GH 301 Model Solutions
March 2026

1. **Learning Objectives:**

6. The candidate will understand how to apply the framework of predictive analytics to healthcare data and business applications.

Learning Outcomes:

(6b) Differentiate between types of risk score models

(6c) Describe common healthcare data sources for predictive modelling

(6d) Identify challenges specific to the use of healthcare claims in model development

Sources:

eLearning Module: FSA: Predictive Modeling for Healthcare Actuaries

Commentary on Question:

About two-thirds of the candidates did well discussing the accuracy of the second and third statements, while nearly two-thirds of the candidates struggled to fully address the inaccuracies in the fourth and fifth statements.

Solution:

(a) Verify the accuracy of the following statements about predictive analytics using healthcare data. Justify your response.

I. When performing predictive analytics with healthcare data, it is important to consider inference versus transparency. Additionally, for health risk score modeling, two important criteria are stability and accuracy.

II. The difference between concurrent and prospective risk scores is the time-period during which the measured relative costs are incurred. The US Department of Health and Human Services' Hierarchical Condition Categories (HHS-HCC) model, as an example, is a concurrent model which is used to evaluate the performance of Accountable Care Organizations (ACOs).

III. The presence of ICD-10 diagnosis codes in laboratory claims often identify the presence of clinical conditions for members, therefore, it is reasonable to include the diagnoses from laboratory services when developing and applying a predictive model.

1. Continued

IV. One of the common data sources used in predictive analytics is claims data and it often includes demographic information such as patient age, gender, health insurance product type, race, ethnicity, family status and income.

V. A "snapshot month" is the first month of open enrollment each year, which often contains the most accurate data for predictive models.

Solution:

I. Incorrect: When performing predictive analytics with healthcare data, it is important to consider inference versus accuracy. For health risk score modeling, two important criteria are stability and transparency.

II. Partially Incorrect: The difference between concurrent and prospective risk scores is the time-period during which the measured relative costs are incurred. However, the HHS-HCC model is a concurrent model which is used to adjust ACA individual and small group cap payments. The CMS-HCC model is a prospective model which is used to adjust Medicare Advantage cap payments.

III. Incorrect: The presence of ICD-10 diagnosis codes in laboratory claims often identify what is being tested, but the claims do not include the results of the laboratory test. Therefore, diagnoses from laboratory services should be excluded from the predictive model.

IV. Partially Incorrect: One of the common data sources used in predictive analytics is claims data. It also includes demographic information such as patient's age, gender, health insurance product type. It may also include race and ethnicity. Family status and income are social determinants of health (SDOH).

V. Incorrect: A "snapshot month" is a single month used to select a set of members to be included in a predictive model. The first month of open enrollment often contains inaccurate data for predictive models.

2. Learning Objectives:

1. The candidate will understand how to evaluate the effectiveness of provider reimbursement methods from both a cost and quality viewpoint.

Learning Outcomes:

(1d) Evaluate accountable care organizations and their impact on quality, utilization, and cost.

Sources:

GHRM-105-23: Avoiding Unintended Consequences in ACO Payment Model

Commentary on Question:

Candidates performed very well on this question. It was noted that the regulations around ACO payment models have advanced since the publication of the source material. To the extent there have been changes (e.g. most ACO's now in two-sided models), credit was awarded as long as appropriate justification was provided (if applicable). Model solution based on source material.

Solution:

(a) Describe the unintended incentive for Accountable Care Organizations (ACOs) when the Centers for Medicaid and Medicare Services (CMS) created the Medicare Shared Savings program.

- CMS created a weighting system when calculating the ACO benchmark that put 60% weight on the most recent year's experience.
- Thus, ACO's are incentivized to shift services to the year prior to renewal of the 3-year contract.

(b)

(i) Describe differences between one-sided and two-sided models for ACOs participating in the Medicare Shared Savings program.

(ii) Explain whether most ACOs participate in one-sided or two-sided models. Justify your response.

- ACO's have a choice to join the program and whether to do the one-sided or two-sided savings model.
- In the one-sided model, ACO's share in 50% of the gains. There is no downside risk and will receive the FFS payment regardless.
- In the two-sided model, ACO's share in the gains and the losses, both at 60% max. The additional amount (50% vs. 60%) is not much reward for the additional risk. Thus, the market is almost entirely in one-sided deals.

