# SOCIETY OF ACTUARIES
## Group and Health – Advanced

# Exam GHADV

## MORNING SESSION

**Date:** Thursday, November 3, 2016
**Time:** 8:30 a.m. – 11:45 a.m.

### INSTRUCTIONS TO CANDIDATES

**General Instructions**

1. This examination has a total of 100 points. It consists of a morning session (worth 60 points) and an afternoon session (worth 40 points).

   a) The morning session consists of 8 questions numbered 1 through 8.

   b) The afternoon session consists of 5 questions numbered 9 through 13.

   The points for each question are indicated at the beginning of the question. Questions 9 through 12 pertain to the case study.

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.

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Exam GHADV

****BEGINNING OF EXAMINATION****
**Morning Session**

**1.** (*6 points*)

(a) (*1 point*) Describe the credentialing process for physicians.

(b) (*1 point*) List elements of a typical credentialing application.

A managed care organization (MCO) provided the following data for maternity claims experience in 2014:

| Service Category | Billed | Allowed |
|---|---|---|
| Facility | $10,000 | $6,000 |
| Medical Supplies and Equipment | $1,500 | $1,000 |
| Professional | $6,000 | $2,000 |

There were 30 maternity claims per 1,000 members in 2014. The average length of stay for a maternity claim was 1.8 days.

(c) (*2 points*) Calculate the per member per month (PMPM) cost for each of the following contract arrangements. Show your work.

(i) 50% discount off billed charges for all service categories

(ii) Capitation of physician services at 105% of professional charges combined with a bundled payment for facility and medical supplies and equipment charges set at 80% of charges

(iii) 60% discount off billed charges for professional and medical supplies and equipment charges combined with a $2,500 per diem charge for facility services

(d) (*2 points*) Describe three risks to the MCO for each of the following types of contracts:

(i) Global capitation of professional services

(ii) Global capitation of all in-network services

(iii) Per diem rates for facility charges

**2.** (*6 points*)

(a) (*1 point*) Compare and contrast disease management and population health management programs.

(b) (*1 point*) Identify questions to ask during the predictive modeling, intervention development, and outreach and enrollment stages of the value chain method when implementing a care management program.

(c) (*2 points*) For each of the following areas of care management evaluation:

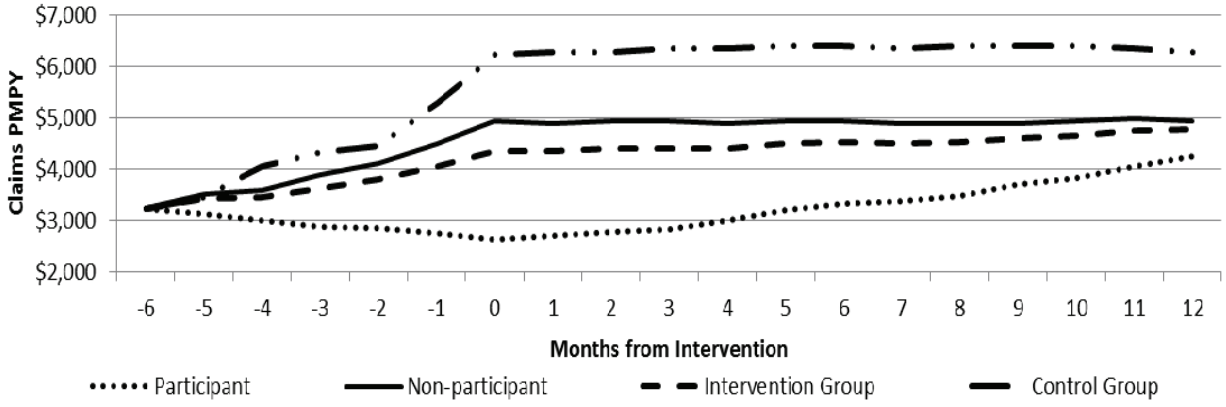
- Economics of Care Management Programs
- Risk-Adjustment and Predictive Modeling
- Financial Outcomes Evaluation

(i) (*1 point*) Explain how actuaries are involved.

(ii) (*1 point*) Describe tools actuaries use

A vendor asserts its care management program will save $3 million over a one year period if 1,000 members participate. The vendor has provided the following:

- Data shows per member per year claims for members enrolled in the care management program
- Members had continuous coverage for all 18 months
- Members participated for the full 12 month intervention period




(d) (*2 points*) Critique the vendor's assertion.

