GH RM Model Solutions
Fall 2023

1.

Learning Objectives:
3.   The candidate will understand how to evaluate healthcare intervention programs.

Learning Outcomes:
(3a)   Describe, compare and evaluate programs.

Sources:
Managing and Evaluating Healthcare Intervention Programs, Duncan, Ian G., 2nd Edition, 2014, Ch. 9: Applying the Economic Model: The Example of Opportunity Analysis

Valuation of Care Management Vendors, Health Watch, May 2020

Commentary on Question:
This question tested general candidate knowledge on techniques for implementing and evaluating care management solutions.

Solution:
(a)

(i)   Describe the Opportunity Analysis process.

(ii)   Explain the purpose and considerations for each of the following steps in the Opportunity Analysis process when designing a care management program:

- Analytics
- Evidence
- Economics

The Opportunity Analysis process extends traditional predictive modeling by matching opportunities within a client's populations to care management programs. It is retrospective (analyzing past data to identify patient population as high opportunity) but applied prospectively to current members based on the characteristics targeted in the intervention period. OA has a two-dimension nature:
- Members are segmented by severity, need, utilization, and intervenability
- Programs are organized by target, resource cost and effectiveness

1.   Continued

Analytics
- The purpose of analytical profiling is to segment members in broad groups that consist of like conditions and are amenable to different types of intervention applied to their care management program
- An example of stratification maps diagnoses to condition categories, such as Episodic, Chronic, Mental Health, Emerging.
- Further useful segmentation may be made by cost and frequency

Evidence
- The purpose is to conduct a literature review to identify programs or interventions that function well (improve quality of care and reduce utilization and cost)
- Proposed programs should be efficacious (evidence demonstrates clinical effectiveness), cost-effective (expected benefits exceed the program cost), and generalizable (risk profile and characteristics of the study population is similar to our target population)
- Three-step process: search for relevant publications (casting a wide net using searching tools like Google Scholar or PubMed), assess the quality of evidence (peer-reviewed studies that use high evidence methods such as randomized controlled trials are usually better), and determine generalizability (recent studies from the same country are preferable).

Economics
- A key consideration is the ability to risk-rank a population using appropriate predictive modeling.
- The process should result in an expected cost per risk-ranked patient.
- This is then compared with the program cost per intervened patient to determines at which level to intervene using determined financial goals, such as ROI target or marginal savings objectives.

(b)   Assess the merits of Opportunity Analysis in response to the director's concern.

Commentary on Question:
Nearly all candidates correctly pointed out that clinicians using rules-based methods were ineffective at targeting patients for CM intervention, scoring at least partial credit. The candidates that performed best also described several points, explaining the merits of OA.

- Studies found that clinicians are not particularly good at identifying high-risk patients
- In a resource-constrained environment, we must carefully consider the economics of program planning which are often ignored or misunderstood by clinicians

1.   Continued

- OA provides a structured approach for understanding which subpopulations are amenable to intervention and its likely value
- The structured financial model provides a specific plan with targets to compare to actual outcomes and a framework to help identify areas where the program could be improved

(c)   Describe adjustments to consider for material differences between the two populations.

Commentary on Question:
Most candidates received some credit on this part of the question. Candidates needed to describe, and not just list, adjustments to receive full credit.

- Scope
  The definition of included procedures in vendor specific data can change over time as new codes are added and others become obsolete.
- Trend
  Over any significant period of time, changes in average cost per service and utilization must be accounted for. Effect of vendor's introduced care management should be removed.
- Class of claims
  How savings are measured (billed, allowed, or paid dollars or some combination) can affect how calculations should be performed and the trend impact on copay leveraging.
- Seasonality
  If data and/or projections do not comprise complete years, adjustments may have to be made for seasonal patterns in utilization.
- Episodic care
  In some cases where a vendor's activities are specific to a given set of procedures, there can be a corresponding effect on associated procedures not included in the vendor contract.
- Care shifting
  If an insurer is going to stop paying, or pay less, for a specific type of claim, it's possible that provider behavior will respond by shifting care to other types of claims that have not been impacted by the vendor's care management.
- Risk adjustment
  Average risk level may vary over time, between covered and noncovered populations, or between test and control populations. Where risk factors are available, they can be used to identify and adjust for such variance.
- Overlap
  If multiple vendors or company initiatives affect the same types of claims for the same population, there is a risk of giving a vendor credit for savings generated by a different initiative.

1. **Continued**

- Credibility
  The credibility of the measured savings may be limited in cases where vendor activities only affect a small number of people, or experience period is relatively short.
- Delay in claim impact
  A care management initiative may not become fully effective upon implementation. This can have a pronounced effect on savings measurement in the first year and sometimes beyond that.

2. **Learning Objectives:**
3.   The candidate will understand how to evaluate healthcare intervention programs.

Learning Outcomes:
(3a)   Describe, compare and evaluate programs.

(3b)   Estimate savings, utilization rate changes and return on investment.

(3d)   Calculate chronic and non-chronic trends in a manner that reflects patient risk.

Sources:
Managing and Evaluating Healthcare Intervention Programs, Duncan, Ian G., 2nd Edition, 2014, Ch. 12: An Actuarial Method for Evaluating Care Management Outcomes (excluding Appendix 12.2- 12.3)

Managing and Evaluating Healthcare Intervention Programs, Duncan, Ian G., 2nd Edition, 2014, Ch. 13: Understanding Patient Risk and Its Impact on Chronic and Non-Chronic Member Trends

Commentary on Question:
Commentary listed underneath question component.

Solution:
(a)   Describe how to initially classify targeted members for the disease management program.

Commentary on Question:
Candidates needed to have the correct ordering for the initial classification of targeted members to receive full credit.

1. All eligible health plan members are first split between chronic (aka suitable) members and non-chronic (aka index) members,
2. Then chronic members are split between included members and excluded members,
3. Then included members are split between members targeted for the DM program and those not targeted for the program.