2. Continued

(c) Calculate the incremental revenue ABC would receive for the contract period by performing an additional six knee replacements in Year X - 1. Show your work.

Commentary on Question:
Some candidates also added in the revenue received from the additional six knee replacements. Since those are not in the contract period, they shouldn't be added. Credit was not deducted for having done this extra, erroneous step. Also, some candidates, while arriving at the correct answer, put in a lot of extra steps to get there.

Savings w/o additional knee replacement =	=50%*(5750000-5500000)*3	= $375,000
Benchmark w/ additional knee =	=5000000*0.1+5500000*0.3+(6000000+20000*6)*0.6	= $5,822,000
New Savings =	=50%*(5822000-5500000)	= $161,000
Total New Savings =	=161000*3	= $483,000
Incremental Savings =	=483000-375000	= $108,000

(d) Critique the following statements with respect to the changes being considered:

(i) *"The most recent year matters the most in healthcare spend so the benchmark calculation should be based solely on that year."*

(ii) *"The benchmark should be based on all similar ACOs across the United States."*

(iii) *"One-sided deals should be eliminated. The government and ACOs should both have skin in the game so there should only be two-sided arrangements."*

(i) The benchmark calculation would benefit from more, not fewer, years. More years would add credibility and stability to the program. And, equal weights to disincentive loading procedures to a higher weighted year is preferred to not have the "unintended consequence".

(ii) While it would benefit the program to expand the benchmark to other similar ACOs, costs vary a lot by geography. A national benchmark would favor certain ACOs geographies over others. Consider expanding to ACOs within a local geography.

(iii) While it is reasonable to think both the government and ACO's should have skin in the game, the fact is that the majority of ACO's favor one-sided. It would be difficult to expect ACO's to want to be in a two-sided model after almost exclusive participation in the one-sided model. Many ACOs can't afford to take the downside risk associated with two-sided models.

3. Learning Objectives:

2. The candidate will understand how to evaluate healthcare intervention programs.

Learning Outcomes:

(2a) Describe, compare, and evaluate programs.

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

Sources:

Duncan 2nd Edition Managing and Evaluating Healthcare Ch 03

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) List the components of a Medication Therapy Management (MTM) program for Medicare plans.

Commentary on Question:

What the question was testing: Knowledge of the specific CMS process-oriented components of a Medicare Part D MTM program.

- Most candidates performed well here, correctly identifying core steps such as health assessment, plan formulation, monitoring, and patient education
- A common error was listing eligibility criteria (e.g., multiple chronic conditions, >$4,000 drug spend) in place of process components
- A smaller group listed adherence metrics (MPR, PDC, STAR) as MTM components, reflecting a misunderstanding of what the program encompasses

Solution:

a. Performing or obtaining necessary assessments of the patient's health status
b. Formulating a medication treatment plan
c. Selecting, initiating, modifying, or administering medication therapy
d. Monitoring and evaluating the patient's response to therapy, including safety and effectiveness
e. Performing a comprehensive medication review to identify, resolve, and prevent medication-related problems including adverse drug events
f. Documenting the care delivered and communicating essential information to the patient's other primary care providers
g. Providing verbal education and training designed to enhance patient understanding and appropriate use of medications

3. Continued

h. Providing information, support services, and resources designed to enhance patients' adherence with their therapeutic regimens
i. Coordinating and integrating medication therapy management services within the broader health care-management services being provided to the patient

(b) Describe how medication reconciliation can improve adherence for ABC Health's members.

Commentary on Question:

What the question was testing: Whether candidates understood medication reconciliation in the post-discharge context and could connect it to its specific mechanism, identifying drug duplications, gaps, and interactions with readmission reduction as the goal.

- The majority of candidates described generic member education or adherence monitoring rather than the drug-specific reconciliation mechanism
- Very few candidates named readmission reduction as the goal or explicitly anchored their answer to the post-discharge setting
- The most common misconception was conflating medication reconciliation with adherence measurement tools such as MPR and PDC

Solution:

a. Medication reconciliation (med rec) attempts to lower hospital readmissions through teaching patients how to take their medication.
b. This occurs post discharge from inpatient hospitalization to ensure the patient understands the new drugs, what drugs they should no longer take, and to make sure they understand their regimen overall.
c. Drug reconciliation focuses on specific drugs the patient is taking, looking for duplication, gaps in therapy, inappropriate drugs (those that may interact with other drugs) or inappropriate dose

(c) Compare and contrast the health plan cost implications of medication adherence on Prescription Drug Plans (PDP) and Medicare Advantage Part D (MAPD) plans.

