HEALTH, GROUP LIFE & MANAGED CARE
ILLUSTRATIVE SOLUTIONS

Solution #1

a) Explain the non-financial advantages of having a reinsurance plan in place.

Increase intellectual capacity
access to knowledge and expertise to underwrite and administer the risk

Joint ventures
Fronting
ceding company may cede nearly 100% of the risk
used when reinsurer not licensed as direct insurer or no presence
100% ceding not allowed in the state of New York
Lack of ceding company commitment
product is viewed as an accommodation to the market
ceding company cede almost 100% of the risk
Mutual interests
both insurer and reinsurer interested in selling the product
nearly equal participation in the risk
both contribute to the design, pricing, U/W and admin
Acquisition
assumption reinsurance agreement where the buyer assumes all the obligations
minimizes disruption to policyholders while deciding whether to rewrite policies
may improve persistency on the assumed block of business

b) Describe the limitations of reinsurance

Reinsurance cannot render an inherently uninsurable risk insurable

A risk that has been under-rated cannot be suddenly adequately rated

State-run reinsurance pools do not solve the imbalance of premiums and losses that created non-availability of insurance in the first place

Reinsurance can be misused or overused
ceding company should always retain largest possible risk without endangering solvency

Reinsurance may be used for improper, illegal or fraudulent purposes
reinsurance can be used as a device to bilk reinsurers and other entities

example is Equity Funding in California (policies fraudulently created)

Solution #2

(a) Goals and objectives of insurance regulation:

Goals of Insurance Regulation

Regulation protects the consumer and prevents problems for the consumer. Some of these problems such as misleading marketing materials, unfair pricing, inadequate reserves and insolvency as well as bad matches between policyholder needs and policy benefits can be avoided by regulation.

Regulation is also used to maintain fairness among competing companies, raise tax money, advance social goals, and promote cost efficiency. Regulation can't solve all problems; the aim is to accomplish as much as possible within existing constraints.

(b) Legal Framework, Steps and Enforcement:

Legal framework

The constitution gives the legislature authority to pass laws
Laws are enacted to set forth general standards of protection.
Regulations promulgated by agencies to implement laws.
Administrative directives or bulletins address specific and timely issues.

In the US, the McCarran-Ferguson Act gives states authority except where specific federal statute preempts it.
Some examples of Federal Regulation are:

- ADEA
- ADA
- BBA
- COBRA
- ERISA
- FMLA
- HIPAA
- HMO Act
- Medicare as secondary payer laws

Solution #2 (Continued)

The Federal Regulation that has had the greatest impact on state regulation is ERISA. One section of the regulation contains the "ERISA preemption". This section provides that State regulation of insurance does not apply to benefits provided directly by an employer to his employees as part of an employer welfare plan

Another regulation that has had an impact is HIPAA. This regulation requires that self- funded employer plans provide for 'portability' In addition, this regulation addresses long term care insurance plans.

Steps to regulation

Licensing. Establishes which companies are subject to regulation Companies get a unique legal name. Also, agents are licensed in order to monitor sales practices.

Information Gathering. The purpose of information gathering is to monitor financial soundness, confirm compliance with regulations, and provide information to consumers and to help in designing new regulatory requirements.

Prior Approval for business activities Useful in cases where prevention is more effective than cure of a regulatory problem. Prior approval has been required for policy form language, premium rate levels, reinsurance arrangements, dividend payments, mergers and investments

Enforcement. Often relies on consumer complaints. Regulation without enforcement ultimately can be ignored by the regulated

Receivership. Regulates companies that are financially impaired. Regulation ranges from receiving and reviewing special reports on financial condition to taking over an insolvent company

State Solvency Regulation covers capital requirements such as "risk based capital", guaranty funds and adequacy of reserve levels.

State Consumer Protection Regulation covers disclosure of key features of insurance policies, reasonableness of benefits and fairness in order to prohibit discrimination among classes of policyholders

Solution #3

(a)

Sources of external trend

(1) CPI/PPI
- market basket of goods
- tracks out of pocket costs, so trend is overweight vision/dental/nursing home and underweight physician and hospital in/out patient
- uses billed charges so may overstate trend

(2) National Health Expenditure of GDP
- shows by type of payor and type of provider
- subject to frequent revision
- subject to substantial lag time

(3) Medicare
- for those 65+/disabled
- not much maternity, pediatrics, Rx
- frequent benefit and eligibility changes overtime limit the usefulness and comparability of this data

(4) Databases
- from consultants

(5) Surveys
- results should only be used as a means to test trend assumptions from other sources

(b)

Problems in computing trends

- continuity issues with the data
- resources to do the trend studies may not be available
- info at sufficiently detailed level may not be available
- competitive pressures of the marketplace
- random fluctuation (e.g. catastrophic claims)
- interpretation of the data (pulse outliers- single outlier points, phase shifts in data)
- seasonality- look at 12 month rolling average
- loss ratio used- but reflects distortions caused by including premiums
- incomparability of year over year expense due to growth, shrinking block, one large group
- disruptions in claim payment system
- random fluctuations that makes good years look bad and/or bad groups look good

Solution #3 (Continued)

(c)

Net trend- this is the trend in the allowable PMPM claim cost adjusted for the leveraging effects of deductible.

