SOCIETY OF ACTUARIES
Group and Health – Advanced

Exam GHADV

MORNING SESSION

Date: Thursday, April 30, 2015
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 6 questions numbered 9 through 14.

   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.

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Printed in the U.S.A.
Exam GHADV

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

1. (*4 points*) You have been asked to evaluate the cost savings of a disease management program. You have been provided the following table that shows results from a study:

Chronic Grouping	Terminating	Continuing	Newly Identified
Average Cost Baseline Per Member Per Month (PMPM)	$930	$707	$600
Number of Member Months Baseline	30,000	180,000	70,000
Average Cost Year 1 PMPM	$750	$600	$500
Number of Member Months Year 1	50,000	185,000	60,000

Assume 6% annual trend from the baseline to year 1.

(a) (*2 points*) Calculate the PMPM savings and the annual savings of the program. Show your work.

(b) (*1 point*) Describe how truncation stabilizes trend measurement.

(c) (*1 point*) Recommend a level for which to truncate claims in the above study. Justify your recommendation.

2. (*8 points*) You have been hired to advise a medical group that is in the process of negotiating a provider contract with a large health plan. The current provider payment structure follows a resource based relative value schedule (RBRVS) similar to the Medicare model.

(a) (*1 point*) List reasons a provider group chooses to contract with a health plan.

(b) (*1 point*) Describe the three relative value units (RVUs) used in the RBRVS, and describe how the payment for a service is calculated.

During the contract negotiation process, the medical group is approached by a large Independent Physician Association (IPA) comprised of many primary care and specialty providers in the area. The IPA performs its own network management and credentialing, but does not perform medical management.

(c) (*2 points*) Describe the advantages and disadvantages to contracting with an IPA from the perspective of the health plan.

(d) (*1 point*) List four elements of the credentialing application that the IPA should review before offering the medical group membership.

The medical group decides to join the IPA. As part of the contract between the health plan and the IPA, a Pay for Performance (P4P) incentive is included that provides a fixed percentage of compensation based on satisfying predetermined measures and goals. Performance measures are based on the entire IPA and the focus is placed on process and structure. The health plan has agreed to provide the IPA with data to support provider profiling initiatives to meet the P4P measures and goals.

(e) (*2 points*) Describe the advantages and disadvantages of basing P4P incentives on the performance of the entire group versus individual providers from the perspective of the IPA.

(f) (*1 point*) Describe how provider profiles can assist the IPA in meeting the P4P goals.

3. (*7 points*) You are the actuary for Disability Protective Insurance (DPI). DPI is introducing short-term disability (STD) and long-term disability (LTD) products for the first time.

(a) (*2 points*) Describe the types of claim reserves needed for disability insurance.

(b) (*2 points*) Describe the methods used to calculate disability claim reserves for:

(i) Both STD and LTD

(ii) Only STD

(iii) Only LTD

DPI has received LTD claims for three members. You are given:

- All were disabled at age 40
- All will be covered until age 65
- Interest will be 0% per year

The following table summarizes these claims along with DPI's reserving assumptions and policy provisions:

Member	1	2	3
Monthly Benefit	\$500	\$200	\$300
Elimination Period (months)	6	6	6
Months Since Date of Disability	10	12	8
Accumulated Value of Past Benefits (per \$ of Monthly Benefit)	\$4	\$6	\$2
Present Value of Expected Future Benefits (per \$ of Monthly Benefit)	\$200	\$150	\$60
Probability Denied Claim would be Approved if Appealed	0.5	0.3	0.1

(c) (*3 points*) Calculate the reserve, assuming all claims:

(i) Have been approved

(ii) Have been denied by DPI and are currently being appealed by the claimants

4. (*7 points*) You are reviewing the underwriting and pricing on a small group health plan written before the Affordable Care Act (ACA).

(a) (*4 points*) Compare and contrast the ACA's impact on each underwriting rating parameter.

You are given the following information for the small group:

- The group has only four enrolled participants
- Each participant has single coverage

	Annual Claim Cost	Pre-ACA Annual Premium
21-year-old Male Non-Smoker	$500	$625
21-year-old Female Non-Smoker	$800	$975
64-year-old Male Non-Smoker	$2,300	$3,000
64-year-old Female Smoker	$4,000	$4,900

(b) (*3 points*) Calculate the ACA-compliant annual premium for each participant. Assume no trend. Show your work.

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5. (*9 points*)

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

(b) (*1 point*) List reasons why a member group might be excluded from a disease management population. Provide examples.

You are an actuary evaluating a disease management program. You are given the following program experience:

Baseline Period: Chronic Population		
Member Months	HIV	1,800
	Transplant	900
	All Chronic	45,000
Claims	HIV Member Claims	$1,250,000
	Transplant Member Claims	$900,000
	All Chronic Member Claims	$14,000,000
	HIV Admissions	68
	Transplant Admissions	49
	All Chronic Admissions	1,300
Baseline Period: Indexed Population		
Members Months	Indexed Members	140,000
Claims	Indexed Member Claims	$17,000,000
Interventions Period: Chronic Population		
Member Months	HIV	2,000
	Transplant	1,000
	All Chronic	50,000
Claims	HIV Member Claims	$1,500,000
	Transplant Member Claims	$1,000,000
	All Chronic Member Claims	$15,000,000
	HIV Admissions	70
	Transplant Admissions	51
	All Chronic Admissions	1,400
Intervention Period: Indexed Population		
Member Months	Indexed Members	150,000
Claims	Indexed Member Claims	$20,000,000
Cost of the Disease Management Program PMPM:		$50

5. Continued

(c) (*5 points*) For this disease management program:

(i) Calculate the total dollar savings. Show your work.