3. Continued

Commentary on Question:

What the question was testing: Understanding of the different economic incentive structures – PDP bears only drug costs creating a perverse incentive, while MAPD offsets higher drug costs through avoided medical utilization.

- Candidates who scored well demonstrated clear understanding of the MAPD aligned incentive and typically provided a concrete clinical example to support it
- The PDP perverse incentive was less commonly understood, many candidates noted PDP is drug-only without drawing the cost implication
- A large portion of candidates noted structural differences between the plan types without connecting them to the economic consequences of adherence

Solution:

a. PDP
   i. Plan isn't at risk for the medical costs, so raising member Rx adherence only increases costs to the plan
b. MAPD
   ii. Plan at risk for medical costs, so there's incentive to increase compliance.
   iii. However, the increase in drug cost needs to be understood in context of the offset cost of the adverse medical event.

(d)

(i) Compare and contrast Medication Possession Ratio (MPR) and Proportion of Days Covered (PDC).

(ii) Calculate the MPR and PDC for this member. Show your work.

(iii) Evaluate whether the Medicare STAR measure of 80% adherence has been met. Justify your response.

Commentary on Question:

What the question was testing: Technical understanding of both adherence metrics, their definitions, structural differences, and correct application, culminating in an evaluation of whether the member met the Medicare STAR measure of 80% adherence.

3. Continued

- Candidates performed significantly better on D(i) than D(ii) or D(iii), with many correctly describing both metrics conceptually but unable to translate that understanding into accurate calculations. The most common calculation error was using 300 as the denominator for both MPR and PDC rather than the correct values of 350 and 365 respectively
- A large portion of candidates merged both drug therapies into a single combined calculation in D(ii) rather than reporting separately by therapy, and similarly evaluated adherence on a blended basis in D(iii) rather than per therapy as required
- Using MPR instead of PDC as the STAR metric in D(iii) was widespread, and no candidate achieved maximum points on D(iii) as none explicitly stated the 292-day equivalent (80% × 365) required for full credit

Solution

i. Part (i)
   - MPR:
     - Is defined as
       $$MPR = \frac{\#\ of\ Days'\ supply\ in\ the\ patient's\ possession}{\#\ of\ Days\ during\ the\ measurement\ period\ during\ which\ the\ patient\ could\ have\ had\ the\ dru}$$
     - It is possible for this to be greater than 1.0, which is why the PDC is used
   - PDC:
     - Is defined as
       $$PDC = \frac{\#\ days\ of\ coverage}{Total\ \#\ of\ Days\ in\ measurement\ period}$$
   - MPR counts all days supply (even those that overlap). PDC approaches it based on days of coverage, so it is going to be more conservative than MPR because it avoids double counting that occurs when more than one drug is consumed on the same day. However, neither of these measures account for if a member actually took their drug.

ii. Part (ii)
   - Adherence is calculated by therapy, so there are 4 calculations.
   - Therapy 1:
     - MPR: (90+90+90+90)/(260+90) = 102.9%
     - PDC: (90+90+90+90)/365 = 98.63%
   - Therapy 2:
     - MPR: (90+90)/(260+90)=51.4%
     - PDC: (90+90)/365 = 49.3%

3. Continued

iii. Part (iii)

- The STAR measure requires 80% adherence, which requires 292 (365*80%) days.
- Therapy 1:
  - PDC is greater than 80%, so the adherence measure is met.
- Therapy 2:
  - PDC is less than 80%, so it is not met.
  - (292 – 90 – 90) = 112 additional days are required to meet the measure

4. Learning Objectives:

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

5. The candidate will understand how to explain the social determinants of health (SDOH) and their impact on health care costs and policy.

Learning Outcomes:

(3a) Apply risk adjustment to underwriting, pricing, claims, and care management situations (applications include Medicare, Medicaid, and ACA products).

