8,500 = \$1,100 \text{ per service} \end{aligned}$$

$$\text{Avoided Services} = \text{Expected Services} - \text{Actual Services}$$

$$\begin{aligned} \text{Expected Services} &= 2015 \text{ Services per } 1,000 * (1 + \text{Trend}) * 2016 \text{ MMs}/1,000 \\ &= (6,750/15) * (1.04) * 20,000/1,000 \\ &= 450 * 1.04 * 20 \\ &= 9,360 \end{aligned}$$

$$\text{Avoided Services} = 9,360 - 8,500 = 860$$

$$\text{Total Savings} = 860 * \$1,100 = \$946,000$$

## 9. Learning Objectives:

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

### Learning Outcomes:

- (4a) Understand the risks and opportunities associated with a given coverage, eligibility requirement or funding mechanism.
- (4c) Recommends strategies for minimizing or properly pricing for risks.

### Sources:

Group Insurance – Seventh Edition: Chapter 27 – Experience Rating & Funding Methods, and Chapter 30 – Group Insurance Underwriting

### Commentary on Question:

*Commentary listed underneath question component.*

### Solution:

- (a) Describe the criteria LI should consider to evaluate the retrospective experience rating proposal for BTM.

#### Commentary on Question:

*Most candidates listed the appropriate things to consider when evaluating the retrospective experience formula, however numerous candidates did not describe why these criteria.*

**Group Size** – A minimum size is critical to offer a retrospective experience rating proposal. Larger membership counts leads to more stable claims experience.

**Contract Provisions Regarding the Funding Arrangement** – A retrospective premium arrangement substantially changes the risks under an insurance contract and such an arrangement will replace the normal experience rating formula.

**Company Policies and Practices** – An insurer’s policies and practices will be an overriding factor.

**Company Financial Situation** - Unless a specified refund formula is guaranteed by the terms of the contract, the insurer’s overall financial health is an overriding factor in any refund situation.

## 9. Continued

### Characteristics of the Group

- **Age and gender** – Age is a highly correlating factor with future mortality and morbidity. Gender mix also impacts both life and health claim costs, and age-gender factors are good predictors for several specific medical conditions
- **Location or area** – There are significant regional and local differences in health care practices and prices.
- **Type of industry** – Some industries expose employees to health hazards or to high stress levels, while other industries have high costs because of benefit entitlement attitudes or close proximity and access to the health care system.
- **Financial strength** – Business downturns often lead to reductions in staff. Since downsizing tends to be uneven among job classes, age groups, and locations, it can result in dramatic shifts in demographic factors.
- **Ease of administration** – Underlying administrative costs are a major consideration for the group underwriter and client. A major component of the case review is devoted to evaluating the customer's ability to provide accurate and timely data on employee enrollment, terminations, and status changes.
- **Level of participation** – To the extent that credible claim experience reflects the current participation levels, the underwriter has to anticipate future enrollment changes in developing prices or caveats.
- **Carrier persistency** – Groups that go to market every year, or every time a rate guarantee expires, may find fewer and fewer bidders.

- (b) Describe challenges when reviewing Group Life claim experience for experience rating.

### Commentary on Question:

*Most candidates did not perform well on this section of the question as they only listed assumptions to review and/or data issues that should be considered, which are pertinent to all types of rating vs. specific to Group Life.*

1. Group Life experience tends to be volatile due to low frequency and wide variation in amounts of coverage.
2. Industry practices vary with respect to pooling, disability waiver of premium reserves, conversion charges, portability, report close-out dates, and interest payments to beneficiaries.
3. Basic life plans or Employer paid life plans tend to be more stable than optional life plans, which tend to be employee-paid and offer more choices.

## 9. Continued

- (c) Calculate the deficit or surplus at 6/30/2017. Show your work.

### Commentary on Question:

*Candidates generally performed well on this question, typically only making minor errors, if they completed all 3 years in computing the surplus/deficit. Some common errors included neither accounting for interest nor the premium stabilization reserve. Numerous candidates also only calculated the cash flow for the final year, ignoring the carry forward surplus from prior years.*

Formula Balance = (Prior Formula Balance carried forward) + (Investment earnings on money held) + (Premiums) - (Claims charged) - (Expenses charged) - (Risk & Profit charged) - (Premium stabilization reserve).