(b)   Describe reasons for excluding members from the measured population.

member class is not receptive to DM (e.g., residents of LTC, hospice, other institutions) who are under the care of resident clinical personnel.

member is a candidate, but the program is administered by another vendor (e.g., mental health, substance abuse, behavioral condition)

2.   Continued

pattern of claims is subject to sharp discontinuity and thus distort a trend calculation.

member's claims are significant and will likely dominate the group and introduce "noise" to the calculation.

ESRD, transplants, HIV/AIDS, Members who are institutionalized (mental health, hospice, or nursing home)

(c)

(i)   Describe an often-implicit assumption on which the actuarially adjusted historical control methodology relies.

(ii)   Describe challenges of an actuarially based disease management savings calculation.

(iii)   Describe how actuaries can address these challenges.

Commentary on Question:
Many candidates had difficulty answering this part of the question.

(i)   It relies on the equivalence between the populations included in the baseline and measurement period. A criteria is used to decide whether to include a member in the population during baseline and intervention period. We can assume they are comparable and thus equivalent since for each period the population uses the same objective criteria.

(ii)   Applying the appropriate trend rate – need to use a trend rate that reflects the expected utilization without intervention. It is difficult to calculate because it's hard to find out the true value without intervention since the group will be managed and thus wouldn't be able to see what would happen without intervention. Equivalence between baseline and measurement period – need to account for changes in mix of continuing, new, and terminating members and changes in condition and comorbidities.

(iii)   Applying the appropriate trend rate – should use the nonchronic trend rate since the chronic trend would be impacted by disease management efforts. Should also need to account for average risk between populations and periods.

2. **Continued**

> Equivalence between baseline and measurement period – can be done be reweighting the claims cost of the different groups to account for mix change. In addition, risk adjust the claims cost to reflect the change in risk between periods.

You have led a transition state analysis on high-risk, medium-risk, and low-risk chronic members in Periods 1, 2, and 3. The analysis leads to the following observations in Period 1:

Risk Members	Cost Per Member Per Year (PMPY)	Risk-Mix
High	$50,000	5%
Medium	$5,000	55%
Low	$500	40%

For Period 2, you observe that the risk-mix of high-risk members increased 100 basis points, while the low-risk members' risk-mix did not change. For Period 3, the risk-mix of low-risk members increased 200 basis points, while the high-risk members' risk-mix did not change.

You are also given the following:

- There are no other categories of risk members
- The cost PMPY remains the same from Period 1 to Period 2
- From Period 2 to Period 3, the high-risk members cost PMPY decreased 10% while the low-risk members cost PMPY increased 10%

(d) Calculate the trend from Periods 1 to 2 and from Periods 2 to 3. Show your work.

Risk Members	Period 1 Distribution	Period 1 Cost	Period 2 Distribution	Period 2 Cost	Period 3 Distribution	Period 3 Cost
High	5%	$50,000	6%	$50,000	6%	$45,000
Medium	55%	$5,000	54%	$5,000	52%	$5,000
Low	40%	$500	40%	$500	42%	$550
Average		$5,450		$5,900		$5,531
Trend				8.26%		-6.25%

(.05 x 50,000) + (.55 x 5,000) + (.40 x 500) = 5,450
(.06 x 50,000) + (.54 x 5,000) + (.40 x 500) = 5,900   (5,900 / 5,450) – 1 = 8.26%
(.06 x 45,000) + (.52 x 5,000) + (.42 x 550) = 5,531   (5,531 / 5,900) – 1 = -6.25%

> You are given the following on a different member cohort:

2. **Continued**

	Units per 1000	Unit Cost
Baseline	100	$8,000
Trend	1.05	1.10
Actual	99	$8,800

(e)

    (i)   Verify the PMPM savings for the member cohort is equivalent on a utilization unit basis and cost basis. Show your work.

    (ii)   Explain the importance of the results in (i).

Commentary on Question:
A lot of candidates had difficulty answering part (ii) for this part of the question.

(i)

	Units per 1000	Unit Cost	Cost PMPM
Baseline	100	$8,000	100 x 8000 / 12000 = $66.67
Trend	1.05	1.1	
Trended Baseline	105	$8,800	105 x 8800 / 12000 = $77.00
Actual	99	$8,800	99 x 8800 / 12000 = $72.60
Reduction	6		$77.00 - $72.60 = $4.40
	6 x 8800 / 12000 = $4.40		

The above calculations verifies that both methods generated equivalent savings of $4.40 PMPM.

    (ii)   The two calculations show the same results. This is because baseline unit cost trend happens to be the same as the actual unit cost.

           The importance of the above results lie in that it is essential to have an accurate estimate of unit cost trend from baseline period and whether baseline unit cost multiply by trend will be equal to the actual unit cost in the measurement period will determine the validity of the actuarially control methodology. If these two numbers do not agree, then the savings can be overestimated or underestimated.

3. **Learning Objectives:**

1. The candidate will understand how to evaluate and recommend an employee benefit strategy.

Learning Outcomes:

(1c) Recommend an employee benefit strategy in light of an employer's objectives.

Sources:

GHRM-102-23: Recommend an Employee Benefits Strategy

Commentary on Question:

In general, a lot of candidates knew the material at a high level. Very few candidates gave enough detail or understood the simplified underwriting calculation well enough to receive full credit on any of the three parts.

Solution:

(a) Calculate the claims PEPM if the parent company transitions all subscribers to Carrier A's CDHP with HSA, using simplified underwriting. Show your work.

Commentary on Question:

Many candidates understood the need to adjust the plans for different actuarial values and cost of care values. Despite the problem being presented in an almost identical way to the study note (Table 9), very few candidates applied the simplified underwriting calculations correctly.

First, calculate a combined row for the table using sum for subscriber counts and sumproduct for the other columns.

