

Exam GHADV

AFTERNOON SESSION

Date: Thursday, November 1, 2018

Time: 1:30 p.m. – 3:45 p.m.

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This afternoon session consists of 6 questions numbered 10 through 15 for a total of 40 points. The points for each question are indicated at the beginning of the question. Questions 10 - 15 pertain to the Case Study, which is enclosed inside the front cover of this exam booklet.
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.

Recognized by the Canadian Institute of Actuaries.

Tournez le cahier d'examen pour la version française.

CASE STUDY INSTRUCTIONS

The case study will be used as a basis for some examination questions. Be sure to answer the question asked by referring to the case study. For example, when asked for advantages of a particular plan design to a company referenced in the case study, your response should be limited to that company. Other advantages should not be listed, as they are extraneous to the question and will result in no additional credit. Further, if they conflict with the applicable advantages, no credit will be given.

****BEGINNING OF EXAMINATION****

Afternoon Session
Beginning with Question 10

Questions 10-15 pertain to the Case Study.
Each question should be answered independently.

10. (5 points) You are the valuation actuary for Quantum.

- (a) (1 point) Describe considerations for establishing reserve cells.
- (b) (1 point) Recommend reserving cells for Quantum. Justify your answer.

In addition to Exhibit 2, you are given:

- Trend rate is 12% per annum
 - Assume that July 2016 through December 2016 claims are complete.
- (c) (3 points) Calculate the total reserves needed for October 2017 through December 2017 using the Projection Method Per Member Per Month (PMPM) as of December 31, 2017. Show your work.

**Questions 10-15 pertain to the Case Study.
Each question should be answered independently.**

11. (7 Points) Spectre Accountable Care Organization (SACO) is considering retaining Skyfall to quantify the expected savings and optimal implementation strategy for the initiatives detailed in SACO Email 1. You are developing Skyfall’s proposal for this work. The benchmark period is 2018-2020. SACO will participate in the Medicare Shared Savings Program (MSSP) for the 2021-2023 program period.

(a) (5 points)

- (i) Construct a timeline illustrating when SACO should implement each initiative to maximize profit.
- (ii) Justify the recommended implementation date for each initiative. Include a qualitative evaluation of how the recommendation will maximize SACO’s profitability.

SACO will renew its participation in the MSSP for the 2024-2026 program period.

(b) (2 points) Recommend when SACO should implement each initiative given continued participation in the MSSP. Justify your response.

**Questions 10-15 pertain to the Case Study.
Each question should be answered independently.**

12. (6 points) You are given:

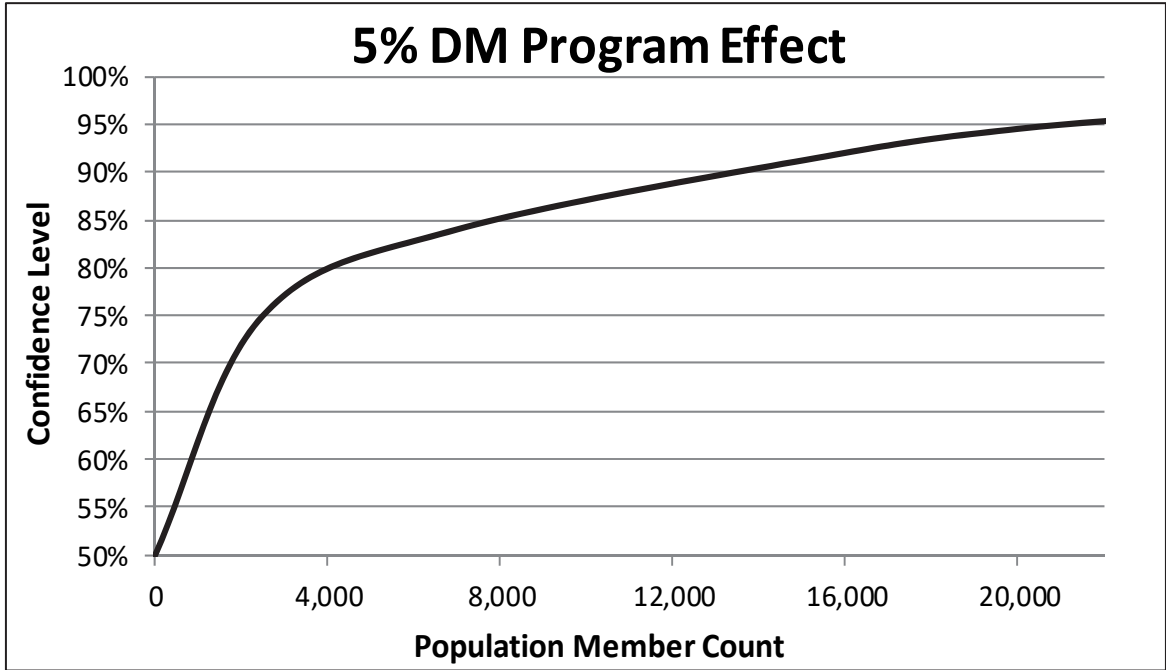
- Exhibit 8
- Annual utilization trend of 6%.