(3b) Apply risk adjustment concepts to normalize population claims experience.

(5c) Describe the current use of SDOH in traditional actuarial practices.

Sources:

Healthcare Risk Adjustment and Predictive Modeling, Duncan, Ian G., 2nd Edition, 2018 - Ch. 13: Medicaid Risk Adjustment pages 278

Social, Physical and Cultural Determinants of Health: Their Incorporation into Actuarial Data and Workstreams, SOA Research Institute, Apr 2023, Sections 3 – 6

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

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Calculate the average annual claims trend normalized for risk adjustment for the 20X1 through 20X3 experience period for the following blocks of business. Show your work.

(i) Risk Group A

(ii) Risk Group B

(iii) Non-Risk Group C

Commentary on Question:

Performance on part (a) was mixed. Most candidates were able to appropriately calculate the trend for Non-Risk Group C. While most candidates correctly calculated the trend for Non-Risk Group C, some did not convert results into an average or annual trend or they failed to apply the appropriate risk adjustment factor.

Solution in Excel

4. Continued

(b) Calculate the projected combined revenue for all groups for 20X4. Show your work.

Commentary on Question:
Candidates generally performed poorly on part (b). Common mistakes included using claims instead of the capitation rate, failing to apply risk adjustment factors, or omitting the application of trend. The data labeled "All Other MCO Total Average Risk Score" should have instead been labeled "Combined MCO Total Average Risk Score" since there was no market share given. Candidates were given full credit if they used "All Other MCO Total Average Risk score" in the denominator of the relative risk or if they made an assumption about the market share for ABC.

Solution in Excel

(c) Describe causes for the change in ABC Health's relative risk score from 20X2 to 20X3.

Commentary on Question:
Performance was mixed on part (c). Many well-prepared candidates earned full credit. Some candidates commented on how the actual risk scores were changing rather than explaining the potential reasons for this occurring.

Changes in relative risk score can be caused by any combination of causes from the 3 categories below (do not need to come from all 3 categories):

(i) ABC Health average risk score change due to changes in submitted diagnoses, member health in experience period, demographic changes, etc.

(ii) Other MCO average risk score change due to membership changes, programs targeting diagnoses capture, member health

(iii) Change in risk model used – states can chose to change models altogether or swap to a newer version of the same model with updated coding

4. Continued

(d) Describe the potential impacts of this partnership to the following loss ratio components:

(i) Claims

(ii) Revenue

(iii) Admin

Commentary on Question:
Candidates generally performed well on part (d). Candidates who didn't earn full credit commonly lost points for commenting on a change in additional members only or did not provide detailed descriptions.

Potential impacts to:

(i) Claims – one of the goals of improving health outcomes is to lower claim costs in the long run, however in the short term it is possible that if members are more actively engaged in their health claim costs could rise

(ii) Revenue – Medicaid revenue will be impacted based on changes in the relative risk score. Partnering with a SHARP may lead to higher diagnoses being captured if members with severe diagnoses have a new claim show up in the experience period. In the long term, if health outcomes improve the risk score could drop and reduce revenue to match the expected reduction in claim costs.

(iii) Admin – Admin costs are expected to increase to pay for the SHARP services.

5. Learning Objectives:

2. The candidate will understand how to evaluate healthcare intervention programs.

4. The candidate will understand how to describe medical coding, sources of data, and data quality.

Learning Outcomes:

(2a) Describe, compare, and evaluate programs.

(2b) Estimate savings, utilization rate changes, and return on investment.

(4b) Identify and explain the use of coding sets used in health practice (CPT, ICD-10, DRG, Revenue Codes).

Sources:

"Healthcare Claim Coding" from LO4
Duncan Ch 12
Duncan Ch 16

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Describe contents included in the following types of claim files:

(i) HCFA – 1500

(ii) Pharmacy claim data

(iii) UB-92

(iv) Encounter data

Commentary on Question:

Candidates generally performed well on part A. Candidates did need to describe contents and not just list items to get full credit.

(i) This is used by non-facilities including physicians. One service per line. Primary data elements are procedure codes and diagnosis codes.

(ii) Primarily entered and validated at the point of sale. Because of the simple nature of the service, it is adjudicated instantly. The pharmacy claim record contains drug names, NDC codes, formularies, quantity, packaging, dosage and form. Often, diagnosis is not part of the pharmacy claim process.