Current Design	Subscribers	Claims PEPM	AV Without Account Funding	Cost of Care Adj to Patient Carrier
CDHP with HSA	6,300	765	79.00%	1
CDHP with HRA	5,750	694	77.00%	1
PPO High	2,100	1,150	86.00%	0.98
PPO Core	6,300	709	77.00%	0.98
Combined, Company A CDHP with HSA	**20,450**	**767.32**	**78.54%**	**0.992**

Second, calculate the AV Adjustment to CDHP with HSA design.
Formula: CDHP with HSA's AV without Account Funding divided by Current Design's Actuarial Value Without Account Funding.
CDHP with HSA = 79%/79% = 1.000
CDHP with HRA = 79%/77% = 1.026
PPO High = 79%/86% = .919
PPO Core = 79%/77% = 1.026
Combined sumproduct with subscriber count = 1.007

Third, calculate the Claims Adjusted to CDHP with HSA.
Formula: Claims per Employee per Month * AV Adjustment to CDHP with HSA * Cost of Care Adjustment to Parent Carrier.
CDHP with HSA = 765*1.000*1.000 = 765
CDHP with HRA = 694*1.026*1.000 = 712.03

3. **Continued**

PPO High = 1150*0.919*0.98 = 1035.27
PPO Core = 709*1.026*0.98 = 712.87
Combined, CDHP with HSA = 767.32*0.992*1.007 = **766.30**

(b) Evaluate reasons for and against the parent company offering alternative plan design options besides only a CDHP with HSA.

Commentary on Question:
Most candidates performed well on this part of the question and generally provided a few reasons for and against offering alternate plan designs.

Reasons For an HRA
·   Contributions made by the employer are excluded from gross income
·   Doesn't require an HDHP
·   Fewer limitations on contribution limits
Reasons Against an HRA
·   An HRA is not portable, i.e. funds are forfeited upon employee termination
·   Only employer funded
Reasons For other options
·   Greater plan selection
·   Only about 30% of subscribers are in the existing HSA option today
Reasons Against other options
·   CDHPs encourage individuals to take greater responsibility of their health care choices (i.e. consumerism)
·   Potential for adverse selection
·   Added administrative burden with multiple options

(c) Assess whether each Division is subject to penalties under the Employer Shared Responsibility rules included in the Patient Protection and Affordable Care Act. Justify your response.

Commentary on Question:
Most candidates knew the two potential penalties. Some of the more detailed aspects of the regulations were lost on most candidates. Few candidates demonstrated the ability to correctly apply the regulation to the information given in the question.

- If an employer has at least 50 full-time employees, it is an applicable large employer (ALE), and is therefore subject to the employer shared responsibility provisions and the employer information reporting provisions.

3. **Continued**

- Companies with a common owner are generally combined and treated as a single employer for determining ALE status. If the combined number of full-time employees for the group is large enough to meet the definition of an ALE, then each employer in the group is part of an ALE and is subject to the employer shared responsibility provisions, even if separately the employer would not be an ALE.
- Divisions X and Y are separate members of an ALE for purposes of PPACA.
- A U.S. Code Section 4980H(a) penalty may apply if an employer does not offer MEC (Minimum Essential Coverage) to at least 95% of its full-time employees and at least one full-time employee enrolls in an Exchange plan and receives a federal subsidy.
- Division X offered cover to 92% (24,000 / 26,000) of FTEs. This is less than 95%, therefore A is subject to a penalty.
- A U.S. Code Section 4980H(b) penalty applies if an employer offers MEC to at least 95% of full-time employees but coverage is either "unaffordable," or does not provide "minimum actuarial value" (60%). So, if contributions are less than 9.66% x $11,880 (FPL for single person in continental United States) / 12 = $95.63, the plan is considered "affordable".
- Division X's lowest cost plan has an actuarial value of 79.0%, which exceeds the 60% minimum actuarial value threshold. The plan is also considered affordable since the monthly contribution for single coverage for Division A's plan is $92. Division X would not be subject to any 4980H(b) penalties.
- Since Division Y does not subsidize coverage, its coverage may not be considered "affordable" for all employees. The seven employees enrolled in the Exchange plans all had household incomes of less than $30,000 per year, so the monthly contribution for single coverage exceeded 9.66% of the household income and is therefore not considered affordable. So, Division Y is subject to the 4980H(b) penalty.

4. **Learning Objectives:**

2. The candidate will understand how to evaluate the effectiveness of different provider reimbursement methods from both a cost and quality point of view.

Learning Outcomes:

(2a) Calculate provider payments under various reimbursement methods.

(2b) Evaluate standard contracting methods from a cost-effective & quality perspective.

(2c) Understand contracts between providers and insurers.

Sources:

Provider Payment Arrangements, Provider Risk, and Their Relationship with Cost of Healthcare, 2015 (excluding Appendices)

GHRM-104-23: Evaluating Bundled Payment Contracting

GHRM-109-23: The Application of Tiering in Healthcare

GHRM-114-23: Chapter 45 of Group Insurance, Skwire, Daniel, 8th Edition, 2021

Value-Based Care Framework, The Actuary, Apr 2020

The Cost of Value-Based Care, The Actuary, Apr 2020

Commentary on Question:
Commentary listed underneath question component.

Solution:

(a) Describe various provider payment models.

> **Commentary on Question**:
> *Most candidates performed well on this part of the question.*
>
> 1. Bundled payment – one payment per procedure / admission – typically including all services associated with that procedure
> 2. Fee for Service – contracted fixed amount for each specific service / fee schedule
> 3. Shared Savings – provider shares in gain / loss based on provider's performance and quality against a benchmark
> 4. Global Capitation – pay one rate per member (regardless of utilization)
> 5. Pay for Performance – payment based on quality of hospital / provider
> 6. Diagnosis Related Group (DRG) – similar to bundled payment, pays per admission to hospital that is reflective of underlying diagnosis

4. **Continued**

7. Per Diem – pays for each day of an admission
8. Reference Pricing – set a maximum reimbursement rate that will be paid regardless of the provider

(b)   You have been asked to address concerns regarding the cost volatility of certain procedures in the insurer's network of three hospitals. Your first focus is cardiac stent procedures.

