
SOCIETY OF ACTUARIES
Group and Health – Advanced

Exam GHADV

AFTERNOON SESSION

Date: Thursday, April 30, 2015

Time: 1:30 p.m. – 3:45 p.m.

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This afternoon session consists of 6 questions numbered 9 through 14 for a total of 40 points. The points for each question are indicated at the beginning of the question.
2. Failure to stop writing after time is called will result in the disqualification of your answers or further disciplinary action.
3. While every attempt is made to avoid defective questions, sometimes they do occur. If you believe a question is defective, the supervisor or proctor cannot give you any guidance beyond the instructions on the exam booklet.

Written-Answer Instructions

1. Write your candidate number at the top of each sheet. Your name must not appear.
2. Write on only one side of a sheet. Start each question on a fresh sheet. On each sheet, write the number of the question that you are answering. Do not answer more than one question on a single sheet.
3. The answer should be confined to the question as set.
4. When you are asked to calculate, show all your work including any applicable formulas.
5. When you finish, insert all your written-answer sheets into the Essay Answer Envelope. Be sure to hand in all your answer sheets because they cannot be accepted later. Seal the envelope and write your candidate number in the space provided on the outside of the envelope. Check the appropriate box to indicate morning or afternoon session for Exam GHADV.
6. Be sure your written-answer envelope is signed because if it is not, your examination will not be graded.

Tournez le cahier d'examen pour la version française.

****BEGINNING OF EXAMINATION****
Afternoon Session
Beginning with Question 9

9. (4 points)

- (a) (2 points) Describe how the Affordable Care Act (ACA) is influencing changes to managed behavioral health care.
- (b) (2 points) Explain the importance of diagnosing behavioral health conditions to improve overall patient health.

10. (9 points) You are the valuation actuary in charge of setting long-term reserves.

(a) (2 points) Describe aspects of Long-Term Disability (LTD) benefit plan designs important to claim reserves.

You are given:

- Annual interest rate of 4%
- Elimination period is three months
- Benefit period is four months
- Monthly benefit is a level \$2,500
- Claimant is 35 years old
- The following continuance table:

Continuance Table			
Claim Duration (in months)	Age at Claim		
	35	45	55
0	1,000	1,000	1,000
1	900	950	975
2	800	900	950
3	700	850	925
4	600	800	900
5	500	750	875
6	400	700	850
7	300	650	825

(b) (3 points) Calculate the LTD claim reserve at time 0. Show your work.

(c) (2 points) Describe assumptions when calculating LTD claim reserves.

Your Chief Actuary has asked you to verify that your reserve methodologies comply with the applicable Actuarial Standards of Practice (ASOP).

(d) (2 points) Describe the applicable ASOPs and how they apply to these liabilities.

11. (6 points) You are an individual health actuary in the United States. You support the Medicare Supplement line of business at Generic Insurance Company (GIC). Your VP has become increasingly concerned about anti-selective lapse within your product line. Consequently, he has asked you to perform some research on the topic.

(a) (1 point)

- (i) Describe anti-selective lapse.
- (ii) Explain why anti-selective lapses occur.

In the individual lapse rate model, insurers set a price based on the insurer's expected cost plus a margin, but there are exceptions.

(b) (1 point) List three exceptions.

Insured #1 has a Medicare Supplement Insurance policy with GIC with a current annual premium of \$1,000.

You are given:

- Cost of switching is 5% of premium.
- Current product benefit relativity to insurer A-D policies is 1.03.
- GIC uses the individual lapse behavior model S, where S is a step function.

Insurer	Market Share	Annual Premium
A	10%	\$800
B	30%	\$700
C	40%	\$650
D	20%	\$750

(c) (2 points) Calculate the probability of price induced lapse. Show your work.

Insured #2 is an impaired life in the Medicare Supplement market with an adjusted annual premium of \$1,200 and market price of \$1,500.

(d) (1 point) Define excess risk.

(e) (1 point) Calculate the excess risk of Insured #2 over Insured #1. Show your work.