		July 1, 2014 - June 30, 2015	July 1, 2015 - June 30, 2016	July 1, 2016 - June 30, 2017
a	Prior Balance Carried Forward	\$0	\$240,000	\$312,200
b	Interest	\$0	\$7,200	\$9,366
c	<b>Total Balance</b>	<b>\$0</b>	<b>\$247,200</b>	<b>\$321,566</b>
	<i>a + b</i>			
d	Total Premium	\$12,000,000	\$13,500,000	\$14,000,000
e	Pooled Premium	\$0	\$925,000	\$925,000
f	<b>Net Premium</b>	<b>\$12,000,000</b>	<b>\$12,575,000</b>	<b>\$13,075,000</b>
	<i>d - e</i>			
g	Total Paid Claims	\$10,080,000	\$10,530,000	\$10,220,000
h	Pooled Claims	\$0	\$450,000	\$675,000
i	Change in Reserves	\$0	\$540,000	\$460,000
j	Legal Claims	\$0	\$0	\$120,000
k	<b>Incurred Claims</b>	<b>\$10,080,000</b>	<b>\$10,620,000</b>	<b>\$10,125,000</b>
	<i>g - h + i + j</i>			
l	Expenses	\$1,320,000	\$1,485,000	\$1,540,000
m	Risk & Profit	\$360,000	\$405,000	\$420,000
	<i>d * 11%</i>			
	<i>d * 3%</i>			
n	Experience Refund	\$240,000	\$312,200	\$1,311,566
o	Stabilization Reserve	\$500,000	\$500,000	\$500,000
p	<b>Refund Final Balance</b>	<b>\$0</b>	<b>\$0</b>	<b>\$811,566</b>
	<i>c + f - k - l - m</i>			
	<i>n - o</i>			

## 9. Continued

- (d) Propose contractual clauses LI should include in the final retrospective proposal to BTM. Justify your response.

**Commentary on Question:**

*Candidates typically only listed one item below as a suggested contractual clause missing the opportunity to make recommendations on other modifications that could be made. Candidates should be sure to provide justification in their recommendations when asked.*

**Retrospective Experience Rating Calculation** – The calculation should be defined along with all fees, expenses, profits and risk charges.

**Contract Term** – Should define the contract term as these arrangements are cumbersome and difficult to administer. It should also be clear in the contract if termination is allowed in a deficit position.

**Refund Payment** – The time of the payment should be defined allowing for reasonable reserve run-off, so deficits are not likely when refunds have been paid out.

**Service Level Agreements** – Must define all service level agreements within the contract terms must not deviate from the normal administrative standard offered by LI.

## 10. Learning Objectives:

2. Evaluate and apply techniques for claim utilization management, care management, and population health management.

### Learning Outcomes:

- (2a) Describe, compare and evaluate care management and population health programs and interventions.
- (2c) Describe the considerations in the design, implementation and evaluation of a care management program.

### Sources:

Duncan Chapter 4

### Commentary on Question:

*Commentary listed underneath question component.*

### Solution:

- (a) List the measurement issues encountered when developing study designs for disease management (DM) programs.

#### Commentary on Question:

*Most candidates performed well on this part of the question and received full or partial credit. Because the question asks the candidate to only list measurement issues, candidates who listed measurement issues and candidates who listed and described measurement issues each received equal credit.*

- Appropriate outcome to measure
  - Determining ending and starting time periods
  - Total medical costs versus disease-specific medical costs
  - Data quality issues
  - Regression to the mean
  - Patient identification/eligibility
  - Patient selection bias
  - Outliers
- (b) Evaluate the reasonableness of the data provided to you by HoldEm DM in Exhibits 8 and 9. Justify your response.



## 10. Continued

### **Commentary on Question:**

*This part of the question was testing the candidate's ability to review data results from two different studies completed on the same DM program and assess reasonableness of the results. Few candidates demonstrated an ability to appropriately assess the reasonableness of the data provided in this question.*

*Candidates who were able to recognize the large variance in the cost/admit or admits/1,000 between the two exhibits received full credit. Partial credit was given to candidates who identified other potential issues that should be investigated, but were not able to identify discrepancies in the numbers directly.*

Exhibit 8 suggests a baseline heart failure admits per thousand of  $[7,050 / (10,000 / 1,000)] = 705$ , and an intervention period heart failure admits per thousand of  $[8,360 / (11,925 / 1,000)] = 701$ .

Exhibit 9 suggests a heart failure admits per thousand around 100-200.

Exhibit 8 suggests a baseline heart failure cost per admit of  $\$2,500 * 10,000 / 7,050 = \$3,546$ , and an intervention period heart failure cost per admit of  $\$2,550 * 11,925 / 8,360 = \$3,637$ .

Exhibit 9 suggests a heart failure cost per admit of roughly \$16,000.