You are given the following information for cardiac stent procedures:

	Hospital A	Hospital B	Hospital C	Hospital D	Hospital E
Annual Admits	450	200	325	150	500
Average Length of Stay (Days)	3.5	2.4	4.1	2.7	4.0
Paid Cost per Day	$3,200	$3,600	$3,800	$4,100	$2,900
Member Coinsurance at Hospital	20%	20%	20%	20%	20%

(i)   Calculate a bundled payment for cardiac stent procedures. Show your work.

(ii)   Recommend which hospital(s), if any, should be re-contracted for this procedure. Justify your response.

Commentary on Question:
Some candidates viewed the term re-contracting to mean not just changing an existing contract but also to renew or adjust an existing contract with the other hospitals. Credit was given to well thought out responses that proposed re-contracting the other hospitals.

(i)

	Hospital A	Hospital B	Hospital C	Hospital D	Hospital E
Allowed Cost per Day	$4,000	$4,500	$4,750	$5,125	$3,625
Total Cost per Procedure	$14,000	$10,800	$19,475	$13,838	$14,500
Bundled Payment (Weighted Avg)	$14,840				

(ii)   Hospital C should be re-contracted at the bundled rate because this would result in a lower cost to the insurer.

4. **Continued**

(c)   Your leadership has proposed a bundled payment to all five hospitals. The CEO of Hospital C has threatened to terminate their contract with the insurer over this proposal. You have been asked to evaluate the following actions to resolve the issue with Hospital C.

Action	Description
Implement Tiered Payment System	Tier Member Coinsurance at Hospital C
Implement Shared Savings Arrangement	Set a benchmark for cardiac stent procedures, and share 50% of the surplus or deficit with Hospital C
Terminate Hospital C	Hospital C becomes out-of-network where member coinsurance is increased. Allowed costs for Hospital C will increase 10%

Describe advantages and disadvantages of each action for addressing the issue.

Solution:
   o
Tiered Payment System – steer members to more efficient providers through lower member cost sharing

Pros:
- Provider continues to be in-network
- Members are steered to high-quality, lower cost hospitals through lower member cost share

Cons:
- Provider may not like being evaluated on quality or may not be receptive to being classified in a non-preferred tier.

Shared Savings Arrangement – Provider gets a bundled rate and shares in savings and deficit

Pros:
- Retain the savings.
- Encourages the provider to be efficient.

Cons:
- Provider may not be willing to take on risk
- Appropriate benchmark tricky to calculate
- Administratively complex to administer

Termination – no longer list Hosp C as In-Network

4. **Continued**

      Pros:
- lessen admin burden of negotiation.
- Steer patient from expensive provider.
- Lower costs

      Cons:
- may lose network adequacy in certain specialties, losing efficient provider, member abrasion.
- May leave members with no choice.
- Also, may be good in other treatments.

(d)   Calculate the member coinsurance or benchmark required for each action in part (c) to generate the same savings as the bundled payment proposal. Show your work.

	per admit cost to start	$15,580
	per admit cost with bundling	$11,872
	Savings for Bundling per admit	$3,708
Tiering	Plan Portion	61%
	Total Cost at C	$19,475
	New Per Admit Cost	$11,872
Shared Savings	Benchmark	$22,996
	Savings/Deficit	$7,416
	Insurer Share	$3,708
Termination	Plan portion	55%
	Cost increase	10%
	New Cost	$21,423
	New Per Admit Cost	$11,872

5. **Learning Objectives:**
4. The candidate will understand how to apply risk adjustment in actuarial work.

Learning Outcomes:
(4a) Integrate reinsurance arrangements within an overall risk management strategy.

Sources:
GHRM-113-23: Ch. 18 of Life & Health and Annuity Reinsurance, 4th Edition

Commentary on Question:
Commentary listed underneath question component.

Solution:
(a) Describe nonproportional reinsurance methods common for health and disability insurance

Commentary on Question:
Candidates generally performed well on this part of the question. Candidates needed to not just list but provide an accurate description to earn full credit.

Extended Wait
- This method is used primarily for periodic payment benefits, e.g. disability income or long term care.
- Reinsurance benefits begin only after the claim has reached a specified duration or amount. This period before reinsurance can be viewed as a deductible at the ceding company's expense
- The ceding company can reinsure a proportion of claim amounts or retain a flat amount after the extended wait period

Excess Reinsurance or Stop Loss
- This method provides coverage for claims in excess of a defined level, thus stopping the loss of the ceding company at that level.
- Most common reinsurance method for major medical coverages
- Specific/Individual and Aggregate coverage are two methods of providing stop loss. They are often used in conjunction for self-insured plans and are usually provided by the same provider.

Specific stop loss or Individual Excess provides payment if the total benefits on a single individual exceed a specified dollar amount, referred to as the attachment point, trigger point, or excess/individual/high deductible
Aggregate stop loss or aggregate coverage provides payment if total retained claims on an entire employee group or a portfolio of policies exceed a specified attachment point, which is typically defined as a percentage of expected claims.

5. Continued

Specified benefits or carve out benefits
- This method is often offered without any requirement for the ceding company to retain any of the specified risks, thus allowing insurers to offer broader coverage without assuming the risks.
- Reinsurers typically provide coverage on a per capita rate for the specified benefits, which may include premature births, organ transplants, a continuing list of experimental treatments, or managed care for certain types of treatments

Claim Takeover and Runoff Blocks
- A process where the reinsurer assumes the risk on future runoff of a known block of claims which typically works best with long tail benefits such as disability income or LTC.
- Reinsurer usually wants control over future claims administrations as it assumes the full risk and makes its own assessment of claim recoveries, deaths, investment income, and other cost assumptions at proposal

Catastrophe Covers providing reinsurance coverage in the event of a catastrophe is often sought for accidental benefits insurance, but uncommon for health

(b) Calculate the total percentage reduction in aggregate claims spend from the DM program for each of the intervention years under the following scenarios:

    (i)   Propose three arrangements based on different reinsurance methods. Justify your response.