5. Continued

(iii) Unified Billing form is used by facilities. The detailed patient medical record tracks each procedure, test, drug, and service done in a facility. In the UB92 the data is rolled up to revenue codes, charges, and units. Many facility claims are further aggregated for reimbursement as per diems or DRG.

(iv) Submitted to a health plan for capitated services. It is often less accurate and incomplete. There is often no incentive to submit accurate encounter data beyond a contract that requires it since the actual reimbursement is from the capitation payments.

(b) Describe coding schemes in claims data to classify members as diabetic.

Commentary on Question:
Candidates generally performed well on Part B. Specifically connecting how the codes could be used for diabetes was necessary for full credit.

Coding schemes in claims data to classify members as diabetic could be diagnosis codes such as ICD-10 codes, DRGs, and MDCs. ICD-10 codes may give direct information on whether a person has the diabetes diagnosis. DRGs are diagnosis related groups and those could classify members as diabetic. MDC are major diagnostic categories and may be too broad to pinpoint diabetes.
Pharmacy codes such as NDC (national drug codes) and GPI may give information on prescriptions that can tell if a member is diabetic.
For procedure codes, if a CPT-4 or a HCPC is identified for a procedure that is associated with a diabetic patient, that could be flagged as a sign a patient is diabetic.

(c) Describe reasons for excluding diabetic members from the DM program's measured population.

Commentary on Question:
Part C is under the context of a DM program for people with diabetes. The question is looking for reasons to exclude members from this program specifically. Many candidates did well.

The measurement population should reflect individuals whose claims don't exhibit sharp discontinuity that would distort trends, are not substantially higher than other members in the same class that would unduly influence the entire cohort, are not under care of another program vendor that savings should instead be contributed to, or are not good candidates for disease or care management due to being institutionalized.

5. Continued

(d) Calculate the total percentage reduction in aggregate claims spend from the DM program for each of Years 2 and 3, using retrospective chronic identification. Show your work.

Commentary on Question:
Many candidates were able to receive partial, if not full, credit on this portion of the question for some portion of the calculation.
Answers were also accepted if the year 3 expected cost was based from year 2 actual diabetic cost.
Savings should be shown as a percentage since that is what the question specifically asked for. Candidates could earn full credit if they expressed the percentage based on the total membership or just the total diabetic membership. If a candidate recommended to apply trend in part E after not doing so in Part D, the candidate could earn credit in Part D.

		Year 1	Year 2	Year 3	
Diabetic	**Claims**	1,392,758	1,437,065	1,456,075	a
Diabetic	**Members**	300	300	300	b
Diabetic	**PMPM**	386.88	399.18	404.47	c = a/(b*12)
Non	**Claims**	2,268,133	2,309,517	2,382,958	d
Non	**Members**	700	700	700	e
Non	**PMPM**	270.02	274.94	283.69	f = d/(e*12)
Non	**Trend**		1.82%	3.18%	$g = (f_{t+1}/f_t)-1$
Diabetic	**Expected**	386.88	393.94	406.46	$h = g_{t-1} * (1+h_t)$
Savings	**PMPM**		(5.25)	2.00	j = h - c
Savings	**Dollars**		(18,895.12)	7,191.51	k = e * b * 12
Savings	**%**		-0.504%	0.187%	m = k / (a + d)

5. Continued

(e) Propose a revision to the calculation to better demonstrate the impact of ABC's program. Show your work. Justify your proposal.

Commentary on Question:
This part required the candidate to look at the data included in the question. Candidates could earn full credit if they recommended a differing minimum amount of screens besides 10. Candidates could also alternatively earn full credit if they recommended to use prospective chronic identification instead of using the glucose blood screens.

Employees who submitted 0-10 screens had much worse outcomes than employees who submitted over 100 screens. Therefore, the outcome methodology should be changed to only count employees who are using the DM program with over 100 screens. The calculation below demonstrates both years savings increasing each year as compared to part D.