The data in Exhibits 8 and 9 suggest stark differences in admits per thousand and cost per admit, but both exhibits are indicative of the same disease management program. The data are not reasonable and need to be further reviewed and vetted with HoldEm before making any conclusions about the qualitative and financial effectiveness of Royal Health's heart failure disease management program.

## 11. 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.
- (1c) Describe the credentialing and contracting process for providers.

### Sources:

Essentials of Managed Health Care, Kongstvedt, 6th Edition, 2013, Ch. 4

Evaluating Bundled Payment Contracting, Dong, Fitch, Pyenson and Rains-McNally, 2011

### Commentary on Question:

*This question tests the candidate's understanding of contract negotiations between payers and providers including calculation of total costs and distribution of payments and risk.*

*Most candidates were able to correctly answer some portion of the question, and most demonstrated at least a basic understanding of the mathematical calculation in part c.*

### Solution:

- (a) Describe the contract negotiation process between payers and providers.

#### Commentary on Question:

*Few candidates received full credit on this question. Candidates generally understood that negotiations were back and forth but most failed to describe additional aspects of the process.*

*Credit was given for valid descriptions in addition to the below example.*

- The contract negotiation process involves multiple rounds of back and forth
- It's unusual for parties to get a quick agreement as each wants to optimize its outcome
- Any disclosure of data by one party is strategic and done to support the party's goal in negotiation
- When parties get to an agreement, hospital and payer will use the first year as the "base" and negotiate a percentage increase for a multiyear contract

## 11. Continued

- (b) Describe a hospital's goals in negotiating with payers.

**Commentary on Question:**

*Most candidates received full credit for this portion. Credit was also given for correct descriptions of goals not stated below.*

Hospitals seek to:

- Obtain the most favorable payment terms possible
- Ensure they will not be excluded from the network of a large payer
- Receive direct payment from the plan, thereby avoiding the need to collect from the patient
- Receive timely payment
- Have defined rights around disputed claims.

- (c) Calculate a bundled payment rate for kidney transplants such that Lynd's expected revenue for Montenegro Hospital is unchanged, when assuming facility charges are based on:

- (i) Lynd's contract effective 1/1/2018.  
(ii) Montenegro's contract effective 1/1/2018.

Show your work.

**Commentary on Question:**

*Most candidates who attempted this question received most or full credit for Lynd's contract calculation. Very few candidate correctly calculated the amount based on Montenegro's contract.*

- (i)  
Lynd's Contract Rate - \$102,500

Pre-op Professional Services – 20% \* (7,000 + 4,000 + 7,000 + 5,000) + 10% \*  
(7,000 + 5,000) = \$1400 + \$800 + \$1400 + \$1000 + \$700 + \$500 = \$5,800

Post Discharge Professional Services – 20% \* (27k + 26k + 31k + 23k) + 10% \*  
(26k + 27k) = \$5400 + \$5200 + \$6200 + \$4600 + \$2600 + \$2700 =  
\$26,700

Bundled Payment Rate for Part i - **\$135,000** = \$102,500 + \$5,800 + \$26,700

## 11. Continued

(ii)

Facility Charges for Montenegro's Contract -  $(20\% * 5 * \$6100 + 50\% * (20\% * \$188,000 + 20\% * \$202,000 + 20\% * 252,000 + 10\% * \$285,000 + 10\% * \$348,000)) = \$6,100 + 50\% * (\$37,600 + \$40,400 + \$50,400 + \$28,500 + \$34,800) = \$6,100 + \$95,850 = \$101,950$

Bundled Payment Rate for Part ii - **\$134,450** = \$101,950 + \$5,800 + \$ 26,700

- (d) Recommend contract terms Lynd should include in a bundled payment contract with Royale Health. Justify your response.

### **Commentary on Question:**

*To receive full credit, candidates were required to explain/justify why each term should be included. Credit was given for appropriate terms/justifications, even if not listed below.*

*Most candidates received partial credit on this portion, though few received full credit.*

- Lynd should make sure the episode is clearly defined/delineated – including what pre/post transplant care is included in the bundle. This ensures Lynd can bill for and is paid consistent with its expectations in negotiating the contract.
- Lynd should make sure there are appropriate provisions for handling outlier cases. They may seek stop-loss or catastrophic provisions for handling complicated cases or situations with high comorbidities/complexities, but need to ensure they don't suffer a large loss on an unexpectedly complicated/costly transplant that was not anticipated when they negotiated the contract.
- Lynd should make sure the volume and scope of the transplants will result in fairly predictable costs/services. If there is volatility, Lynd should make sure payments are adjusted to capture the actual mix of case complexity/cost.
- If post-op care is included in the bundle, Lynd should ensure that it can control the providers/cost of services. If it can't, Lynd should have the post-op care carved-out to protect against unanticipated costs that it must pay / pass through to other providers.