    (ii)   Calculate the reinsured and retained claims under each arrangement using 2022 claims. Show your work..

Commentary on Question:
Some candidates proposed the same method with only the parameters changing. Candidates needed to propose three separate arrangements to earn full credit. In addition to the arrangements shown below, candidates also earned full credit for proposing Aggregate Stop Loss and Combined Specific and Aggregate Stop Loss.

(i)
- Specific Stop Loss plan: e.g. $75,000 retention limit on individual claims
- Carve out coverages: e.g. Organ Transplant and Premature Births
- Quota share coinsurance: e.g. 90% quota share, meaning 10% of claims are reinsured

5. **Continued**

    (ii)   Total Plan Cost = Total Member Months * Net Benefit Cost PMPM = 500,000 * 452.12 = 226,060,000

Specific Stop Loss
Individual Retention Limit = $75,000
Annual Value Per Member = Value of Net Benefit Cost in Excess of High End of Range = 724.94
Reinsured Cost in 2022 = Annual Value Per Member*Member Months/12 = 724.94*500,000/12 = 30,205,833
Retained Cost in 2022 = Total Plan Cost – Reinsured Cost = 226,060,000 – 30,205,833 = 195,854,167

Carve Out Benefits
The reinsurer is at risk for the cost of Organ Transplants and Premature Births, which includes both the Hospital and Physician components.
Organ Transplant Net Cost PMPM = 20.34 + 3.14 = 23.48
Premature Births Net Cost PMPM = 7.52 + 0.75 = 8.27
Reinsured Cost in 2022 = (23.48 + 8.27)*500,000 = 15,875,000
Retained Cost in 2022 = Total Plan Cost – Reinsured Cost = 226,060,000 – 15,875,000 = 210,185,000

Quota Share Coinsurance
Quota Share Percentage = 90%
Reinsured Cost in 2022 = (100-90)% * Total Plan Cost = 10%*226,060,000 = 22,606,000
Retained Cost in 2022 = Total Plan Cost – Reinsured Cost = 226,060,000 – 22,606,000 = 203,454,000

(c)   Calculate expected costs for 2024 under each of your proposed reinsurance arrangements. Show your work.

Commentary on Question:
Many candidates struggled to calculate the correct expected costs under each proposed reinsurance arrangement.

Average Cost Trend: 5.0%
Average Use Trend: 1.5%
Expected 2024 Gross PMPM Cost = 475.55 * [(1+5.0%)*(1+1.5%)]^2 = 540.14
Expected 2024 PMPM Value of Flat Copays = 23.43*(1+1.5%)^2=24.14
Expected 2024 Net Benefit Cost PMPM = 540.14-24.14=516.00
Trend Factor = 516.00/452.12 = 1.1413

5. **Continued**

Apply trend factor to average costs in CPD distribution assuming constant frequency distribution:

Range of claims	High End of Range of Claims	Frequency	2024 Average Annual Net Claims	Annual Net Benefit Cost	Accumulated Frequency	Accumulated Annual Net Benefit Cost	Accumulated Monthly Net Benefit Cost	Value of Net Benefit Cost in Excess of High End of Range
25000,01-50000	50,000	0.017500	42,798	748.97	0.035000	2,992.96	249.41	1368.99
50000,01-75000	75,000	0.007500	74,754	560.66	0.017500	2,243.99	187.00	933.33
75000,01-100000	100,000	0.005000	97,010	485.05	0.010000	1,683.33	140.28	698.29

i.e. 2024 Average Annual Net Claims for 50,000-75,000 = 2022 Average Annual Net Claims * Trend Factor = 65,500*1.1413 = 74,754

Expected Cost Under No Reinsurance in 2024 = Expected 2024 Net Benefit Cost PMPM * Member Months = 516.00*500,000 = 258,000,000

Specific Stop Loss
Annual Value Per Member = Value of Net Benefit Cost in Excess of High End of Range = 933.33
Expected Reinsured Cost in 2024 = Annual Value Per Member * Membership = 933.33*500000/12 = 38,888,923
Expected Retained Cost in 2024 = Expected Cost Under No Reinsurance in 2024 – Expected Reinsured Cost in 2024 = 258,000,000 – 38,888,923 = 219,111,077
Reinsurance Premium = Expected Reinsured Cost in 2024/(1-Profit Load - Admin Load) = 38,888,923/(1–0.03–0.02) = 40,935,709
Total Expected Cost in 2024 = Expected Retained Cost in 2024 + Reinsurance Premium = 219,111,017 + 40,935,709 = 260,046,785

Carve Out Benefit
Organ Transplant Net Cost PMPM in 2024 = Organ Transplant Net Cost PMPM in 2022 * Trend Factor = 23.48 * $[(1.05) * (1.015)]^2$ = 26.67
Premature Births Net Cost PMPM in 2024 = Premature Births Net Cost PMPM in 2022 * Trend Factor = 8.27 * $[(1.05) * (1.015)]^2$ = 9.39
Expected Reinsured Cost in 2024 = (26.67+9.39) * 500,000 = 18,030,000
Expected Retained Cost in 2024 = 258,000,000 – 18,030,000 = 239,970,000
Reinsurance Premium = 18,030,000/(1-0.03-0.02) = 18,978,947
Total Expected Cost in 2024 = 18,978,947 + 239,070,000 = 258,948,947

5. **Continued**

       Quota Share
       Expected Reinsured Cost = Quota Share % * Expected Cost Under No
       Reinsurance in 2024 = (1-90%)*258,000,000 = 25,800,000
       Expected Retained Cost in 2024 = 258,000,000 – 25,800,000 = 232,200,000
       Reinsurance Premium = 25,800,000/(1-0.03-0.02)=27,157,895
       Total Expected Cost in 2024 = 232,200,000 + 27,157,895 = 259,357,895

(d)   Recommend whether your client should proceed with a reinsurance arrangement.
       Justify your response.