**3.** (*15 points*) You are a health insurance actuary responsible for financial reporting for commercial individual business.

(a) (*3 points*) For the three risk mitigation programs created under the Affordable Care Act (ACA):

(i) (*1 point*) Describe each program.

(ii) (*1 point*) Create a chart summarizing the markets to which each program applies.

(iii) (*1 point*) Create a chart summarizing who is responsible for the administration of each program.

(b) (*2 points*) You are giving the following claims experience for qualified health plan members in 2014.

| Member | Paid Claims |
|---|---|
| A | $65,000 |
| B | $80,000 |
| C | $48,000 |
| D | $0 |
| E | $25,000 |
| F | $170,000 |
| G | $325,000 |
| H | $55,000 |
| I | $72,000 |
| J | $15,000 |

(i) Calculate the expected transitional reinsurance payment as originally prescribed for 2014. Show your work.

(ii) Calculate the percent increase in reinsurance payments that you expect to receive under the revised 2014 program parameters. Show your work.

(c) (*1 point*) Describe elements of the risk-adjustment mechanism that may lead to increased uncertainty in your year-end financial statement.

## 3. Continued

Issuers A, B, and C offered products on the individual exchange in 2014. All issuers charged the same premium.

The following chart shows market share and risk score by issuer.

| Issuer | Market Share | Risk Score 2014 | Risk Score 2015 |
|---|---|---|---|
| A | 70% | 1.25 | 1.25 |
| B | 20% | 1.20 | 1.30 |
| C | 10% | 1.15 | 1.25 |

You work for issuer A and have determined your risk score is 1.25 for the year 2016. Unfortunately, issuers B and C have not yet disclosed their risk scores.

(d) (*9 points*)

(i) (*1 point*) Calculate the percent of premium paid or received for 2014 from the risk pool by each issuer and identify if it was a payment or receivable.

Show your work.

(ii) (*4 points*) Construct three scenarios for your relative risk score for 2016.

Show your work.

(iii) (*2 points*) Describe the considerations for determining a premium deficiency reserve (PDR) in this situation.

(iv) (*2 points*) Recommend whether or not the risk score should be considered in the PDR calculation. Justify your answer.

**4.** (*6 points*) XYZ Inc. implemented an employee health management (EHM) program in 2015.

(a) (*2 points*) Describe options for methodologies measuring the directly monetized metric used to evaluate savings of EHM programs.

(b) (*1 point*) Describe the characteristics of a "gold standard" for measuring monetized savings including the implementation challenges.

You are given the following per member per month (PMPM) claims costs:

| Year | Industry Peers | XYZ Inc. |
|---|---|---|
| 2014 | $300 | $310 |
| 2015 | $320 | $325 |

(c) (*1 point*) Calculate the 2015 PMPM savings from the EHM program for XYZ.

Show your work.

(d) (*2 points*) Describe safeguards for improving the validity of the savings calculation.

**5.** (*6 points*) You are an actuary for Company ABC.

(a) (*1 point*) Describe aspects of provider contracting ABC should consider.

ABC is designing a new health insurance product using a network with fewer providers than its current offerings.

(b) (*1 point*) Recommend characteristics for each aspect from (a) above that ABC should incorporate. Justify your recommendations.

ABC is considering adopting bundled payment contracts for the new product.

(c) (*2 points*) Describe financial, operational, and quality issues specific to bundled payment contracts.

You are given the following:

| | Member 1 | | Member 2 | | Member 3 | |
|---|---|---|---|---|---|---|
| | Visits | Total Costs | Visits | Total Costs | Visits | Total Costs |
| Pre Op Visits | 2 | $ 240 | 4 | $ 360 | 3 | $ 300 |
| Surgery Performance | 1 | $ 10,000 | 1 | $ 9,000 | 1 | $ 8,000 |
| Implant | 1 | $ 7,500 | 1 | $ 5,500 | 1 | $ 5,000 |
| Rehab | 1 | $ 500 | 2 | $ 1,200 | 2 | $ 800 |
| Post Op Visit 0-30 days | 2 | $ 395 | 3 | $ 420 | 4 | $ 400 |
| Post Op Visit 31-60 days | 1 | $ 100 | 2 | $ 150 | 2 | $ 150 |
| Post Op Visit 61-90 days | 0 | $ - | 1 | $ 50 | 1 | $ 60 |

(d) (*2 points*) Calculate a bundled payment contract rate such that 99% of the experienced claims cost is covered. Show your work.