(ii) Calculate the net return on investment (ROI). Show your work.

(iii) Recommend whether or not to continue with the program. Justify your answer.

(d) (*2 points*)

(i) Describe plausibility factors.

(ii) Evaluate whether the savings calculated is plausible for this intervention. Justify your answer.

6. (*8 points*)

(a) (*2 points*) Describe propensity scores and propensity score matching.

(b) (*1 point*) Describe the general approach to using propensity score matching.

(c) (*1 point*) Describe methods of data matching that might be used in a propensity score matching model, including the strengths of each method.

(d) (*1 point*) Describe the similarities and differences between propensity scores and risk adjustment.

You are the pricing actuary for NOP Health Plan. Last year NOP initiated a diabetes self-management education/training (DSME/T) program to help control costs associated with Type 2 diabetes.

(e) (*1 point*) Describe the purpose and components of a DSME/T program.

A consultant from another department stated that the program is not working because he performed an unmatched study that compared members enrolled in the program to members not enrolled in the program. You completed a similar study using propensity score matching (matched).

You are given the following program experience:

	Unmatched		**Matched**	
	Enrolled in DSME/T	**Not enrolled in DSME/T**	**Enrolled in DSME/T**	**Not enrolled in DSME/T**
Variable Descriptions	**Intervention Group**	**Control Group**	**Intervention Group**	**Control Group**
Admissions per 1,000	200	203	191	196
Cost per admission	$14,300	$14,600	$14,306	$15,516
Diabetes admissions per 1,000	126	120	126	136
Cost per diabetes admission	$12,500	$13,000	$12,616	$14,680
Percentage of members compliant with antidiabetic medication	52%	53%	52%	49%

6. Continued

(f) (*2 points*)

(i) Interpret the different conclusions based on the separate studies performed.

(ii) Recommend whether or not to continue with the program. Justify your answer.

7. (*10 points*) You are an actuary for Mid-Western Health (MWH), a regional health insurer. MWH is introducing an Accountable Care Organization (ACO) product.

(a) (*1 point*) Define Accountable Care Organization (ACO).

(b) (*3 points*) Describe:

(i) Three types of payment arrangements typically used with ACOs.

(ii) Advantages to MWH of introducing an ACO product.

(iii) Reasons healthcare providers would participate in an ACO product.

You are given the following scenarios:

Scenario	Risk Sharing Arrangement	Target Claims Cost (Per Member Per Month – (PMPM))	Actual Claims Cost PMPM
I.	ACO shares in 30% of claims below the target	$200	$170
II.	ACO shares in 50% of claims both above and below the target	$200	$180
III.	ACO shares in 50% of claims both above and below the target	$200	$240

(c) (*1 point*) Calculate the payment MWH would make to or receive from the ACO providers under each scenario. Show your work.

MWH is introducing a new ACO product beginning January 1, 2016. MWH expects all its current membership to switch to the new ACO product. The final provider contracts were not as favorable as MWH assumed they would be when pricing the product.

You are given the following:

Current Members:	10,000
Projected Premium:	$200 PMPM
Projected Claims:	$180 PMPM
Projected Administrative Costs:	$30 PMPM
Discount Rate:	0% per annum
Valuation Date:	December 31, 2015

All policies renew each January 1.
The 2016 membership will remain at the current level.

7. Continued

(d) (*1 point*) Explain when a Premium Deficiency Reserve (PDR) is required.

(e) (*1 point*) Calculate the PDR MWH should establish. Show your work.

You are given the following scenarios:

- Membership, premium and administrative costs are as given above.
- Projected claims are gross medical expenses before considering the risk sharing and quality incentives with the ACO providers.
- The claims target for the ACO providers in all scenarios is $180 PMPM.

Scenario	Arrangement with ACO Providers	Projected Claims PMPM	Projected Quality Index
I.	Providers share in 50% of gains if quality index exceeds 1.0	$170	1.2
II.	Providers share in 25% of claims better or worse than target	$200	0.8
III.	Providers share in 40% of claims better or worse than target and receive a $10 PMPM bonus if the quality index exceeds 1.0	$160	1.2

(f) (*3 points*) Calculate the PDR that MWH would need to establish in each scenario. Show your work.

8. (*7 points*) You are the CFO of Big Insurance Company (BIC), a U.S. health insurer. BIC is concentrated principally in two market segments: commercial individual health insurance and commercial small-group health insurance. You are concerned that the market reforms introduced by the Affordable Care Act (ACA) may create uncertainty for health insurance issuers.

(a) (*1 point*) Describe risk-adjustment for individual and small-group products per the ACA.

(b) (*2 points*) Describe how the following ACA premium stabilization programs may lead to increased uncertainty and impair comparability to prior years in the 2014 financial statements for an insurer:

- Risk-adjustment
- Reinsurance

(c) (*1 point*) Describe current differences between the ACA individual and small-group risk-adjustment mechanism and the Medicare Advantage risk-adjustment mechanism.

BIC is enrolled in an ACA risk-adjustment program in a market with one competitor.

- BIC has 80% market share and its competitor has 20% market share.
- BIC and its competitor charge identical premiums for the same cohort of enrollees.
- BIC has an aggregate raw risk score of 1.10 while its competitor has an aggregate raw risk score of 1.35.

(d) (*2 points*) Calculate the transfer that BIC must make to the competitor as a percent of:

- BIC's premium
- The competitor's premium

Show your work.

(e) (*1 point*) Assess the impact these results have on the financial statements for BIC and its competitor.

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

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