       Commentary on Question:
       Candidates generally performed well on this part of the question. In addition to
       the responses below, others consistent with the source material received credit.

- The benefits of reinsurance are based on considerations such as the plan sponsor's view of risk and the size of the group
- Medical plan sponsors reinsure coverages for protection against adverse fluctuations in experience.
- Since the plan sponsor wants to leave copays at the same level, this puts him at risk on trend leveraging. Excess reinsurance provides great risk mitigation for this risk
- Since reinsurance primarily covers larger claims, any negotiated fee agreements that relate to an insurer's claims will have a significant impact on the reinsurer's liability above the deductible
- The plan sponsor could transfer some of the risks of higher procedure costs or lower discounts and reduce total fluctuations by capping high cost claims or carving out some high cost benefits

6. **Learning Objectives:**
1. The candidate will understand how to evaluate and recommend an employee benefit strategy.

Learning Outcomes:
(1a) Describe structure of employee benefit plans and products offered and the rationale for offering these structures.

(1b) Describe elements of flexible benefit design and management.

(1c) Recommend an employee benefit strategy in light of an employer's objectives.

Sources:
The Handbook of Employee Benefits, Rosenbloom, Jerry, 7th Edition, 2011, Ch. 2: Functional Approach to Designing and Evaluating Employee Benefits

A Practical Guide to Private Exchanges, Health Watch, May 2015

Consumers to the Rescue? A Primer on HDHPs and HSAs, Health Watch, Feb 2019

GHRM-101-23: Health Plan Payroll Contribution Strategies and Development for Employers

The Handbook of Employee Benefits, Rosenbloom, Jerry, 7th Edition, 2011, Ch. 18: Selected Additional Benefits (pp. 491-496)

Commentary on Question:
This question tests the candidate's understanding of the functional approach in evaluating benefits, along with demonstrating knowledge of core considerations in evaluating plans. This includes understanding the plan offerings of both the private and public exchanges, unique characteristics of HDHPs, and how employee contributions could influence plan enrollment.

Solution:
(a) Explain why a functional approach is needed when planning, designing, and administering employee benefits.

Commentary on Question:
Candidates who were able to adequately express three or more of the points below generally received full credit on this part of the question.

6. **Continued**

- Employee benefits are a significant element of total employee compensation. Therefore, it is vital that this element of compensation be planned and organized to be effective in meeting employee needs.
- Employee benefits currently represent a large item of labor cost for employers. Therefore, effective planning and avoidance of waste in providing benefits can be an important cost-control measure for employers.
- Benefit plans may have been adopted on a piecemeal basis in the past without coordination with existing benefit programs. The functional approach reviews existing benefits to determine any overlaps, cost savings, and gaps in benefits.
- New benefits and coverages and changes in tax laws, regulatory environment, and other developments in employee benefit planning. Need a systematic approach to planning benefits and staying current/competitive/compliant.
- A program can relate to several employee needs or loss exposures. Functional approach can analyze plan so that various programs can be integrated properly.

(b)

(i) Describe common attributes central to private exchanges.

- Employee Choice - Private exchanges often offer more plan design options than traditional employer-sponsored plans. Depending on the private exchange, the available plan design options may be standardized.
- Employer Subsidies - Employers will subsidize the cost of coverage, often through a defined-contribution approach where the employee can "buy-up" for lower-cost-sharing provisions or "buy-down" for lower premiums.
- Ancillary Product Offerings - The private exchange will often offer ancillary products like dental and vision alongside the medical and pharmacy benefits via the exchange so that it's a complete "one-stop-shop" for health-related benefits.
- Online Enrollment and Decision-Making Tools - Online tools are becoming more sophisticated and user-friendly, allowing for members to evaluate their health care needs, understand their employer's subsidy, and elect benefits that meet their needs.

(ii) Compare and contrast elements of public and private exchanges.

Element	Public Exchange	Private Exchange
Who sponsors	Government	Employer
Who can enroll	Individuals and small groups	Employees and retirees of sponsoring employer
Types of coverage available	Medical and prescription drug	Medical, prescription drug, dental, vision and other voluntary benefits at the employer's discretion
Plan designs available	• Plans must provide actuarial values of 90, 80, 70, or 60 percent as defined by the federal Actuarial Value Calculator. • Individuals may be eligible for income-based reduced cost-sharing.	Exchange operator or employer defines the plan designs.
Who pays for coverage	• Individuals and small employer groups pay the premiums for coverage. • Individuals may be eligible for income-based government subsidies. • Small employers may be eligible for small business tax credits.	Employers provide a subsidy toward the cost of coverage and covered members pay the balance.

(c) Describe how high deductible health plan (HDHP) enrollees' behavior is modified by membership in a HDHP.

Commentary on Question:
Most candidates performed well on this part of the question.

- Saving for health care services - Since unused funds are owned by the HSA enrollee and are not lost, this encourages regular deposits into the account.
- Selecting a more appropriate treatment venue, such as using urgent care instead of the emergency room.
- Avoiding unnecessary care - Similarly, "shopping" may lead an enrollee to forgo treatment for minor ailments or avoid those treatments that have marginal benefit.
- Selecting generic prescription drugs instead of higher- cost, brand- name prescription drugs.
- Comparing quality ratings of providers - Online tools for quality rankings of providers are also growing and becoming more sophisticated.
- Negotiating prices with providers, particularly for costs under the deductible.

6. Continued

- Improving their own health and taking other illness avoidance measures - Enrollees make the connection between better health and lower out- of-pocket costs due to the combination of the HDHP and an HSA as incentives for the enrollee to reap the benefits of any health improvement activities.

Company ABC offers two HDHPs to its employees.
- Plan A has a monthly premium of $200.
- Plan B has a monthly premium of $400 with richer benefits than Plan A.