PMPM claim cost = 5,250,000/(2,000*12) = 218.75

Plan A:

218.75	claim cost
-50.00	cost sharing
168.75	claim cost after value of deductible
-33.75	(20%) cost sharing
135.00	claim cost after all cost sharing

218.75 * 1.15 = 251.56	trended claim costs
-50.00	cost sharing
201.56	claim cost after value of ded
-40.31	cost sharing
161.25	claim cost after all cost sharing

Allowable trend = 251.56/218.75 => 15%
Net trend = 161.25/135.00 => 19.4%

Plan B:

218.75	claim cost
-100.00	cost sharing
118.75	claim cost after value of deductible
-35.63	(30%) cost sharing
83.12	claim cost after all cost sharing

218.75 * 1.15 = 251.56	trended claim costs
-100.00	cost sharing
151.56	claim cost after value of ded
-45.47	(30%) cost sharing
106.09	claim cost after all cost sharing

Allowable trend = 251.56/218.75 => 15%
Net trend = 106.09/83.12 => 27.6%

- Difference is net trend due to anti-selection when offer choice.
- These plans have substantial cost sharing differences

Solution #3 (Continued)

(d)

Antiselection would be a major issue if these plans were offered as a dual option.
- Individuals often have a relatively good idea of their near term health insurance needs
- Healthier lives would tend to select the leaner plan B
- Unhealthy lives would select plan A
- While health status of total group may be average (e.g. 1.0), the poorer health of plan A lives would make the overall benefit program costs worse because of Plan A's higher cost.
- Shouldn't necessarily put all anti-selection impact into plan A premium as this would induce the healthier Plan A lives to elect
  Plan B and cause an antiselection spiral. (Plan B costs would increase as well).

Solution:
- Use pure benefit relativities on Plan A and Plan B premiums
- Offer plans with closer benefit design
- Offer an employer paid fund along with the high deductible plan
- Or don't offer dual option

Solution #4

(a) Must account for antiselection
Employer contribution strategy
Employee contribution strategy
Managed care will have lower costs initially
Multiple carriers will make it harder to figure out

(b)

Indemnity	4,063,000	
High cost claims	278,000	
	3,785,000	
Trend	1.196	$(1.009)^{12} \times (1.012)^{6}$
	4,526,863	
Pooling	525,000	35x12x1250
	5,051,863	
Admin	180,000	12x12x1250
	5,231,860	
Risk/Profit	/ 92	(1- 02-.05)
	5,686,804	
Number of EEs	15,000	1250x 12
	$379.12	
Tier	/1 9	$\frac{1x500+2.5(750)}{1250}$
	Single = $ 199.54	
	Family = $498.84	2.5 times single

PPO

	4,063,000	
High cost claims	278,000	
	3,785,000	
Trend	1.196	$(1.009)^{12} \times (1.012)^{6}$
	4,526,863	
Benefit Factor	.7/.85	
	3,728,004	
Number of EEs	15,000	
	$248.53	

	In Network(85)	Out of Network(15)
	$248 53	$248 53
Discount	.7	1
Utilization	.95	1
	$165.27	$248 53
Blend	.85	.15
	$140.27	$37 28
Total	$172.76	
Pooling	$35 00	
Admin	$12.00	
	$224.76	
Risk/Profit	/.92	
	$244.04	/1 9 Single = $128.58 x2.5 = Family $321 45

Solution #4 (Continued)

(c) If current plan managed care would have to think about:
Different provider contracts
Different discounts
Medical management programs
Network size and location
Access to network
Capitation payments
In and out of network use
Projected enrollment

Solution #5

(a)

Profit margin = earnings/premium
Underwriting gain = premium less claims less expenses
Operating gain = underwriting gain plus investment income
These can be expressed as a % of premium
Loss ratio = incurred claims / earned premium
Advantages – widely used and easily recognized, automatically adjusts for growth
Disadvantages – distorted by reserve adjustment and seasonality
Return on Equity = GAAP operating gain/ GAAP capital plus Surplus
Problems - misunderstood, not readily available
Economic Value Added – ROE – cost of capital
Advantages – some projects can not pass ROE criteria but will pass EVA

(b)

Reserve – hard to see which period cause losses
Treat each year separately
Seasonality - due to annual deductible
Use 12 – month average
Adjust reserve by seasonality factor
Underwriting Cycles – use longer period such as 6 years
Service business – this includes ASO business.
May be more appropriate to use profit per employee

(c)

Reinsurance strategy
Reinsurance can reduce the amount of capital needed depending on
Retention limit, demographics, etc.

