November 2002
Society of Actuaries

****BEGINNING OF EXAMINATION 8****
HEALTH, GROUP LIFE & MANAGED CARE
MORNING SESSION

1. (*5 points*) You are the COO of ABC Insurance Company. You are considering outsourcing the claim and benefit administration function.

(a) Describe common claims and benefit administration problems and their effects.

(b) Describe measures of claim quality and methods to increase quality.

(c) Describe methods commonly used to control claims costs and claims administrative expense.

(d) Review circumstances under which you might outsource claims administration.

2. (*5 points*) A company has successfully implemented a flexible benefits program for its salaried employees with the following benefits:

<u>Basic Coverage</u>

Non-hospital and drug:	\$300 deductible, 75% coinsurance
Hospital:	Semi-private room, \$150 maximum per day
Out-of-country:	\$50,000 maximum per year \$500,000 lifetime maximum
Vision:	No coverage

<u>Enhanced Coverage</u>

Non-hospital and drug:	\$100 deductible, 90% coinsurance
Hospital:	Semi-private room, \$250 maximum per day
Out-of-country:	\$80,000 maximum per year \$1,000,000 lifetime maximum
Vision:	\$200 maximum per year

Employee Palpatine incurred the following medical expenses over a one-year period:

Apr. 5	formulary drug prescription of \$125
Jun. 10	formulary drug prescription of \$180
Jul. 18	hospital stay, semi-private room at \$180
Jul. 19	hospital stay, semi-private room at \$180
Jul. 20	hospital stay, semi-private room at \$180
Sept. 22	formulary drug prescription of \$60
Dec. 5	new glasses at \$280

(a) Identify and address the concerns the union might have with the company's proposal to offer this program to union members. Include design alternatives that could be substituted.

(b) Explain the general principles regarding selection that should be considered when implementing a flexible benefits program.

(c) Calculate the out-of-pocket expenses Palpatine would have paid under the Basic and the Enhanced options.

Questions 3 – 8 pertain to the Case Study

3. (*5 points*) Wonderful Life's small group block of business is experiencing deteriorating profits. The Chief Actuary believes part of this deterioration is due to the wearing off of underwriting. You have been asked to design a durational study for Wonderful Life's closed block of small group business using the data found in Table MM-7.

(a) (*1 point*) Describe the information that would be required to compile this study.

(b) (*1 point*) Describe the potential limitations of the data used in a durational study and the factors you should consider in adjusting the data.

(c) (*3 points*) Calculate the annual durational factors for Wonderful Life's closed block of small group experience using the data in table MM-7 and other relevant information on the small group block discussed in the case study. Show your work.

Questions 3 – 8 pertain to the Case Study

4. (*10 points*) Wonderful Life is considering the purchase of medical reinsurance that is a combination of quota share and specific excess. The quote they have received is as follows:

Specific excess

- 100% of claims in excess of $50,000
- Covers claims incurred from July 1, 2000 through June 30, 2001
- Reinsurance premium = $20.00 Per Employee Per Month

Quota share reinsurance

- 30% of claims incurred up to $50,000
- Ceding allowance: 20% of ceded premium
- Covers premium earned and claims incurred from July 1, 2000 through June 30, 2001

Wonderful Life's management has set a pre-tax ROE target of 25% while holding risk-based capital at 30% of premium. Current operating expenses are 15.1% of premium and pre-tax investment income is 3.0% of premium.

(a) (*4 points*) Calculate Wonderful Life's total pre-tax operating gain using the data in table MM-3 assuming Wonderful Life purchases this reinsurance coverage. Show your work.

(b) (*4 points*) Determine if Wonderful Life would have met its pre-tax ROE objectives:

(i) Without the reinsurance coverage.
(ii) With the reinsurance coverage.

(c) (*2 points*) Describe the other profit measures you could use in analyzing this business.

Questions 3 – 8 pertain to the Case Study

5. (*7 points*) You are the actuary for the Major Medical Division of Wonderful Life. You have been asked to develop a forecast for the major medical line.