## 12. Learning Objectives:

3. The candidate will understand and apply valuation principles for insurance contracts.

### Learning Outcomes:

- (3c) Calculate appropriate claim reserves given data.
- (3g) Apply applicable standards of practice related to reserving.

### Sources:

Group Insurance, Skwire, 7th Edition, 2016 - Ch. 37 Claim Reserves for Short-Term Benefits

GHA-115-16: Individual Health Insurance, Bluhm, Leida, 2nd Edition 2015 - Ch. 6 Reserves and Liabilities

### Commentary on Question:

*Commentary listed underneath question component.*

### Solution:

- (a) List governing documents for the setting of reserves and liabilities in United States and Canada.

#### Answer to the question:

- U.S. Statutory Governing Documents
  - NAIC Accounting Practices and Procedures Manual (APPM), including Statements of Statutory Accounting Principles (SSAPs)
  - NAIC model Standard Valuation Law (SVL)
  - NAIC model Actuarial Opinion and Memorandum Regulation (AOMR)
  - NAIC model Health Insurance Reserves Model Regulation
  - NAIC Health Reserve Guidance Manual
- Canadian Governing Documents
  - GAAP principles published by the CPA
  - The Canadian Income Tax Act governs the tax basis for insurers
- U.S. GAAP Governing Documents
  - FASB Statements and Interpretations, as well as FASB Technical Bulletins
  - AICPA Statements of Opinion, Industry Audit and Accounting Guides

## 12. Continued

- Tax Governing Documents
    - IRS code and related documents (regulations, opinions, tax court decisions, legislative committee reports, and IRS private letter rulings).
  - Actuarial Governing Documents
    - ASOP #5: Incurred health and disability claims
    - ASOP #22: Statements of Opinion Based on Asset Adequacy Analysis by Actuaries for Life or Health Insurers
    - ASOP #23: Data Quality
    - ASOP #28: Statements of Actuarial Opinion Regarding Health Insurance Liabilities and Assets
    - ASOP #41: Actuarial Communications
    - ASOP #42: Determining Health and Disability Liabilities Other than Liabilities for Incurred Claims
- (b) Describe the considerations in setting claim reserves.

**Answer to the question:**

- Controls and reconciliation
  - Ensure that the data being used reconcile and are consistent with the data and reporting practices used by the accounting department.
- Internal company practices
  - Fluctuating payment patterns can be caused by staffing practices and staffing events (such as vacations and layoffs, or unusual weather such as snow storms or floods), changes in computer systems, and other company specific practices.
- External influences
  - Company lags can also be affected by environmental influences, such as epidemics, governmental mandates, or new laws.
- Policy provisions
  - Disability claims will have a long runout due to the month by month payment pattern and general duration of disabilities.
  - Major medical claims will have a faster runout, since most of the services will occur closer to the date of accident or illness.
  - For life insurance, claims are paid within a few months of death, thus producing an even more predictable runout than for A&H claims.

## 12. Continued

- Insurance characteristics
  - New plans have long lags initially for the following reasons:
    - Insureds' lack of familiarity with plan benefits and claim filing procedures;
    - Impact of any pre-existing condition provisions; and
    - Company's lack of familiarity with a new type of benefit.
  - Once this initial period after issue has passed, lags will typically become shorter, still later, lags may eventually increase over time, due to the severity of claims increasing over time.
- Reserve cells
  - Reserve cells can be set up by group size (individual, small group, large group), by medically underwritten versus guaranteed issue, by over 65 versus under 65, by deductible size, by network, or by region. Insurers also reserve for Medicare vs. non-Medicare members.
- Managed care
  - If managed care results in changes in utilization levels, particularly relating to large claims that have longer lags, the underlying lag factors may change.
    - Many reimbursement contracts with hospitals include "outlier provisions", governing the treatment of large claims.
  - Managed care programs often involve provider risk sharing arrangements such as withholds, capitated services, settlements, or bonus or incentive payments.
- Trends
  - Trends refer to the changes in the cost of medical claims over time, but trends will not often have a dramatic impact on lag factors unless the trends change dramatically over a short period of time.
- Seasonality
  - If claims may increase or decrease significantly at various times of the year, then lags should be studied by seasonal and not calendar-year periods.
- Economic conditions
  - Recessions will affect claims for elective treatments, such as dental and cosmetic surgery, but cause an increase in incidences and durations of claim where people fear the loss of coverage.
- Claim administrative expenses
  - Accounting standards require recognition of a liability for the administrative expenses related to the incurred but not paid claims.