Dividend philosophy
Ruin theory does not take into consideration dividends. Higher dividend
Payments require more surplus

Expense management control
Better expense management lower surplus requirements

Premium growth
Higher growth increases the surplus required

(d)

After-tax ROE = After tax operating gain/required RBC
2004 after tax operating gain = $182,700
2004 required RBC = 18% * 6,787,500 = $1,221,750
After-tax ROE = $182,700/$1,221,750 = 14.95%
Since 14.95% is greater than objective of 12.5%, Wonderful Life met objective

Solution #6

You are the group pricing actuary for Wonderful Life Insurance Company. You are preparing a proposal for Bailey Industries which includes an analysis of prior experience

(a) Describe the criteria that Wonderful Life would use to underwrite Bailey Industries

- Financial underwriting
  - financial results very important
  - poor financials could lead to the threat of layoff, which increase incidence of disability & elective medical procedures
- Carrier persistency
  - do not want to quote a group that goes out to bid on each renewal since need to keep group long enough to recoup initial acquisition expenses
- Ease of administrative requirements
  - larger groups have economies of scale with expenses
  - may be offset by lots of custom admin required
- Industry
  - impacts both the worksite risks/stresses of the industry as well as the lifestyle associated with workers in various industries
- Demographics
  - age/sex are key, can give indication of expected morbidity
- Area/location
- Participation
  - participation enhanced by level of employer contributions

(b) Describe the models you might use to predict selection in a multi-option environment

- Choice Model
  - Employees can to some extent predict their claim costs & select the plan that is the best value for them, considering both premium contribution & out-of-pocket costs
  - Uses a probability claims distribution
  - Maximum selection is the difference between:
    - Total claim costs on the employee's optimal plan and
    - Claims on the plan without choice
- Member Cost Utilization Model
  - Calculates separately by type of service
  - Cost sharing impacts ordinary/routine care but has less impact when have serious medical condition & under the care of a physician
- Durational Claims Model
  - Claim costs in early duration are held down by underwriting & this impact wears off over time
- Cumulative Antiselection Model
  - Healthy people will lapse to find cheaper coverage elsewhere but sicker people will stay

Solution #6 (Continued)

(c) Calculate the expected change in utilization for the HMO plan using the member utilization cost model.

HMO claims PMPM = 3300/2.2/12 = $125

	Pd Clm	Gross Cost	Utilization Adjustment	Utilization Reduction
Facility - 50%	$62.50 / (1-0) =	$62.50	0.05	$3.13
Prof. - 30%	$37.50 /(1-.05) =	$39.47	0.169	$6.67
Pharmacy - 20%	$25.00 / (1-.18) =	$30.49	0.056	$1.71
		$132.46		$11.51

% = 11.51/132.46 = 8.7%

Util Adj = (1-0/0.25)*0.05 + 0 = 0.05
(1-0.05/0.40)*0.25 - 0.05 = 0.169
(1-0.18/0.25)*0.20 + 0 = 0.056

PPO claims PMPM = 3900/2.2/12 = $147.73

	Pd Clm	Gross Cost	Utilization Adjustment	Utilization Reduction
Facility - 50%	$73.87 /(1-.175) =	$89.54	0.015	$1.34
Prof. - 30%	$44.32 / (1-.25) =	$59.09	0.044	$2.60
Pharmacy - 20%	$29.55 / (1-.18) =	$36.04	0.056	$2.02
		$184.67		$5.96

% = 5.96/184.67 = 3.2%

Util Adj = (1-0.175/0.25)*0.05 + 0 = 0.015
(1-0.25/0.40)*0.25 - 0.05 = 0.044
(1-0.18/0.25)*0.20 + 0 = 0.056

Additional utilization = 8.7% - 3.2% = 5.5%

Solution #7

(a) Factors affecting financial results for group line of business

Growth & profit

Both determined by

1) New business growth depends on:
   - Competitiveness of premium
   - Company reputation
   - Distribution channel
   - Marketing strategy

2) Rate increase depends on:
   - Claim cost containment strategy
   - Ability to control expenses
   - Underwriting practices and skills in setting/selling rates

3) Persistency depends on:
   - Market structure
   - Level of service
   - Cost of changing carrier

4) Other growth:
   - Change in number of employees
   - Change in payroll of the policyholder
   - Change in benefit details

(b) Sources of profits for group insurance

1) Morbidity/mortality – depends on the extent to which business is experience rated
2) Expenses – a function of duration and how well acquisition expenses are recouped and amortized
3) Investment income – usually small for group line of business since mostly done on a yearly-renewable term. Maybe large for benefit with high contract reserves (LTD)
4) Contingency margins – A function of the claims fluctuation
5) Profit margin – explicit margin charge for profit, depends on how much you charge
6) Incurrals and recovery of deficits from retrospective experience rating – depends on ability to recover deficits

Solution #7 (Continued)

(c) Profits of Group 1 by source

Premium = $54,000
Actual claims = $34,000
Manual rate since 0% credibility = $263 per employee per month
Trend = mid-point of the experience period (01/2004) to mid-point manual rate (07/2005)
= 1.009^12 x 1.012^6 = 1.196

Trended manual rate	$263/1.196 = 219.88
Region 1	0.90
Plan $500	0.70
Age/sex	0.90
Adjustment factor	0.567

Expected claims = $219.88 x 0.567 = $124.67
Total expected claims = $124.67 x 25 x 12 = $37,401

Expected administration expenses = $20 x 25 x 12 = $6,000
Expected commission = 10% premium = $5,400
Expected premium taxes = included in expected admin exp
Total expected expenses = $11,400

Actual expenses (admin + commission + premium taxes) = 17% of premium = $9,180

Profit by source:

- Mortality/morbidity = Expected – Actual = $37,401 – $34,000 = $3,401 (gain)
- Investment income = Premium x Return = 3.1% x $54,000 = $1,674 (gain)
- Administration expenses = Expected – Actual = $11,400 - $9,180 = $2,220 (gain)
- Profit margin = 6% premium = $3,240 (gain)
- Taxes = 1.9% premium = -$1,026 (loss)