		Year 1	Year 2	Year 3	
Diabetic	**Claims Incl**	1,159,730	1,187,174	1,190,622	a
Diabetic	**Members Incl**	248	248	248	b
Diabetic	**Claims Excl**	233,027	249,891	265,453	y
Diabetic	**Members Excl**	52	52	52	z
Diabetic	**PMPM**	389.69	398.92	400.07	c = a/(b*12)
Non	**Claims**	2,268,133	2,309,517	2,382,958	d
Non	**Members**	700	700	700	e
Non	**PMPM**	270.02	274.94	283.69	f = d/(e*12)
Non	**Trend**		1.82%	3.18%	$g = (f_{t+1}/f_t)-1$
Diabetic	**Expected**	389.69	396.80	409.42	$h = g_{t-1} * (1+h_t)$
Savings	**PMPM**		(2.11)	9.35	j = h - c
Savings	**Dollars**		(6,283.47)	27,819.83	k = e * b * 12
Savings	**%**		-0.168%	0.725%	m = k / (a + d + z)

6. Learning Objectives:

1. The candidate will understand how to evaluate the effectiveness of provider reimbursement methods from both a cost and quality viewpoint.

4. The candidate will understand how to describe medical coding, sources of data, and data quality.

Learning Outcomes:

(1b) Calculate provider payments under various reimbursement methods.

(4d) Evaluate impacts of changes in coding structures on provider reimbursement.

Sources:

eLearning Module: FSA: Terminology and Analytical Use of Data for Healthcare Actuaries (Healthcare Claim Coding, page 33)

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Calculate the cost of introducing the 20% bonus. Show your work.

Commentary on Question:

Most candidates did well on this part with several obtaining full credits. To get full credits, the candidates had to determine which services would get the bonus (office visits only), apply trend appropriately, and calculate the bonus using the proportion of evenings / weekends given as an assumption. A common minor mistake was to apply the rate increase to both years. Common major errors were to apply the bonus to all E&M procedures and not just office visits, or calculate a cost difference between years.

Model Solution is provided in Excel.

(b) Critique the assumptions used for calculating the cost of the bonus.

Commentary on Question:

This part asked the candidate to be critical about the assumptions used to come up with the result in part (a). Most candidates were able to get half or more of credits with several candidates getting full creditsby providing a critique for more than 1 assumption. Most credits on this part were awarded for pointing out that the proportion of evenings / weekends was the most critical assumption in coming up with the result. Several other valid answers were also considered and awarded such as that assumptions could vary by CPT codes, that savings might occur from longer office hours in other settings such as the ER, that the utilization rate used is low relative to average healthcare trends, or that the 2.5% rate increase is negotiated with the physician association and likely will not change.

6. Continued

The estimated cost of the bonus is most impacted by the assumed proportion of visits that will occur in the evenings and weekends. A lower proportion would lower its value proportionally. Currently 5% of visits are in the evenings and weekends, which means that some of the offices are already open at that time. Going from 5% to 12% is a large jump that should be carefully measured. While this may be the goal, it's unlikely that such a large change will take place in the first year of introducing this bonus. Physicians would need to be willing to work irregular hours and may have to hire staff longer and incur more operating costs, while members would need to be made aware and educated on this change for this sort of utilization change to be realized.

While the utilization trend has a smaller relative impact on the cost than the timing shift, it is possible the assumed 1% annual growth is unrealistically low and conservative compared to historical healthcare trends. This modest trend fails to account for "induced demand," where expanding availability creates new visits from members who previously forewent care due to scheduling conflicts. Because longer operating hours and financial incentives encourage physicians to actively promote more visits, a more realistic, higher trend rate would increase plan cost and incidentally the estimated cost of the bonus.

7. Learning Objectives:

1. The candidate will understand how to evaluate the effectiveness of provider reimbursement methods from both a cost and quality viewpoint.

Learning Outcomes:

(1a) Describe contracts between payers and providers.

(1c) Evaluate standard contracting methods from a cost-effective and quality perspective.

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a)

(i) Recommend each specialist as preferred or non-preferred. Justify your response.

(ii) Describe other factors that should be considered when deciding if a specialist should be preferred.

Commentary on Question:

Candidates generally did well on both parts. Some candidates incorrectly interpreted the efficiency score and did not score as well.

7. Continued

Below is a sample answer. It may be acceptable that a provider is recommended as preferred or non-preferred so long as sufficient justification is given.