## 12. Continued

- (c) Calculate the incurred but not reported (IBNR) reserve for the incurred months July 2016 – September 2016 for the Quantum Legacy III Individual block of business as of December 31, 2016 under the following scenarios:
- (i) The loss development pattern of July 2015 is representative of all expected future payments.
  - (ii) The loss development pattern of December 2015 is representative of all expected future payments.

Show your work.

### Commentary on Question:

- *In order to get the maximum points allowed in this question, candidates needed to arrive at the correct result.*
- *The vast majority of candidates scored well on this part of the question.*
- *Candidates who did not score well did not correctly calculate the % of Ultimate, the Ultimate Payments and the IBNRs.*

### Answer to the question:

- (i) The loss development pattern of July 2015 is representative of all expected future payments.
- % of Ultimate
    - Sept-16 =  $1,563,000 / 1,843,000 = 84.8\%$
    - Aug-16 =  $1,715,000 / 1,843,000 = 93.1\%$
    - Jul-16 =  $1,753,000 / 1,843,000 = 95.1\%$
  - Ultimate Payments
    - Sept-16 =  $1,400,000 / 84.8\% = 1,650,800$
    - Aug-16 =  $1,230,000 / 93.1\% = 1,321,802$
    - Jul-16 =  $1,166,000 / 95.1\% = 1,225,863$
  - IBNR
    - Sept-16 =  $1,650,800 - 1,400,000 = 250,800$
    - Aug-16 =  $1,321,802 - 1,230,000 = 91,802$
    - Jul-16 =  $1,225,863 - 1,166,000 = 59,803$
    - Total =  $250,800 + 91,802 + 59,803 = 402,465$



## 12. Continued

(ii) The loss development pattern of December 2015 is representative of all expected future payments.

- % of Ultimate
  - Sept-16 =  $1,564,000 / 1,683,000 = 92.9\%$
  - Aug-16 =  $1,635,000 / 1,683,000 = 97.1\%$
  - Jul-16 =  $1,650,000 / 1,683,000 = 98.0\%$
- Ultimate Payments
  - Sept-16 =  $1,400,000 / 92.9\% = 1,506,522$
  - Aug-16 =  $1,230,000 / 97.1\% = 1,266,110$
  - Jul-16 =  $1,166,000 / 98.0\% = 1,189,320$
- IBNR
  - Sept-16 =  $1,506,522 - 1,400,000 = 106,522$
  - Aug-16 =  $1,266,110 - 1,230,000 = 36,110$
  - Jul-16 =  $1,189,320 - 1,166,000 = 23,320$
  - Total =  $106,522 + 36,110 + 23,320 = 165,952$

(d) Critique the difference in results obtained in (c).

### Commentary on Question:

- *In order to get the maximum points allowed in this question, the candidates must have critiqued the difference in results obtained in (c), with meaningful comments on results.*

### Example of acceptable answer to the question:

- The IBNRs obtained in (i) and (ii) are quite different. The December 2015 development pattern completed much faster than the July 2015 pattern. Also, one month's development pattern is not likely credible and does not usually provide a stable basis due to differences in:
  - Seasonality in claims
  - Staffing issues (vacations, workload, claims backlog, etc.)
  - Random fluctuation from month to month
  - Risk mix
  - Changes in plan design or benefits
  - Trends in claims
  - Catastrophic events

It is more reasonable and appropriate to average several months' patterns to account for these differences.

## 12. Continued

- (e) Recommend a reserving approach that may produce more accurate claim reserve values. Justify your response.

**Commentary on Question:**

- *In order to get full credit for this question, the candidate must have recommended a reserving approach that may produce more accurate results and justify its rationale.*
- *Most candidates did well on this part of the question.*
- *Candidates who scored well recommended a reserving approach and explained its rationale.*

**Example of acceptable answer to the question:**

- More accurate results could be obtained by averaging 12 months of development patterns using smoothing techniques for age-to-age factors like removing high and low values of weighed averaging among others. I also recommend to not use completion factors for the most recent months as they are not credible. I would recommend alternative methods like the loss ratio or projected method for the most recent months.

### 13. Learning Objectives:

4. The candidate will understand how to apply principles of pricing, risk assessment 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) Understand, evaluate and apply various risk adjustment mechanisms.
- (4c) Recommends strategies for minimizing or properly pricing for risks.

#### Sources:

Group Insurance, Skwire, 7th Edition, 2016; Ch. 31 Managing Selection in a Multiple-Choice Environment

#### Commentary on Question:

*Commentary listed underneath question component.*

#### Solution:

- (a) Describe the advantages and disadvantages of offering a self-insured plan with an ASO arrangement.