Solution #8

A. Describe factors that are making consumerism a significant trend.

Direct Drivers:

- Education – people know more & ask more questions
- Income – more willing to spend money & demand quality goods
- Time spent working – people work more and want things to simplify life
- Aging workforce
- Access to Information
- Technology – easier access
- Growth of consumerism in society
- Increasing Costs

B. Compare and contrast the key dimensions of PDHB's as they relate to the two options ACME is considering.

	Option1	Option2
Continuity of coverage	low	high
Breadth of Choice	medium	high
Flexibility of funding	low	high
Employer Admin Stewardship	high	medium
Employee's Stake in spending	low	high

Option 1

- Multi-option plan provides choices
- Employee can choose whether or not to participate in FSA
- Has more control over routine spending if a high deductible is offered

Option 2

- Continuity of coverage
- Moves toward definition of insurance – cover catastrophic losses
- PHA is portable
- PHA can be used to buy insurance

Disadvantages of FSA

- Use it or lose it – unused money at end of year is forfeited
- Can't be used to buy insurance
- Is not portable from employer to employer
- Incentive to use money at end of year so you don't lose it

Solution #8 (Continued)

C. Describe the healthcare challenges that can be addressed by PDHB's with respect to:

1. **Employees**
2. **Employers**

1. Employees
   - Want more choices
   - Needs vary by individual
   - Don't have choices in benefits, providers, plans
   - Want to reduce costs
   - Want portability (eliminate job lock)
   - Want savings for after retirement to spend on healthcare

2. Employers
   - Increasing medical costs – looking to shift cost to employees
   - Increasing liability exposure
   - Changing employment relationships – shorter term employment, want more flexibility and portability
   - Complex Benefit Administration

Solution #9

(a) Cost control through plan design

Introduce deductibles
- May be waived for Class 1 (preventive/diagnostic) services
- Exist for class 2 and 3 services

Coinsurance
- Different coinsurance for each class
- Higher coinsurance for class 2 and 3

Maximum limits
- Need to include annual limits
- Different lifetime limit for orthodontia

Include exclusions like cosmetics

Have pre-existing conditions (missing tooth clause)

Cost control through fee schedules

Use UCR (Usual, Customary and Reasonable) for reimbursement
Implement capitation
Use a specific network of dentists that are reimbursed at a specified fee-for-service schedule

Cost control through utilization controls

Implement pre-authorization when estimated claims are larger than a certain threshold
Consider less expensive treatment
Limit the announcement period of introducing a new dental plan, especially if the group did not have prior dental coverage
Use coordination of benefits
Use provider profiling

Solution #9 (Continued)

(b) Underwriting and rating parameters

Group size
- Should have a minimum group size
- Larger group decreased risk variability; smaller group have larger risk variability
- Large group have credible experience

Define eligibility
- Plan will cover employees and their dependents
- Most plans are sold to active employees only

Participation percentage
- Include minimum participation requirements usually 75%

Adjust premium rates for group with high employee turnover

Consider employer contributions

Other coverages
- Bundle dental care with medical care
- A group without previous coverage can expect to have higher utilization

Demographic
- Age and gender are important pricing variables
- Location is also an important pricing variable
- Underwrite for occupation/industry that have higher expected utilization
- Premium rates have to reflect the family composition

Waiting and deferral period
- Eligibility provision that contain limits for type II and III services
- Some plan will limit benefits to preventive services for new entrant or late entrant

Incentive coinsurance
- Benefits are initially provided at a lower coinsurance level for type II and III services, and increase each year, as long as preventive services are utilized

Transferred business
- Payment is usually limited to the lesser of the old plan and the new plan benefit , less any benefit paid under the old plan

Dental benefit plan features

Solution #10

(a)

- the assumptions that reflect the risk assumed under the contracts
- the quality of data
- margins used to compensate for the variance in incurred cost among the different plans that were combined due to similar payment patterns
- large blocks with stable payment patterns requires lower margins. Conversely, coverages with lower claim frequency and/or large average loss payment requires higher margins

(b)

Development Method

- choice of completion and projection factors
- averaging and smoothing techniques
- explicit margins added to the "average" reserve

Tabular Reserves

- margins applied in the assumptions to calculate tabular factors

Projection Methods

- margins in the utilization and provider reimbursement trends to project cost per unit exposed

Loss Ratio Methods

- may have explicit or implicit margin, depending on choice of LR & its relationship to the likely experience of the block

Solution #11

(a) Incontestable clause – there is a limited period of time after the claim when the insurer can contest the claim. Applies even if fraud is used to obtain the contract

Good health clause – assume health does not deteriorate from the time of underwriting to time first premium is paid.

Pre-existing condition exclusion – conditions affecting the ability to work prior to coverage do not count Insured must have been aware of condition.