You are given the data in Tables MM-3, MM-6, and MM-7.

(a) Describe the major projection elements governing the design of a financial forecast.

(b) Identify additional information you would need to develop a forecast and any concerns about the information you have been provided.

6. (*6 points*) Wonderful Life is examining various methods of smoothing age-to-age development factors.

(a) *(4 points)* Calculate the first lag month's development factor for Wonderful Life using the most recent four months of experience from Table MM-4b under the following averaging approaches:

(i) Without Hi and Lo
(ii) Geometric Mean
(iii) Dollar-Weighted
(iv) Per Member Age-to-Age Ratios

(b) *(2 points)* Describe other methods that could be used to smooth age-to-age development factors.

Questions 3 – 8 pertain to the Case Study

7. (*9 points*) You are the pricing actuary for Wonderful Life. You have been asked to evaluate the expected cost trend for Group 6. You have been given the following data in addition to Tables MM-2 and MM-3.

	Option 1		Option 2	
	%EE's	Avg Cost	%EE's	Avg Cost
Sub-group 1	80%	5% Higher	90%	5% Lower
Sub-group 2	20%	20% Lower	10%	45% Higher

(a) *(2 points)* Calculate the expected claim cost per employee per month (PEPM) for the next renewal period beginning March 1, 2002 based on the current enrollment mix.

(b) *(5 points)* At open enrollment, employees in sub-group 2 of each option choose the other option. Calculate the expected trend for each option and determine the impact on the overall expected trend.

(c) *(2 points)* The employer is currently paying 70% of the cost of Option 1 and Option 2.

(i) Calculate the amount the employer and employee would pay PEPM based on the current rates and enrollment mix if the employer were to pay an equal amount under a fixed dollar cost scheme.

(ii) Describe the potential concerns associated with a fixed dollar cost scheme.

Questions 3 – 8 pertain to the Case Study

8. (*10 points*) You are an underwriter at Wonderful Life and have been given the following information:

- Tables BI with the following assumptions:
  - — The experience shown is for July 1, 2000 to June 30, 2001
  - — Amount of claims greater than $50,000 totals $540,000
- Tables MM-2
- Table MM-3a

(a) (*3 points*) Calculate the retrospective refunds for Group 4 and for Group 5. Show your work.

(b) *(5 points)* Wonderful Life is quoting its most popular $250 deductible plan to Bailey Industries for a March 1, 2002 effective date. Assume the quote will cover existing PPO employees with a fully insured plan and that quoted benefits are the same as their current plan. Calculate the composite, employee only, and employee plus dependent rates. Show your work.

(c) (*2 points*) Explain considerations in using past experience data for projecting future experience.

9. (*3 points*) Your consulting firm is hosting a roundtable breakfast for business leaders. The topic of your presentation is "Recent Managed Care Trends Affecting Employers." Most attendees will be large, local employers.

(a) Describe general considerations related to this topic affecting all employers.

(b) Describe other relevant factors specific to the size of the employer.

****END OF EXAMINATION****
MORNING SESSION

****BEGINNING OF EXAMINATION 8****
MANAGED CARE SEGMENT
AFTERNOON SESSION
Beginning With Question 10

10. (*4 points*) Senator Ima Crook from Anystate, USA has proposed a bill requiring Medicare to provide a prescription drug benefit.

This plan would be separate from medical benefits and would be the primary plan for purposes of coordination of benefits.

The plan would offer the following benefits:

- 90% of generic drugs after a $50 annual deductible.
- 80% of brand drugs after a $100 annual deductible.
- Unlimited annual benefit.

ACME Widget Company currently pays the entire cost of a retiree prescription drug plan with the following copayments per prescription:

- $10 on generic drugs
- $20 on brand drugs

Jill Pill is a retiree of ACME anticipating the following monthly drug usage:

	Number of Prescriptions	Average Cost/Prescription
Generic	5	$20
Brand	5	$100

If this bill is adopted:

(a) Describe the different coordination of benefit (COB) approaches an employer could consider in relation to the new plan.