(a) (1 point) Calculate the savings from averted readmissions to Royale Health for the all chronic cohort using the actuarially adjusted historical control methodology. Show your work.

Royale Health wants to know if the sample size of the all chronic cohort is large enough to measure the return on investment of their disease management (DM) program.

HoldEm DM provided the following for the indexed and chronic populations:

Sample Size (Indexed Population)	500	5,000	20,000	40,000
Mean	13.9%	9.5%	9.4%	9.4%
Standard Deviation	29.7%	10.1%	5.1%	3.6%



(b) (1 point) Verify whether the different sample sizes for the indexed population follow a normal distribution. Show your work.

12. Continued

- (c) (1 point) Calculate the predicted standard deviation in the trend for the all chronic cohort in Royale Health's DM program. Show your work.
- (d) (1 point) Evaluate whether the sample size for the all chronic cohort is large enough to observe a 5% DM effect with 95% confidence.
- (e) (2 points) Describe alternative methods for measuring the fluctuations in calculated DM savings.

**Questions 10-15 pertain to the Case Study.
Each question should be answered independently.**

13. (9 points)

- (a) (1 point) Define relative value units (RVUs).
- (b) (1 point) Describe changes to bundled payment initiatives under the Affordable Care Act.

Quantum is considering terminating hospitals from its network in 2018 whose average spend exceeds the industry average. You are given:

- Exhibits 6 and 6A.
 - Exhibit 6 provides allowed charges.
 - Assume facility charges in Exhibit 6A include all corresponding professional services and supplies.
- Unit costs increased 2% in 2017 for all service categories.
- The following procedure mix:

	Industry	Hospital A	Hospital B	Hospital C
Knee Replacement	15%	15%	10%	15%
Hip Replacement	20%	25%	20%	25%
Cesarean Section	10%	10%	10%	10%
Colonoscopy	35%	30%	35%	30%
Appendectomy	10%	10%	15%	10%
Cardiac Stent	10%	10%	10%	10%

- (c) (3 points) Recommend which hospitals, if any, Quantum should terminate from its network based on 2017 experience using Quantum’s methodology. Justify your response. Show your work.
- (d) (1 point) Describe issues with applying this methodology for determining which hospitals to terminate from the network.

As an alternative, Quantum is considering adopting the bundled contracts given in Exhibit 6C for 2018. Assume annual utilization and unit cost trends for 2018 will be 0%.

- (e) (2 points) Recommend which procedures at Hospital A, if any, Quantum should adopt a bundled contract for in 2018. Justify your response. Show your work.

Quantum concluded it can only administer a single bundled contract covering all six procedures.

- (f) (1 point) Recommend whether or not Quantum should pursue a bundled contract with Hospital A for 2018. Justify your response. Show your work.

*Questions 10-15 pertain to the Case Study.
Each question should be answered independently.*

14. (9 points) You are the President at Skyfall Actuarial Consulting and the opening actuary for Quantum Health Insurance Company. One of your responsibilities is to develop the incurred but not reported (IBNR) claim liabilities for Quantum. You are preparing your actuarial opinion to support the annual statements of Quantum.

- (a) (3 points) Describe recommended actuarial standards of practice regarding:
- (i) Selection of data
 - (ii) Review of data
 - (iii) Use of data

You are given Exhibit 5 and the following:

Incurred month	Cumulative paid claims as of 12/31/2017 (in \$000)
Oct-17	\$1,612
Nov-17	\$1,260
Dec-17	\$98

- Assume all claims are completely paid after 12 months.
 - The completion factor for September 2017 is 0.753.
- (b) (3 points) Calculate the IBNR reserve for the incurrence months October 2017 – December 2017 as of 12/31/2017 using the Sum of Digits averaging technique. Show your work.
- (c) (3 points) Using actuarial standards of practice:
- (i) Describe requirements for actuarial communications.
 - (ii) List disclosures in actuarial reports.

**Questions 10-15 pertain to the Case Study.
Each question should be answered independently.**

- 15.** (4 points) You are reviewing the results of Royale Health's study on the heart failure disease management program.
- (a) (1 point) Describe propensity score matching and its value for program evaluation.
 - (b) (1 point) Compare and contrast propensity scores with risk adjustment.
 - (c) (2 points) Evaluate the propensity score results in Exhibit 9 of the case study.

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

USE THIS PAGE FOR YOUR SCRATCH WORK

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