Other exclusions:

Misstatement of age – claimant lied on application
War/armed forces – any disability resulting from act of war or serving in the armed forces is excluded.
Pregnancy - some jurisdictions have mandated maternity coverage
Self inflicted injury or attempt to commit suicide does not qualify as disability

(b) Loss Ratio Method - ratio of claims to premium
Pros – simple, widely used
Cons – easily distorted

Ratio of actual to expected claims
Pros – helps point to problems such as unrealistic pricing assumptions
Cons - large number of categories into which benefits fall

(c) Attending Physician Statement – completed by physician
Medical examinations
Inspections – reports from independent agencies
Disability Income Records – similar to MIB
Agent information – may know claimant
Claimants Statement – insurer provided claim form
Itemized bills

Solution #12

(a)

Most models are viewed as short-term tools to be modified or replaced periodically
Models should be relatively simple to update and execute
Models should be easily understood by all parties that need to rely on it (including non-actuaries)
Model results need to be readily reviewed and verified
Models should be largely self-documenting

(b)

Maximize the model's effectiveness
Need effective use of personnel resources
- Most of the effort should be focused on analysis and assessment of results, rather than forecast mechanics and assembly of data.

Need efficient set-up and use
- Should be streamlined for ease of input of all data and assumptions

Facilitate management review and input

Projection cells

Appropriate level of detail
- Calculations should start at a level that is detailed enough to reflect major characteristics of each business segment, including rating approaches

Appropriate level of summarization

Need flexibility in calculations by cell
- Standard spreadsheets with generic structure for all forecast cells allow the model to be easily adapted as cell definitions change

Information produced

Establish basis for monitoring of experience

Comparison with financial statements

Review and analysis

Solution #12 (Continued)

Quality control

Self-documentation

Scenario-tracking
- Include time-stamps on output to track assumptions and results under multiple scenarios

Reconciliation of data sources
- Starting data should be reconcilable to audited financial statements through standard reports

Solution #13

A. Discuss the steps an agent goes through in selling and servicing individual health insurance.

- Qualify the customer
- Analyze existing coverage and needs
- Convince the customer to supplement or replace existing coverage
- Explain renewability provisions
- Deliver an outline of coverage
- Explain policy variables (benefit period, cost sharing, out of pocket maximums, inside limits, etc.)
- Compete with dissimilar products
- Offer internal replacement upgrade policies and optional coverages
- Perform strong field underwriting
- Sell a high cost product in a price sensitive market
- At time of sale, explain the company's underwriting actions and review policy benefits to minimize first year lapse

B. Describe considerations for plan design, pricing and distribution channels.

Pricing and Plan Design Considerations

- Antiselection
- Benefit and pre-existing condition limitations
- Cost sharing provisions
- Durational effect of underwriting
- Persistency
- Mortality and Morbidity
- Profit considerations and contingency margins
- Expenses (commissions, premium tax, etc.)
- Competition

Distribution channels

- Typically marketed through agents/brokers
- Alternatively may be marketed through direct sales:
    - Mass mailing
    - Print advertising
    - Telemarketing
    - Travel agents
    - Airport booths/vending machines

Solution #13 (Continued)

C. Describe the typical underwriting considerations for individual health insurance.

- Three types of underwriting: non-medical, medical and paramedical
- The underwriter has several potential sources of information:
  - Application
  - Medical examination
  - Attending physician statement (APS)
  - Financial questionnaire

- Specific considerations:
  - Occupation
  - Income
  - Avocations/hobbies
  - Medical history
  - Morals
  - Habits
  - Foreign Travel

- Upon review, the underwriter may take one of three actions:
  - Issue the policy as applied for
  - Issue other than applied for (additional premium, different coverage, exclusionary riders, etc.)
  - Decline

D. Describe elements included in rating classification systems:

- Age
- Gender
- Occupation – very important for disability insurance
- Smoker status
- Area
- State of issue – there may be regulatory considerations such as benefit mandates and minimum loss ratio standards

Solution #13 (Continued)

E. Explain the different forms of premium guarantees that may be offered.

The level of risk increases with the insureds right to renew in the following order:

- Optionally renewable
  - Policy is renewable at company's option
  - Rare for individual health
  - Use is often limited by statute or regulation

- Conditionally renewable/non-renewable for stated reasons only
  - Company retains the right to refuse to renew all insureds in a particular class or alternatively for all insureds in one state

- Guaranteed renewable
  - Guarantees insured's right of renewal
  - Insurer reserves the right to change/increase premium rates – may be subject to regulatory approval

- Non-cancellable
  - Company may not cancel the policy or change the premium rates during the policy lifetime

Solution #14

(a) Plan Contract Administration - meet contractual obligations with members, providers, and groups.

Benefit Administration - responsible for insuring coverage for defined benefits

Medical Policy Administration - benefits must be medically necessary and appropriate

Member and provider services

Liability protection - not fulfilling contractual obligations results in liability risk

(b) Claims backlog – leads to: duplicate billings, unreliable reserve estimate, undetected claim trend, non-compliance with payment regulation

Inadequate front-end control – long time before claims are received and logged into system. Leads to duplicate claims, unreliable reserve estimate.