#### Commentary on Question:

*The candidates generally did well on this part of the question and earned most of the points. The question asked to “describe” the advantages and disadvantages, so full credit was not awarded to candidates who just provided bullet points.*

Advantages of offering self-insured plan with an ASO arrangement

1. Cost Savings - avoid premium tax, minimize retention and/or admin charges
2. Plan Design Flexibility- Not subject to state mandated benefits or insurer offering
3. Claim management - can hire own TPA to administer the plan and pay claims
4. Cash Flow - Sponsor's cash position is improved because the sponsor holds IBNR reserve
5. Investment Income - Sponsor can earn investment income on reserve and cash flows

### 13. Continued

Disadvantages of offering self-insured plan with an ASO arrangement

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

- (b) Calculate the anti-selection cost for 2016. Show your work.

**Commentary on Question:**

*Candidates were asked to calculate and compare the claims cost and the collected premium to arrive at the anti-selection cost. Answers showing the correct anti-selection cost as a PMPM or the total cost were awarded the full credit.*

*Candidates were awarded partial credit for minor calculation errors. The majority of the candidates received most of the points for this part of the question.*

Risk Class	Enrollment	Claim Cost	Premium
Low	8,925	\$560.00	\$425.00
Medium	2,600	\$679.00	\$700.00
High	725	\$787.00	\$700.00
Combined	12,250	\$598.69	\$499.64

$$\text{Total Cost} = \$7,333,975 = \$560 \times 8,925 + \$679 \times 2,600 + \$787 \times 725$$

$$\text{Total Premium} = \$6,120,625 = \$425 \times 8,925 + \$700 \times (2,600 + 725)$$

$$\text{Anti-Selection Cost} = \text{Total Cost} - \text{Total Premium} = \$1,213,350$$

$$\text{Anti-Selection PMPM} = \$1,213,350 / 12,250 = \$99.05$$

- (c) Calculate the relative health status factor for each option in 2017, assuming that premiums for all options are increased by the anti-selection cost. Show your work.

### 13. Continued

**Commentary on Question:**

*The health status factor does not need to take into consideration the premiums; some candidates added in the anti-selection cost from the previous part of the question. Candidates that arrived at the correct health status factor (with calculation steps) for each plan was awarded full credit; correct answers that combined the health status factor for the PPO plans were also awarded full credit. There was a fair distribution of scores on this part of the question with a cohort earning all of the points and a cohort earning minimal or no points.*

Risk Class	Enrollment	Plan Option	Original Claim Cost	Trended Claim Cost	Health Risk Factor (Trended Claim Cost / Avg Trended Claim Cost)
Low	8,925	HDHP	\$560.00	\$610.40	94% (\$610.40 / \$652.57)
Medium	2,600	PPO	\$679.00	\$740.11	113% (\$740.11 / \$652.57)
High	725	PPO	\$787.00	\$857.83	131% (\$857.83 / \$652.57)
Combined	12,250	N/A	\$598.69	\$652.57	100%

HDHP: 94% = \$610.40 / \$652.57

PPO = 117% = (2,600/3,325) x 113% + (725/3,325) x 131%

- (d) Recommend specific plan design changes so that each option becomes profitable without charging the anti-selection cost. Justify your response.

**Commentary on Question:**

*Candidates were challenged on this part of the question. Most candidates identified levers to mitigate the cost without necessarily providing calculations or the conclusion that only the High Deductible Health Plan required plan changes; there is no need to make plan changes for the PPO plan.*

Plan	Enrollment	Cost (A)	Premium (B)	Cost as % of Premium (A/B)
HDHP	8,925	\$4,998,000 (\$560x8,925)	\$3,793,125 (\$425x8,925)	131.8%
PPO	3,325	\$2,335,975 (\$679x2,600+\$787x725)	\$2,327,500 (\$700x3,325)	100.4%
Total	12,250	\$7,333,975	\$6,120,625	119.8%

**HDHP Plan**

- Currently it is not profitable
- Need to lower the overall cost of the HDHP → decrease the plan value
- Possible plan design considerations are
  - increase deductible/coinsurance/out-of-pocket maximum
  - remove adult vision benefits

### 13. Continued

PPO Plan

- Cost as a percent of premium is close to 100%
- No need to modify the plan design

- (e) Calculate the required increase in the pooling charge for 2017, assuming that the stop loss deductible for 2017 will stay at \$100,000. Show your work.