-Cost efficiency score: a lower cost efficiency implies a more efficient provider; all else being equal a provider with a lower score should be preferred over one with a higher score
-Specialty: providers should be compared within a specialty, with at least 1 preferred provider in each specialty
-# episodes: a larger number of episodes implies a more reliable score; all else being equal a provider with more episodes should be preferred

Specialist	Allowed Cost	Cost Efficiency Score	#	Specialty	**Recommendation**	Reasoning	Expected
A	$5,000	0.75	10	Endocrinology	Preferred	Best cost efficiency in specialty. Potential that results are not reliable with only 10 episodes	$6,667
B	$50,000	1.02	100	Endocrinology	Preferred	Despite a below average market score, they have significant volume and a more reliable, close to average score.	$49,020
C	$5,000	1.29	10	Endocrinology	Non-Preferred	Worst cost efficiency and minimal reliability (same number of episodes as A)	$3,876
D	$15,000	0.95	25	Gastroenterology	Preferred	Same number of episodes as provider E, better score	$15,789
E	$17,500	1.05	25	Gastroenterology	Non-Preferred	Same number of episodes as provider D, worse score	$16,667
F	$60,000	1.3	20	Hematology	Preferred	Should be included for network adequacy	$46,154
G	$4,500	0.5	3	Cardiology	Non-Preferred	Only 3 episodes so score is unreliable	$9,000
H	$30,000	0.7	15	Cardiology	Preferred	Most reliable cost efficiency, but potentially unreliable results	$42,857
I	$125,000	0.95	50	Cardiology	Preferred	More reliable cost efficiency due to episode volume and great efficiency score	$131,579
J	$87,500	1.3	25	Cardiology	Non-Preferred	Reliable score with significantly worst cost efficiency	$67,308

7. Continued

(ii) Describe other factors that should be considered when deciding if a provider should be preferred

-Geographic area coverage: most networks are measured against geographical access standards
    -An example is 95% of members must have 2+ primary care physicians within 15 miles or 15-minute drive of the members' homes
    -May lease another insurer's provider network to supplement its provider network if geographical access is not met
    -Critical care may always be in network due to a lack of centers, such as transplant centers or centers treating a rare form of cancer
-Consumer protection:
    -The Model Law includes several consumer protection provisions, most notably the provision prohibiting palance billing by participating providers
    -The Model Law also requires administrators to maintain up-to-date provider directory to help consumers find participating providers
    -Finally, the Model Law addressing issues that ma arise if there is a dispute between the provider and administrator
-Quality metrics:
    -There is an increased emphasis on quality in provider networks due to government entities, large employers, and influential payers
    -There may be worries that financial incentives for providers to reduce costs have led to decline in quality
    -The administrator must decide from a suite of quality measures, establish the validity of the measure, and determine the algorithm for determining whether quality measure has been met
-Other reasonable answers are accepted
    -Reimbursement methods (fee for service, capitation, etc.)
    -Guarantees
    -Other risks, such as operational or reputational
    -Sub-specialty coverage, e.g., cardiology surgery, electrophysiology, interventional cardiology

(b) Calculate the Tiered Network Health Plan (TNHP) savings using your preferred specialist recommendations and the following assumptions. Show your work.

(i) $1,000,000 in total network spend

(ii) 80% of non-preferred episodes shift to preferred providers

(iii) No change in member liability

7. Continued

Commentary on Question:
Candidates scored lower on this question. Nearly all candidates did not incorporate efficiency scores into the formula for P when calculating allowed dollars. Alternative methods were accepted in the application of the shift %

	Allowed	Expected	OE	Episodes
Preferred	$285,000.00	$292,065.68	0.9758	220
Non-Preferred	$114,500.00	$96,850.33	1.1822	63

TNHP Savings = N% * [M% + Shift % * (P% - M%)]

Shift = INN Nonpreferred users switching to INN preferred providers / Total INN nonpreferred users in TNHP
M = change in INN non preferred providers AV of benefits due to additional member liabilitity
P = 1 - (average INN preferred provider cost per unit / average INN non-preferred provider cost per unit
N% = Claims of INN non-preferred providers / total
claims

Shift	80%	
M%	0%	Given
P%	17.5%	=1-0.9758/1.1822
N%	11.5%	=114500/1000000
Savings	0.016%	=(shift * P% * N%)---with M=0