Inadequate pended claims management

Outdated organizational structure

Supporting data file integrity problems

Benefits configuration problems

Informal benefits interpretations

Utilization management – claims clash

(c) Mechanisms of inventory management

- Written procedure should be in place
- The inventory process must occur at regular intervals
- Claims should be monitored throughout the process
- Automation support should be in place

Principles of inventory management

- Claims are received and logged into the processing system
- List of transfers to other departments is maintained
- Claims in process are stored centrally
- Perform periodic check of control and monitoring mechanis

Solution #15

a) manual premium

= incidence ratex,g,e,t x Reserve / 12

incidence rate from Table 6A male

18-24	400	0.80	1.5	= 480 0
25-29	300	0.89	1.5	= 400 5
30-34	200	1.05	1.5	= 315 0
40-44	100	2 02	1 5	= 303 0
50-54	100	6 62	1 5	= 993.0
				2491.5

Monthly Benefit = 100
Avg Reserve = 54 x 100 x 2491.5 / 1100 = $13,454,100 / 1000

Expenses = 18.3% of premium
Profit = 5.0% of premium

Gross Premium = $13,454.1 / (1 - 18.3% - 5.0%) = $17,541.2

PEPM = $17,541 2 / (1100 x 12) = $1.329

b) $\text{credibility} = \frac{N}{N+5000} = \frac{5,000}{10,000} = 0.5$

group own experience:

$$\frac{0.98}{(1-0.183-0.05)} = 1.278$$

blended gross premium

= (0 5 x manual rate) + (0.5 x group own experience)

= (0.5 x 1.329) + (0.5 x 1.278) = 1.303

c) Open claim reserves (LTD disabled life reserves)

Reserve = sumt,w (benefitt x vt x ct)

Solution #15 (Continued)

sum over all individuals (seriatum)
ct is the continuance table rate of disability (may be by gender)
vt is the discount rate
benefit is paid monthly
w is the time until end of benefit
may need to adjust for SSDI, workers comp, other offsets
may require separate IBNR calculation

IBNR Reserves

LTD uses loss ratio method to calculate
STD uses completion method

May hold claim adjustment reserve, UEPR, reserve for resisted claims, ICOS

Tax/SAP/GAAP reserves - varies for LTD based on termination rate, interest rates used and tax considerations

Solution #16

(a) Describe the advantages of an HCEA for your client

Advantages for the client:
- Can provide new benefits to employees at little or no additional cost to employer
    - Not locked in a narrowly used, expensive benefit
- Useful in bargaining situation
    - Soften the impact of employee cost sharing
- Can test the appeal of flexible benefits
- Deliver compensation tax effectively
- Achieve cost containment
    - Employer gain control of future increase
- Allow employees flexibility
- Encourage employees to self-insure predictable or budgetable cost

(b) Describe how the HCEA can be funded and the decisions your client must make in setting it up

Money can come from:
- new employer money
- credits from selling benefits
- company money freed up from reduction in other benefits

Decisions to make by the client:
- sources of fund
- current amount to fund the HCEA, and future increases
- when fund is available, e.g. minimum withdrawals
- any max on the account
- how to handle forfeiture (mid-year): terminations, deaths, retirements
- how to allocate credits to employees
- how to handle end of the year balance (rollover of the claims or unused balance)

(c) Calculate the money available to fund HCEA pool, develop a credit formula to allocate credits to employees, and explain the pros and cons of your formula. Show your work.

(i) Life: reduction of 2× salary
volume = $46,200,000 × 2/3 = $30,800,000
cost = 0.32/1,000 × 30,800,000 × 12 = $118,272

LTD: reduction from 75% to 66.7%
volume = $962,500 – (962,500 × 0.667/0.75) = $106,516
cost = 1.05/100 × 106,516 × 12 = $13,421

Solution #16 (Continued)

Medical: reduction of 20% from 100% to 80%

$$\text{cost} = 20\% \times (50 \times 120 + 125 \times 280) \times 12 = \$98{,}400$$

Dental: elimination

$$\text{cost} = (30 \times 120 + 75 \times 280) \times 12 = \$295{,}200$$

Total available: \$525,293

(ii) I propose to allocate the pool of money using the actuarial method.

Pros: - cost is allocated based on expected expenses
- there are no losers
- no additional cost to employer

Cons: - each employee does not get equal allocation

(iii) Ratio between single and family = 2.5

$$\text{Single amount} = 120 \times X + 280 \times 2.5 \times X = \$525{,}293$$

$$\text{Family amount} = 2.5 \times 641 = \$1{,}602$$

(d) Calculate how much your client would save at next year's renewal, assuming inflation on 15% and 7.5% respectively for medical and dental, and an average increase in salaries of 3%. Show your work.

Current plan:

$$\text{Life} = 46{,}200{,}000 \times 1.03 \times 0.32 \times 12/1000 = 182{,}730$$

$$\text{LTD} = 962{,}500 \times 1.03 \times 1.05 \times 12/100 = 124{,}913$$

$$\text{Medical} = 1.15 * (50 \times 120 + 125 \times 280) \times 12 = 565{,}800$$

$$\text{Dental} = 1.075 * (30 \times 120 + 75 \times 280) \times 12 = 317{,}340$$

$$\text{Total} = 1{,}190{,}783$$

Proposed plan:

$$\text{Life} = 46{,}200{,}000/3 \times 1.03 \times 0.32 \times 12/1000 = 60{,}910$$

$$\text{LTD} = 962{,}500 * 66.7\%/75\% \times 1.03 \times 1.05 \times 12/100 = 111{,}090$$

$$\text{Medical} = 1.15 * 0.8 * (50 \times 120 + 125 \times 280) \times 12 = 452{,}640$$

HCEA (fix credits) = 525,293

$$\text{Total} = 1{,}149{,}933$$

Savings: 1,190,783 – 1,149,933 = \$40,850

Solution #17

G Group Characteristics

Important LTD considerations include:

- industry, occupations, age distribution, gender distr, income, group size location, employment status (seasonal workers may not be acceptable)

Plan Design

Important LTD considerations include:

- benefit richness as defined by benefit percentage, taxability and max benefit
- replacement ratio

Life considerations include:

- non-contributory plan offer most desirable risk (limits anti-selection)

LTC considerations include:

- employees must be actively at work
- inflation

Group Underwriting

- limited period for guaranteed enrollment (1-2 months)

Employer Characteristics

Important LTD considerations include:

- employee insecurity can add to UW risk therefore financial condition must be Underwritten
- downsizing, mergers etc
- employer culture and safety

Life considerations include:

- must have minimum participation level

Eligibility

Important LTD considerations include:

- LTD may provide for exclusions such as pre-existing conditions, metal/nervous or "subjective conditions"
- seasonal employees not eligible

Life considerations include:

- must have minimum hours worked per week

LTC considerations include:

- offered to active, full-time employees

Solution #18

(a)

ADLs/CI	Dur 6	Dur 30		Difference
0/Yes	30.67	27.19		3.48
1/Yes	2.15	1.51		0.64
2/No	8.96	3.78		5.18
2/Yes	1.18	0.84		0.34
3+/No	9.70	3.79		5.91
3+/Yes	1.52	1.02		0.50
			Total	16.05

Incidence rate = 10.15/1000

Claim Cost = Σ Incidence Rate * Daily Benefit Amount * Average Num of Benefit Days
= 0.01015 * 100 *0.1605 * 882
=$143.68

Monthly Cost = $143.68 / 12 = $11.97

(b)

- Should reflect lapse beside mortality in termination assumptions.
- Morbidity will be affected by antiselection on lapses.
  - High voluntary lapse rate in early years leads to losses since companies cannot recoup acquisition costs.
  - Low voluntary lapse rates in the late durations cause antiselection as healthy lives tend to opt out, and impaired lives tend to persist.
- Usually lapse rates are lower in valuation than in pricing for conservatism.
- Level of antiselection used in reserving increases with level of lapse.
- Reserves should be at least equal to value of nonforfeiture benefits
- Antiselection on lapse may wear off over time.
- Low level of lapse, say 2%-3%, will likely not produce antiselection.

(c)

Morbidity load = 1/[(1 - LR0 * AS4) (1 - LR1 * AS3) (1 - LR2 * AS2) (1- LR3 * AS1)]
= 1/[(1 - (06 * .4)) (1 - (05 * .5)) (1 - (04 * .6)) (1 - (.03 * .7))] =1.0998
where LR = lapse rate; AS = anti-selective lapse factor

Solution #19

(a) Employer cost = Expected claims + Credits - Price Tags
Expected Claims for Little Fish employees in Big Fish's flex plan:

	Costs			
	Medical		Dental	
	Single	Family	Single	Family
Proposed Option A	$112.50	275.00	124.44	373.33
Proposed Option B	187.50	458.33	155.56	466.67
Proposed Option C	281.25	687.50	194.44	583.33

	Enrollment			
	Medical		Dental	
	Single	Family	Single	Family
Proposed Option A	5%	10%	10%	5%
Proposed Option B	25%	30%	25%	40%
Proposed Option C	10%	20%	5%	15%

Sum of Costs × Enrollment
$64.24
409.93
262.85
$737.01

Note - examples of above calculations:

Single Medical Option B - $225 / 1.2 = $187.5 (since current Little Fish plan is 20% richer than B)

Single Medical Option A - 60% x $187.5 = $112.5 (A is 60% of cost relative to B)

Single Medical Option C - 150% x $187.5 = $281.25 (C is 150% of cost relative to B)

Single Dental Option B - $140 / 0.9 = $155.56 (since current Little Fish plan is 10% less rich than B)

Credits: ($350 x 40%) + ($900 x 60%) = **$680 per employee**

Solution #19 (Continued)

Price Tags:

	Costs			
	Medical		Dental	
	Single	Family	Single	Family
Proposed Option A	$100	250	105	280
Proposed Option B	200	500	150	400
Proposed Option C	350	875	225	600

	Enrollment			
	Medical		Dental	
	Single	Family	Single	Family
Proposed Option A	5%	10%	10%	5%
Proposed Option B	25%	30%	25%	40%
Proposed Option C	10%	20%	5%	15%

Sum of Costs × Enrollment
$54.50
397.50
311.25
$763.25

Expected cost to Big Fish of Little Fish in flex plan = $737.01 + $680 - $763.25 = $653.76 per employee

Employer cost of current Little Fish plan: (($225 x 40%) + ($550 x 60%)) + (($140 x 40%) + ($420 x 60%)) = $728 per employee

Cost savings to Big Fish of moving Little Fish into it's flex plan: $728 - $653.76 = $74.24 per employee

(b) Reasons to maintain the separate pricing structure:
- units operate in geographic regions that do not have the same costs
- units operate in different markets
- may give local manager more control over overhead costs

Advantages:
- each unit can keep differences for competitive practice reasons
- each unit can have prices that reflect their own experience

Solution #19 (continued)

Disadvantages:
- internal equity issues
- may hinder ability to transfer employees
- may hurt employee morale
- employees may have same job description but different total compensation
- creates different accounting by unit
- unit's experience may not be credible