ABC wants to encourage greater employee enrollment in Plan A and is concerned about budget variations due to unexpected enrollment across plans.

(d)

(i)   Calculate the monthly employee payroll contribution for each of the following contribution approaches. Show your work.
   1. Defined benefit at 75% employer subsidy
   2. Defined contribution at $150 employer subsidy

(ii)   Recommend which contribution approach ABC should use. Justify your response.

Commentary on Question:
Most candidates performed well on this part of the question.

i.   Defined benefit at 75% employer subsidy

	Plan A	Plan B
Employer Subsidy	0.75 * 200 = 150	0.75 * 400 = 300
Payroll Contribution	200 – 150 = 50	400 – 300 = 100

ii.   Defined contribution at $150 employer subsidy

	Plan A	Plan B
Employer Subsidy	150	150
Payroll Contribution	200 – 150 = 50	400 – 150 = 250

ABC should choose the defined contribution approach since:
- Employer will contribute equally across employees regardless of employee enrollment in each plan, thus keeping budget stable.
- The wider difference in employee contributions results in cost transparency, thus incentivizing enrollment in leaner plans (Plan A).

7. **Learning Objectives:**

4. The candidate will understand how to apply risk adjustment in actuarial work.

Learning Outcomes:

(4b) Apply risk adjustment to underwriting, pricing, claims and care management situations

Sources:

Healthcare Risk Adjustment and Predictive Modeling, Duncan, Ian G., 2nd Edition, 2018, Ch. 13: Medicaid Risk Adjustment

Risk Adjustment in State Medicaid Programs, Health Watch, Jan 2008

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Describe steps for implementing risk adjustment into a Medicaid Managed Care Program.

Commentary on Question:

Candidates needed to not just list but provide an accurate description for each step to earn full credit.

2. Decide which risk adjustment system will be used (CDPS, ACG, etc.).
    o The goal of a risk adjustment system in Medicaid managed care is to accurately capture the overall relative risk at the MCO level, not at the individual level. It is important to choose a system based on the data used and the ability to customize the risk adjustment system.
3. Decide what types of data should be used in the risk adjustment system (the plan may be to change this over time).
    o Risk adjustment models should include demographic information (age, gender, and eligibility category).
    o There are three broad categories of additional data that risk adjustment models may use: diagnosis data from inpatient admissions, diagnosis data from outpatient services, and pharmacy data.
4. Decide which Medicaid eligibility groups with be risk-adjusted. In addition, some subpopulations may be excluded (i.e., AIDS and HIV).
    o There are two major considerations in deciding which rate categories to create and whether or not to apply risk adjustment within that rate category: 1) to what degree does health status vary among beneficiaries in the rate category, and 2) will the risk adjustment system appropriately capture health status variations for that category.

7. **Continued**

5. Decide whether to employ a prospective or concurrent risk adjustment system.
   o Prospective risk adjustment uses experience period data to estimate morbidity for a future period. Concurrent risk adjustment uses experience period data to estimate morbidity during that same time period. Concurrent risk adjustment is more accurate than prospective risk adjustment.
   o Although a concurrent model would do the best job of estimating exactly how much variation in risk exists from one MCO to another, most states have chosen to use a prospective model because retroactive adjustments to rates are not favored by states or MCOs.
6. Decide whether to base the risk adjustment factors on the individuals enrolled during the rating period or during the experience period ("individual" vs. "aggregate" approach).
   o In the individual approach, risk scores for individuals are calculated during the experience period and the risk scores follow beneficiaries through the system. The risk adjustment factor for a given MCO is the weighted average of the risk scores for the beneficiaries enrolled during the rating period.
   o In the aggregate approach, the average risk score for enrollees during the experience period is assumed to represent the average risk of enrollees during the rating period.
   o The main advantage of the aggregate approach is that it assigns a claims based risk score to new enrollees.
7. Decide whether or not to customize the risk weights inherent in the risk adjustment model.
   o Customization of risk weights is often necessary for a state Medicaid risk adjustment system based on differences in the state program as compared to the population underlying the development of the risk adjustment system.
8. Decide on criteria for including individuals in the risk adjustment calculations (minimum eligibility during experience or rating period, etc.).
   o Many states require at least six months of eligibility exposure in the experience period to be included in the risk adjustment calculations.
9. Develop criteria for claims records to be included in the risk adjustment model.
   o This step is designed to ensure that the data being used in the risk adjustment calculations is consistent with the rating algorithms and that it is consistent across all comparative organizations.
10. Determine the phase-in schedule and whether or not risk corridors will be used.
    o Typically, adjustments to managed care capitation rates are phased in over time as the risk adjustment process, data, and calculations are refined. The purpose of phase-in and risk corridor provisions is to moderate the impact of the implementation of risk adjustment.

7. Continued

(b) Calculate the total average risk score for XYZ Insurance Company. Show your work.

Commentary on Question:
Most candidates performed well on this part of the question.

Relative Condition Factor (Long Cohort) = (Long Cohort Condition (ERG) Factor) ÷ (Long Cohort Age/Gender Factor) = 0.3680 ÷ 0.3810 = 0.9659

Imputed Condition Factor (Short Cohort) = Relative Condition Factor (Long Cohort) × Short Cohort Age/Gender Factor = 0.9659 × 0.3702 = 0.3576

Weighted Condition Factor (Short Cohort) = (50% × Imputed Condition Factor (Short Cohort)) + (50% × Short Cohort Age/Gender Factor) = (50% × 0.3576 + 50% × 0.3702) = 0.3639

Total Average Risk Score = (Long Cohort Weight × Long Cohort (ERG) Factor) + (Short Cohort Weight × Weighted Condition Factor (Short Cohort)) = (0.86 × 0.3680) + (0.14 × 0.3639) = 0.3674

(c) Calculate the risk adjusted capitation rates for XYZ Insurance Company. Show your work.