(b) For each COB approach, calculate the total annual cost to ACME in connection with Jill's anticipated claims.

11. (*3 points*) You are the individual health insurance actuary for XYZ Insurance company.

(a) Describe the type of expense allocations that could be used for individual health products.

(b) Describe expenses that are typically taken into account in the pricing process and how they are reflected.

(c) Explain the criteria that the expense allocation method must meet.

12. (*5 points*) Using the US and Canadian tax treatment as examples, discuss the impact of taxation of premiums and benefits received on the design of employer-provided insurance programs. Include examples for Life, Disability, Medical, and Long-Term Care and discuss from both the employee and employer perspective.

13. (*5 points*) You are a product development actuary working for a multi-line insurance company. The company is developing an individual medical insurance product.

(a) Outline the types of premium rate and renewal guarantees that may be used and characteristics of each.

(b) Describe factors that influence the level of lapsation rates for these types of policies.

(c) Explain the differences between underwriting life insurance and underwriting for major medical insurance.

(d) Describe sources of information the underwriter might utilize.

14. (*3 points*) You are an actuary for JKL Life which has recently decided to enter the group medical line of business. You have been asked to lead a project to design the needed management information system.

(a) Review the challenges of producing management information reports.

(b) Describe information/reports that would be useful to analyze claims and expenses.

Questions 15 – 17 pertain to the Case Study

15. *(6 points)* You are an actuary for the Bedford Group. In a meeting with the VP of Provider Contracts, you are told that IPA1 and IPA3 are considering consolidating operations and would like to meet next week to formulate a new contract.

Your CEO is concerned that this consolidation would impact physician contracts. She wants to hold physician costs for all IPA's prior to any risk-share arrangements to 125% of 2000 Medicare RBRVS.

Using Tables MC-5 and MC-7:

(a) Review the advantages and disadvantages of different contracting arrangements between physician entities and managed care companies.

(b) Describe the legal structure of an IPA and explain why IPA1 and IPA3 may or may not want to consolidate.

(c) Calculate the overall percentage of 2000 Medicare RBRVS paid in 2001. Show your work.

(d) Calculate the percentage of 2000 Medicare RBRVS that must be negotiated with the consolidated IPA in order to meet the CEO's requirements. Show your work.

Questions 15 – 17 pertain to the Case Study

16. *(4 points)* You are an actuary for the Bedford Group. Hospital ID 1 has been successful with its Maternity case rate and would like to consider moving to a case rate or capitation reimbursement for its Medical and Surgical services.

Using Tables MC-2 and MC-7:

(a) Explain differences between case rate, capitation and per diem reimbursement arrangements and provide reasons why Hospital ID 1 may want to consider changing.

(b) Calculate a combined case rate for all Medical and Surgical inpatient services for Hospital ID 1 using 2001 experience. Show your work.

(c) Describe the financial issues that Hospital ID 1 should consider prior to revising its current contract.

Questions 15 – 17 pertain to the Case Study

17. (*12 points*) You are the Chief Actuary for the Bedford Group and have been approached by a vendor offering demand management programs. You have determined that these programs can save 5% per year on Hospital ID 1 inpatient medical and surgical claims at a cost of $150,000 per year in administrative expenses.

In recent years Hospital ID 1 has been approaching full capacity of its inpatient beds. They are considering implementing a clinical pathways program. The hospital estimates that by implementing the program, it can reduce its medical and surgical inpatient days by 10%. Implementation cost for the program is estimated to be $250,000. Hospital ID 1 has approached you to share in half the implementation cost and to increase their reimbursement by 5% to recognize the improvement in care.

In addition to inpatient claims, the Bedford Group paid $57,960,000 in outpatient claims to Hospital ID 1 in 2001. Assume no other contract provisions change and membership and utilization remain at 2001 levels.