Solution #20

(a) A patient directed healthcare benefit (PDHB) approach would be appropriate for XYZ because:

- Employee group size is appropriate because it is a large group
- The type of employee population is appropriate. It would also be good if employees have internet access to have access to decision support tools, which should be true since they are in a metropolitan region. Because there are retirees and possibly union employees, it may be more difficult to offer a PDHB to these populations if there are promised benefits.
- Need to have resources available to administer the benefits, which needs to be evaluated, but XYZ should have some capabilities here since they are a large employer.
- They are located in a single metropolitan area so there should be PDHB products available.
- HR philosophy is already aligned with the PDHB philosophy of promoting employee responsibility and consumerism.
- A PDHB could allow XYZ to promote a personal health account to be used during retirement and eliminate any current retiree medical benefits.

(b) Nest steps HR manager should take to implement a PDHB:

- Perform a diagnostic review to see if PDHB is appropriate
  - Evaluate current and projected future costs
  - Interview senior management
  - Determine organization objectives
  - Survey employees and retirees
  - Consider whether to offer as full replacement or option, consistent with company culture
- Develop program strategy and explore alternatives
  - Understand PDHB attributes (financial, administrative, HR, regulatory, tax) and determine relative importance of each
  - Assess possible employee reactions
  - Evaluate whether to use a home grown approach or commercially available product
- Perform financial modeling
  - Develop baseline cost for current plan
  - Develop projected cost for alternative plans
  - Evaluate impact of actuarial and financial issues such as risk adjustment and anti-selection
- Evaluate results and select approach
- Implement and communicate plan
  - Identify implementation team
  - Set implementation timetable
  - Finalize contracts
  - Finalize plan documents and SPDs
  - Prepare communication and enrollment material
  - Modify systems to interface with vendors
  - Finalize plan design
  - Develop administrative procedures
  - Enroll employees

Solution #20 (Continued)

- Evaluate results
  - Evaluate vendor performance guarantees
  - Evaluate financial impact
  - Measure employee satisfaction

Solution #21

(a)

Setting aggregate attachment point:

1) obtain past loss experience for rolling 12-month periods for past 1-3 years
2) adjust for specific stop loss payments
3) divide by exposure to get losses PMPM
4) trend from middle of experience period to middle of projection period
5) weight trended PMPM claims for each year available, putting more weight to more recent experience
6) blend with manual rates to get final claim rate
7) adjust for contract type
8) multiply by aggregate margin factor

Aggregate margin factor depends on:

- # certificates: more volatile if smaller group, use higher factor
- specific deductible: aggregate stop loss claims more volatile if stop loss deductible is higher
- plan design: aggregate stop loss claims will be more volatile for a leaner plan

Consider known losses for specific stop loss:

- exclude
- rate up
- have separate deductible

(b)

Underwriting considerations:

- aggregate margin factor: use higher factor for smaller group since claims more volatile
- aggregate attachment point: have consistent rating practices
- specific stop loss deductible: must be appropriate for plan
  $\approx 5\% - 15\%$ of expected claims

(c)

$100,000

SSL: $(300,000 - 100,000) + (125,000 - 100,000) + (250,000 - 100,000)$

losses:	1,635,000
less specific payment:	375,000
equals remaining losses:	1,260,000

Minimum aggregate attachment point $= 120\% \times 90\% \times 240 \times 12 \times \$400 = 1,244,160$

Solution #21 (Continued)

Aggregate attachment point:
$120\% \times \$400 \times 3,000 = 1,440,000$ (take highest of minimum and actual)

no aggregate stop loss reimbursement since aggregate attachment point (1,440,000) is greater than remaining losses.

Total payment = 375,000

$250,000

SSL: (300,000 – 250,000) + 0 + 0

losses:	1,635,000
less specific payment:	50,000
equals remaining losses:	1,585,000

aggregate attachment point = 1,440,000 (from earlier)

aggregate stop loss reimbursement = 1,585,000 – 1,440,000 = 145,000

Total payment = 50,000 + 145,000 = 195,000

Solution #22

(a)

Individual Disablity Income Insurance in the US 8G-701-02

Def'n of Disability

Pure own occ will increase the incidence rate of claims since it allows someone to claim benefits if they can't perform their own specific occupation, with no limitation.

A better alternative would be to have own occ for x years, and then any occ thereafter

Monthly Benefit

This definition allows an insured whose income has decreased due to economic reasons and not health reason, to improve their earnings.

Should include an offset with other benefits (e.g. Social Security benefits) otherwise could have significant overinsurance

Inflation

Removing the COLA rider would provide financial incentive or alternatively tie to CPI less x%

Premium Rate Structure

Premium rates are guaranteed under noncancellable for the life of the contract.

Maximum Benefit

Include a maximum benefit amount payable over the lifetime of the contract.

Risk Classification

Should also separate smoker and non-smoker rates

Target Market and Underwriting

With no requirement for minimum penetration risk of anti-selection is large.

(b)

Individual Disablity Income Insurance in the US 8G-701-02

Other items to consider

- Insurer's ability to evaluate and manage claims
  - Need to have specialized staff
- Insurer's ability to do effective U/W
  - utilization of blood testing ?
- Availability of reinsurance