Commentary on Question:
Candidates received credit for calculating the risk adjusted capitation rate by either adjusting the premium tax for the risk score or applying the premium tax as a percentage, although the latter would be the preferred method, as shown in the following calculations.

Total Average Risk Score for all MCOs:
Relative Condition Factor (Long Cohort) = (Long Cohort Condition (ERG) Factor) ÷ (Long Cohort Age/Gender Factor) = 0.3791 ÷ 0.3791 = 1.0000

Imputed Condition Factor (Short Cohort) = Relative Condition Factor (Long Cohort) × Short Cohort Age/Gender Factor = 1.0000 × 0.3829 = 0.3829

Weighted Condition Factor (Short Cohort) = (50% × Imputed Condition Factor (Short Cohort)) + (50% × Short Cohort Age/Gender Factor) = (50% × 0.3829 + 50% × 0.3829) = 0.3829

Total Average Risk Score for all MCOs= (Long Cohort Weight × Long Cohort (ERG) Factor) + (Short Cohort Weight × Weighted Condition Factor (Short Cohort)) = (0.8372 × 0.3791) + (0.1628 × 0.3829) = 0.3797

7. **Continued**

Relative Risk Score = Total Average Risk Score for XYZ ÷ Total Average Risk Score for all MCOs = 0.3674 ÷ 0.3797 = 0.9676

Relative Risk Score with Phase-In = (80% × Relative Risk Score) + (20% × 1.0000) = (0.8 × 0.9676) + (0.2 × 1.0000) = 0.9741

Risk Score Adjustment to Cap Rate = Relative Risk Score with Phase-In × Budget Neutrality Adjustment = 0.9741 × 1.1 = 1.0715

Cap Rate to be Risk-Adjusted (TANF) = 111 – 3 – 9 – 3 = $96

Cap Rate to be Risk-Adjusted (SSI w/ Medicare) = 167 – 4 – 13 – 4 = $146

Cap Rate to be Risk-Adjusted (Non-Medicaid) = 167 – 11 – 44 – 11 = $101

Risk Adjusted Cap Rate (TANF) = 96 × 1.0715 = $102.86

Risk Adjusted Cap Rate (SSI w/ Medicare) = 146 × 1.0281 = $150.10

Risk Adjusted Cap Rate (Non-Medicaid) = 101 × 1.0032 = $101.32

Risk Adjusted Capitation Rate (TANF) = (102.86 + 3 + 9) / (1 – 3/96) = $118.57

Risk Adjusted Capitation Rate (SSI w/ Medicare) = (150.10 + 4 + 13) / (1 – 4/146) = $171.81

Risk Adjusted Capitation Rate (Non-Medicaid) = (101.32 + 11+ 44) / (1 – 11/101) = $175.43

8.   **Learning Objectives:**
2.   The candidate will understand how to evaluate the effectiveness of different provider reimbursement methods from both a cost and quality point of view.

Learning Outcomes:
(2b)   Evaluate standard contracting methods from a cost-effective & quality perspective.

(2c)   Understand contracts between providers and insurers.

Sources:
GHRM-106-23: Episode-Based Physician Profiling: A Guide to the Perplexing

GHRM-107-23: Physician Cost Profiling – Reliability and Risk of Misclassification

Commentary on Question:
Commentary listed underneath question component.

Solution:
(a)   Explain the process for constructing physician cost-profiles.

   Commentary on Question:
   Most candidates performed well on this part of the question.

   - Group services into meaningful clinical categories (episode) related to patient condition
   - Determine episode cost, using cut points to eliminate extreme values.
   - Assign each episode to the physician who had the highest proportion of total professional costs and who had billed at least 30% of professional costs.
   - Construct of physician summary cost profiles

(b)   You are given the following:

Physician #1 Episode A	Units	Cost/Unit
Office Visits	3	$100
Hemoglobin	2	$25
Daily Drugs	365	$1
Lipid Profile	1	$40
Physician #1 Episode B	Units	Cost/Unit
Office Visits	4	$90
Hemoglobin	2	$25
Daily Drugs	365	$1
Lipid Profile	2	$35

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8. **Continued**

Calculate the summary cost-profiles score for each physician. Show your work.

Commentary on Question:
Many candidates only calculated the Total Cost for Physician #1 and #2. Those who performed best completed the exercise by taking the average of the two and calculating the relativity of each physician to the average. Another common error was calculating relativities by service category instead of for the total episode.

Total Cost for Physician #1 = Sumproduct = \$755
Total Cost for Physician #2 = Sumproduct = \$845
Average = \$800
Physician #1 Score = \$755/\$800 = 0.944
Physician #2 Score = \$845/\$800 = 1.056

(c)   Describe differences between traditional physician profiling and episode-based profiling.

Commentary on Question:
Most candidates demonstrated a high-level understanding of traditional and episode-based profiling. Candidates who performed best demonstrated a deeper understanding of the source material, providing some of the responses below. Other responses consistent with the source material were also accepted.

- Episodic programs raise the importance of complete, accurate data collection and submission. Physicians who electronically submit accurate, fully-documented claims to payers are more likely to have reliable episode profiles and will more likely receive credit for patient-level comorbidities and other risk-adjustment facotrs.
- Episodic programs differentiate physicians with better-organized and supported practice infrastructure.
- Episode-based profiling is likely to catalyze the medical profession, particularly through specialty certifying boards, to accelerate the development of administrable, evidence-based performance measures.
- All stakeholders in the system need to engage in a collaborative process to improve the robustness, utility, and impact of episode-based profiling.

(d)   Describe physician implications of episode-based profiling.

Commentary on Question:
Most candidates demonstrated a high-level understanding of how episode-based profiling has an impact on physician practices. However, many candidates did not provide the depth explored in the study note.

8. **Continued**

- Payers for health services are likely to continue to drive greater performance transparency in health-care delivery.
- Proliferation of performance metrics that directly address well-documented variations in the quality and economic performance of the care delivery system.
- Practices are likely to improve and become more standardized over time, and they have significant implications for practice, policy and research.