**Commentary on Question:**

*The candidates did well on this part of the question – candidates received full credit if they showed calculation steps and arrived at the correct answer below. Candidates that calculated the correct needed cost increase on a PMPM basis or cost basis also received full credit. Candidates with minor calculation errors were not awarded full credit but still received partial credit for the correct methodology as long as the calculation steps were clearly outlined.*

Claimant/ Category	2016 Claims	2016 Deductible	2016 Net Claims	2017 Claims	2017 Deductible	2017 Net Claims
J	\$125,000	\$100,000	\$25,000	\$136,250	\$100,000	\$36,250
A	\$500,000	\$100,000	\$400,000	\$545,000	\$100,000	\$445,000
M	\$185,000	\$100,000	\$85,000	\$201,650	\$100,000	\$101,650
E	\$135,000	\$100,000	\$35,000	\$147,150	\$100,000	\$47,150
S	\$300,000	\$100,000	\$200,000	\$327,000	\$100,000	\$227,000
B	\$150,000	\$100,000	\$50,000	\$163,500	\$100,000	\$63,500
O	\$160,000	\$100,000	\$60,000	\$174,400	\$100,000	\$74,400
N	\$275,000	\$100,000	\$175,000	\$299,750	\$100,000	\$199,750
D	\$195,000	\$100,000	\$95,000	\$212,550	\$100,000	\$112,550
Total	\$2,025,000	\$900,000	\$1,125,000	\$2,207,250	\$900,000	\$1,307,250

Trend = 9%

2017 Claims = 2016 Claims x (1+Trend)

Required Increase in Pooling Charge = 2017 Net Claims / 2016 Net Claims  
 = \$1,307,250 / \$1,125,000  
 = 16.2%

- (f) Explain why the answer obtained in (e) is different from the expected trend rate.

**Commentary on Question:**

*Candidates who were able to identify that the difference is due to trend leveraging and provide an explanation received full credit for this question. The majority of the candidates received full credit for this part of the question.*

### 13. Continued

The answer obtained in part (e) is different from the expected trend rate due to the effects of trend leveraging. The stop loss deductible is left at \$100,000 and with a 9% trend, the portion of the claim in excess of \$100,000 will exceed 9%. For example, if the claim is at \$150,000 and the stop loss deductible is at \$100,000, the excess is \$50,000 in 2016. With a 9% trend, the claim will be at \$163,500 in 2017 and the excess will be at \$63,500. The excess will increase by  $(\$63,500 - \$50,000) / \$50,000 - 1 = 27\%$ .

## 14. 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.
- (1d) Understand accountable care organizations and medical patient home models and their impact on quality, utilization and costs.
- (1f) Describe quality measures and their impact on provider reimbursement.

### Sources:

GHA-110-15: Commonwealth Fund Paper – The Final Rule for the Medicare Shared Savings Program

### Commentary on Question:

*This question tested the candidate's understanding of the MSSP and calculation of savings under the MSSP.*

### Solution:

- (a) Identify which provider the enrollee will be attributed to under the Medicare Shared Savings Program (MSSP). Justify your response.

#### Commentary on Question:

*The majority of candidates understood specialists are to be excluded, however most candidates based their decision on the number of visits instead of allowed amount, and therefore incorrectly identified Provider A as their answer.*

MSSP Attribution is based on the primary care provider who provides the greatest amount of services, as defined by allowed dollars. Specialists are not included in the MSSP attribution model, therefore Provider C is eliminated. Provider B provided a larger share of the allowed dollars than Provider A, therefore the member is attributed to Provider B.

- (b) Calculate the spending benchmark for 2017 under the MSSP. Show your work.

#### Commentary on Question:

*Most candidates were able to answer this part correctly, but several candidates used incorrect weights for each of the experience periods. Please note, candidates could have interpreted the enrollment to be members or member months, and we accepted solutions using either of these interpretations. This solution assumes the enrollment given is member months.*



## 14. Continued

The spending benchmark is based on a blend of risk adjusted, trended experience from 2014-2016, with each 2014, 2015, and 2016 receiving weights of 10%, 30%, and 60%, respectively.