Using Tables MC-2, MC-3, MC-7, and MC-8:

(a) (*2 points*) Compare and contrast disease management and demand management.

(b) (*2 points*) Describe clinical pathways and their possible uses.

(c) (*6 points*) Calculate the expected impact on 2001 revenue to Hospital ID 1 from the Bedford Group for the following programs:
(i) clinical pathways
(ii) demand management

(d) (*2 points*) Due to limited resources, only one of the two programs may be implemented. Recommend which program you would choose. Support your recommendation and show any related work.

18. *(5 points)* You are an actuary assigned to develop a cost estimate for Medicare to provide a prescription drug benefit to Medicare beneficiaries.

You are given the following data and information:

- benefit effective date is 1/1/2003
- all seniors will be covered and any existing drug coverages will be terminated
- annual deductible will be $3,000
- no coinsurance will be charged
- prescription drug per capita spending increases 14.5% per year
- prescription drug spending is uniform within each expenditure range

Expenditure Data for Calendar Year 2000 (amounts in millions)						
	Seniors with Drug coverage			Seniors without Drug coverage		
Expenditure Range ($)	Number of Seniors	Drug Cost		Number of Seniors	Drug Cost	
		Carrier	Out of Pocket		Carrier	Out of Pocket
No cost	3	$ 0	$ 0	1	0	$ 0
$0-250	5	$ 403	$ 173	2	0	$ 260
$251-2,000	11	$9,240	$3,960	5	0	$6,250
$2,001-3,000	5	$8,400	$3,600	2	0	$4,820
$3,000+	3	$7,350	$3,150	1	0	$3,600

(a) Calculate the 2003 expected drug cost:
 (i) in total,
 (ii) for Medicare.

(b) Outline comments regarding the ability of the proposed plan to control current and future Medicare drug costs.

19. *(4 points)* The 2002 budget for HMO DEF calls for reduced primary care and specialty physician utilization. An effort is being made to identify the least efficient physicians, and subsequently to change physician behavior, terminate contracts, or redirect care as needed.

(a) Describe how you would identify costly practice patterns.

(b) List data sources you might access to support this effort.

(c) Explain how risk share arrangements may influence utilization.

(d) List factors other than utilization patterns that you should consider before requesting termination of a physician.

20. *(4 points)* You are a consulting actuary to an insurance company that is considering creating an HMO subsidiary.

(a) Describe managed care regulation governing insurance company operations that the company may encounter.

(b) Describe obligations to perform medical management activities and consequences of non-compliance with such obligations.

21. *(5 points)* You are the Valuation Actuary for an HMO. You are developing your 12/31/2001 reserves for a block of business acquired from another company on July 1, 2001. Your company is not responsible for runout on claims incurred prior to July 1, 2001. You use the authorization method for developing the hospital inpatient IBNR reserve component. Your company has the following reimbursement schedules through September 2001:

	Average Per Diem	Pct of Days
Hospital A	$1,000	25%
Hospital B	$1,100	50%
Hospital C	$1,200	25%

Effective October 1, 2001, Hospitals A and B increased their per diems by 10% and Hospital C increased its per diem by 20%. Your system reports have provided the following information for inpatient services:

	Authorized Hospital Days	Incurred and Paid Claims	Completion Factors	Authorization Credibility
Jul 2001	2,205	$2,475,000	1.00	0
Aug 2001	2,200	$1,950,000	.85	0
Sep 2001	2,225	$2,150,000	.80	.25
Oct 2001	2,050	$1,700,000	.60	.50
Nov 2001	2,025	$1,070,000	.35	. 75
Dec 2001	1,950	$247,500	.10	1.00

(a) (*1 point*) Create a checklist of managed care issues that you will need to consider in preparing your annual Statement of Opinion.

(b) (*3 points*) Calculate the IBNR reserve as of 12/31/2001 based on the information provided. Show your work.

(c) (*1 point*) List reasons why the authorized hospital days may differ from the incurred days.

****END OF EXAMINATION****
AFTERNOON SESSION