- 12.** (6 points) You are a consultant working with an Accountable Care Organization (ACO) that joined the two-sided CMS Medicare Shared Savings model. You have been asked to evaluate a vendor program that will reduce inpatient readmissions next year. The ACO will receive payments from the shared savings model of 60%.

You are given the following for the ACO:

• Projected Medicare beneficiaries	10,000
• Current year benchmark cost target	\$800 per beneficiary per month
• Benchmark trend	2%
• Total claims trend without intervention	3%
• Projected inpatient admission	350 per 1,000 per year
• Projected cost per admission	\$12,000
• Readmission rate (% of admissions that are readmissions)	20%
• Cost of vendor program	\$2,000 per reduced readmission

The cost of a readmission and other inpatient admissions is the same. No changes are expected in beneficiary mix or risk scores between years.

The internal return on investment (ROI) requirement is that any program must return at least twice the cost of the program.

The quality performance is expected to meet the benchmark and no adjustment will be made to the sharing rate.

- (a) (4 points) Calculate the percentage reduction in inpatient readmissions required for the ACO to receive \$1 million in shared savings payments. Show your work.
- (b) (2 points) Recommend whether or not the ACO should pursue the vendor's program. Justify your answer.

13. (5 points) You are an actuary working with a clinical guidance organization that is implementing a nurse concierge program aimed at improving the quality of care given to expectant mothers.

- (a) (1 point) Describe organizations you could consult for ideas of measuring quality improvement.
- (b) (2 points) Define the Agency for Healthcare Research and Quality (AHRQ) “Structure, Process, Outcomes” method to measure program quality and provide examples that could be used for this program.

You are given the following data concerning this program:

	Pre Program	Post Program
Total Members	100,000	120,000
Participants	0	12,500
Child Delivery Hospital Admissions	15,000	20,000
Child Delivery Hospital Days	52,500	67,800
Child Delivery Hospital Costs	\$90,000,000	\$110,000,000
Neonatal Hospital Admissions	100	110

You are given the following benchmarks:

- Participation Rate = 10%
 - Average Cost per Admit = \$4,500
 - Neonatal Hospital Admission Rate = 0.5%
 - Program Cost = \$8,000,000
- (c) (2 points) Evaluate whether or not the program was successful based on the following statistics. Justify your answer. Show your work.
- (i) Participation
 - (ii) Return on investment (ROI)
 - (iii) Neonatal hospital admission rate
 - (iv) Average cost per admission

14. (10 points) You are the actuarial consultant for the ABC Company. The company currently has a single medical plan in which its employees may enroll, but is considering offering three medical plan choices to its employees.

- (a) (1 point) List the advantages and disadvantages of a multiple-choice environment over a single-choice environment.
- (b) (2 points) List ways ABC could offer choice to its employees.

You are given the following information about ABC employee health status:

	Number of Employees	Relative Health Status
Low Risk	500	50%
Average Risk	300	100%
High Risk	200	225%

ABC will contribute \$500 per employee per month for all plans, while employees are responsible for the difference. The premium rates by plan are shown below:

Plan	Total Monthly Premium Rates
Low	\$500
Mid	\$600
High	\$750

Assume all low risk employees will select the Low plan, all average risk employees will select the Mid plan, and all high risk employees will select the High plan.

- (c) (2 points) Calculate the composite relative health status. Show your work.

For year 2, ABC's insurer does not change the monthly premium rates. In response to budget constraints, ABC reduces premium contributions by \$100 per employee per month. Due to the increased employee contribution required, one hundred High Risk employees move into the Mid plan and one hundred Average Risk employees move into the Low plan.

- (d) (2 points) Calculate the year 2 relative health status for each plan and in total. Show your work.

14. Continued

- (e) *(1 point)* Describe techniques an underwriter can use to manage selection and its financial impact in a multiple-choice environment.
- (f) *(2 points)* Recommend a program for ABC to monitor experience based on their employees' choice. Justify your answer.

****END OF EXAMINATION****
Afternoon Session

USE THIS PAGE FOR YOUR SCRATCH WORK

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