Step 1 is to calculate the risk adjusted and trended baseline costs for each year, as follows:

$$2014: ([\text{Allowed cost}] / [\text{Member Months}] / [\text{2014 Risk Score}] * [\text{Trend to 2017}]) \\ (\$8,000,000 / 10,000) / 1.05 \times [1.04 \times 1.05 \times 1.03] = \$856.96$$

$$2015: ([\text{Allowed cost}] / [\text{Member Months}] / [\text{2015 Risk Score}] * [\text{Trend to 2017}]) \\ (\$7,500,000 / 10,000) / 1.10 \times [1.05 \times 1.03] = \$737.39$$

$$2016: ([\text{Allowed cost}] / [\text{Member Months}] / [\text{2016 Risk Score}] * [\text{Trend to 2017}]) \\ (\$8,250,000 / 10,000) / 0.95 \times 1.03 = \$894.47$$

Step 2 is to weight the 3 years together:

$$\$856.96 \times 10\% + \$737.39 \times 30\% + \$894.47 \times 60\% = \$843.60$$

Step 3 is to risk adjust the target

$$\$843.60 \times 0.95 = \$801.42$$

- (c) Calculate the ACO's share of any savings or losses generated under the MSSP on a PMPM basis. Show your work.

### **Commentary on Question:**

*Several candidates answered this part correctly, but many did not correctly risk adjust the cost target. Please note, the solution below assumes enrollment given in Part b is member months. We also accepted solutions based on a cost target which was calculated assuming members.*

Step 1: Risk adjust the cost target

$$\text{Target} = \$801.42 / 0.95 = \$843.60$$

Step 2: Calculate gross surplus

$$\$843.60 - \$825.00 = \$18.60$$

## 14. Continued

Step 3: Calculate quality adjusted surplus

$$\$18.60 \times 60\% = \$11.16$$

Since the gross settlement exceeds the minimum risk corridor of 2%, the ACO will receive a surplus payment of \$11.16 PMPM.

- (d) Critique the ACO's decision to participate in a 2-sided agreement.

**Commentary on Question:**

*Candidates struggled to utilize the information given in the question to develop a comprehensive solution. Very few candidates considered the impact of quality in their solution and instead focused solely on the surplus/deficit in part C to form the basis of their response.*

The ACO's decision should consider several things (listed below). Participation may be right for the ACO if it has the financial capacity to withstand the possible outcomes, particularly if it is skilled both at maximizing quality and controlling medical spending.

- The ACO should consider its ability to withstand the range of financial outcomes
- Shared savings/loss percentages vary based on quality scores
- Maximizing the quality score maximizes the ACO's share of savings and minimizes its share of losses
- Quality scores are partially based on relative performance so no guarantee ACO can achieve maximum quality score

## 15. Learning Objectives:

2. Evaluate and apply techniques for claim utilization management, care management, and population health management.

### Learning Outcomes:

- (2a) Describe, compare and evaluate care management and population health programs and interventions.
- (2c) Describe the considerations in the design, implementation and evaluation of a care management program.

### Sources:

IHI Guide to Measuring the Triple Aim

### Commentary on Question:

*Overall candidates did well on this exam question. The primary objective was for a candidate to show an understanding in the similarities and differences of the Triple Aim and more common disease management initiatives.*

### Solution:

- (a) Describe the purpose of the Triple Aim.

#### Commentary on Question:

*Many candidates for this question only listed the three pillars of the Triple Aim. To receive full credit a candidate had to explain what the Triple Aim is and that it uses the three pillars to improve care.*

- It is the statement of purpose for fundamentally new health systems that contribute to the overall health of populations while reducing costs
- The 3 pillars of the aim are simultaneously improving population health, improving patient experience, and lowering per capita costs

- (b) Describe potential outcome measures for each dimension of the Triple Aim.

#### Commentary on Question:

*Most candidates did very well on this part of the question, as there is a wide array of items that could be used for each dimension. Candidates that didn't receive full credit typically only provided one example for each dimension.*

- Population Health – revolve around health outcomes and can include mortality (years of life lost, life expectancy, etc), Health and functional status, and healthy life expectancy
- Experience of Care – standard questions from patient surveys, institute of medicine's six aims for improvement
- Per capita costs – Total cost per member of the population, hospital/ER utilization rates

## 15. Continued

- (c) Compare and contrast the Triple Aim to traditional disease management program interventions.

**Commentary on Question:**

*Candidates tended to do well on this part of the question, and the common answers listed were that they are both methods to evaluate impact of well-being and that disease management focuses on chronic populations. To receive full credit candidates needed to provide more than one comparison and more than one contrast.*

- Compare
  - Both are methods of evaluating a program's impact of overall well-being
  - Both contain statistical methods to evaluating program success
  - Measurement principles are very similar
    - Defined population
    - Experience over a period of time
    - Distinguish between outcome and process measures, along with population and project measures
    - Need benchmark or comparison data
  - Can be difficult to calculate overall impact on the population
- Contrast
  - DM evaluates chronic population, triple aim is for the entire population
  - DM focuses on the physician patient relationship where triple aim requires interaction between all impacted relationships
  - DM typically focuses on clinical and financial outcomes, not necessarily the patient experience portion of the interaction