**6.** (*9 points*) You are the appointed actuary at ABC insurance company. ABC sells individual long-term disability (LTD) contracts in Canada as well as individual commercial health insurance in the US.

(a) (*1 point*)

(i) Describe types of financial statements ABC needs to produce.

(ii) Explain how reserves should be incorporated within each statement.

(b) (*2 points*) List and describe types of reserves and liabilities included on the balance sheet.

You are given the following paid claims by incurred month for your US block of business.

| | | INCURRED MONTH | | | | | |
|---|---|---|---|---|---|---|---|
| | | Jan-15 | Feb-15 | Mar-15 | Apr-15 | May-15 | Jun-15 |
| PAID MONTH | Jan-15 | $900 | | | | | |
| | Feb-15 | $650 | $1,000 | | | | |
| | Mar-15 | $350 | $1,100 | $800 | | | |
| | Apr-15 | $125 | $700 | $400 | $700 | | |
| | May-15 | $50 | $400 | $100 | $400 | $1,200 | |
| | Jun-15 | $20 | $200 | $400 | $200 | $900 | $800 |

(c) (*3 points*)

(i) (*2 points*) Calculate the IBNR claims reserve using the triangulation method. Show your work.

(ii) (*1 point*) List adjustments to the Triangulation Method that could lead to alternative claims reserve results.

(d) (*1 point*) Explain why the past claims run out pattern may not be representative of the future pattern.

You are given the following premium amounts:

| | Jan-15 | Feb-15 | Mar-15 | Apr-15 | May-15 | Jun-15 |
|---|---|---|---|---|---|---|
| Premium | $3,500 | $3,750 | $3,750 | $4,000 | $4,500 | $5,000 |

(e) (*2 points*) Calculate the IBNR claims reserve for April, May, and June using the loss ratio method using the ultimate claims results for Q1 2015 from Part (c). Show your work.

**7.** (*8 points*) TMNT Insurance Company implemented four disease management (DM) programs last year. You have been hired to evaluate the savings of the programs. You are given the following:

| | Baseline Year | | | Program Year | | |
|---|---|---|---|---|---|---|
| DM Program | Average Annual Membership | Allowed Per Unit | Admits | Average Annual Membership | Allowed Per Unit | Admits |
| Diabetes | 100,000 | $ 12,000 | 50,000 | 90,000 | $ 11,000 | 44,100 |
| Pulmonary Disease | 50,000 | $ 2,500 | 25,000 | 50,000 | $ 2,600 | 26,000 |
| Heart Failure | 75,000 | $ 10,000 | 7,500 | 85,000 | $ 10,000 | 8,650 |
| Asthma | 60,000 | $ 500 | 12,000 | 70,000 | $ 400 | 12,950 |

| Condition | Utilization Trend absent Program | DM Program Cost PMPM |
|---|---|---|
| Diabetes | 0% | $8.00 |
| Pulmonary Disease | 5% | $0.50 |
| Heart Failure | 6% | $3.00 |
| Asthma | 4% | $1.00 |

(a) (*4 points*) Calculate each program's net savings. Show your work.

TMNT has asked you to use plausibility factors to evaluate program success.

(b) (*1 point*) Describe the theory of plausibility factors.

(c) (*1 point*) Explain why plausibility factors may be a poor indicator of DM program savings.

(d) (*1 point*) Calculate the plausibility factor for each program. Show your work.

(e) (*1 point*) Recommend whether or not TMNT should continue each program.

Justify your answer.

**8.** (*4 points*) You are an actuarial consultant working for a pharmacy benefit manager (PBM).

(a) (*2 points*) Describe utilization and formulary management programs that reduce total pharmacy costs, including negative impacts these programs may have on plan participants.

You propose the following changes to the prescription drug benefits for one of your clients:

| | **Drug Category** | **Current Plan Design** | **Proposed Plan Design** |
|---|---|---|---|
| **Retail** | Generic | $10 copayment | $5 copayment |
| | Preferred Brand | $20 copayment | $20 copayment |
| | Non-Preferred Brand | $20 copayment | $40 copayment |
| **Mail Order** | Generic | 20% Coinsurance | $10 copayment |
| | Preferred Brand | | $40 copayment |
| | Non-Preferred Brand | | $80 copayment |
| **Utilization Management** | All | None | Programs Included |

(b) (*1 point*) Describe how the current benefit design may contribute to high plan costs.

(c) (*1 point*) Explain how the proposed plan design promotes more cost-effective drug utilization.

****END OF EXAMINATION****
**Morning Session**

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