HEALTH, GROUP LIFE & MANAGED CARE
ILLUSTRATIVE SOLUTIONS

Solution #1

a)

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)

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 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

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

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

% = 11.51/132.46 = 8.7%

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

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

% = 5.96/184.67 = 3.2%

Additional utilization = 8.7% - 3.2% = 5.5%

Solution #7

a)

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)

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)

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)

	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)

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)

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)

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)

- 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)

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)

- 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)

- 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)

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)

Specialist Savings	Tbl MC-5 Cost pmpm	Tbl MC-4 2004 Util	Calc'd 2004 Unit cost (1)	2005 Cost Pre Savings	2005 Cost Post Savings	Savings pmpm
Phys Med	$4.06	650	$74.95	$4.56	$4.04	$0.52
Chiro	$3.00	900	$40.00	$3.37	$2.89	$0.48
Total	$7.06			$7.92	$6.92	$1.00

Unit cost = pmpm x 12,000/utilization
2005 trend = 10% cost trend, 2% util trend
Pre-savings cost = cost pmpm x 1.1 x util x 1.02/12000 = cost pmpm x 1.02 x 1.1
Post savings cost = Util x 1.02 x .92 x (unit cost x 1.1 - 3)/12,000
Total savings = Savings x 80,000 x 12 = $957,442
2005 Dis Mgmt costs = $1,700,000 from Table MC-6
Vendor costs (20% of DM costs)= $340,000

Net cost of the proposal = $957,442 - $340,000 = **617,442**

b)

- Monitor significant court decisions and legislation to understand how developments may affect med mgmt obligations
- State that the plan has discretionary authority to make eligibility and coverage determinations in agreements
- Comply with ERISA's noticee and reconsideration requirements
- Periodically update the plan's certificates to ensure that they clearly express the intended contractual obligations to members
- Ensure marketing brochures accurately describe benefits, exclusions, and limitations
- Exceptions to the exclusions or limitations should be described in a separate written agreement with the member
- Make a reasonable effort to ensure that any medical management issues are thoroughly investigated before the plan makes an adverse benefit determination
- Ensure that bonuses to medical mgmt personnel are not based primarily upon the plan's utilization experience
- Establish medical policies that are consistent with generally accepted standards of medical practice
- Implement a member complaint and grievance procedure that encourages members to speak up

Solution #15 (Continued)

- Establish a provider appeal procedure similar to that used to resolve member grievances
- Obtain current technology assessments concerning the status of new, experimental, or investigational procedures
- Base provider bonuses on quality and satisfaction in addition to utilization
- Providers at substantial financial risk should have stop loss coverage
- Adopt credentialing criteria
- Thoroughly investigate any questions concerning a participating provider's conduct or competence
- Do not delegate medical management responsibilities to another entity unless that entity's Medical Management programs are comparable with the plan's programs
- Purchase professional liability coverage
- Furnish members and their attending physicians with understandable information about treatment alternatives if the plan determines that a proposed treatment is not medically necessary
- Refer any questions related to the plan's medical management obligations and compliance to legal counsel

Solution #16

a)

Data Sources
Actuarial Consulting Firms
State Insurance Department HMO & Ins Co. Rate Filings
Hospital Cost Report Filings
State -administered data bases (including hospital discharge surveys)
Publicly available Medicare and Medicaid Information
Health care industry surveys (such as done by HIAA)
Insurance Company/HMO/PrepaidGroup Data
American Hospital Association data
Other Possible Sources
SOA website in partnership with NAHDO has info on data sources
Professional Activity Study
Annual Statement Data
HMO Surveys
HMO Research Papers
HMO Industry Profile
Fee Schedules
National Health Care Survey - Data on Health Resources Utilization - may be good for projecting utilization for teriary surgical specialists.

Concerns
Accuracy
Geographic Relevance
Demographic Relevance
No Denominator (i.e. only have information on those who have claims, nothing on those who don't have claims)
Availability of Data - Insurer data difficult/impossible to obtain
Comparability of data/consistency of reporting amongst entities.
Does data reflect appropriate level of care management?
Undercounting physician encounters if not including nurse practicioners and physician's assistants in utilization counts
Data may reflect carrier specific bias (product mix, operations, reimbursement, underwriting and marketing philosophy)

Solution #16 (Continued)

b)

Service	Admits/ 1000	IP Days/ 1000	Day 1 Days	Day 2+ Days	Day 1 Per Diem	Day 2 Per Diem	Cost PMPM
Source	Tbl MC-2	Tbl MC-2	Calc	Calc	Tbl MC-7	Tbl MC-7	
Medical	27.0	120	27.0	93.0	$1800	$1200	$13.35
Surgical	18.0	90	18.0	72.0	4000	1500	15.00
Psychiatric	3.5	45	3.5	41.5	1000	1000	3.75
Alcohol & Drug Abuse	2.0	15	2.0	13.0	1000	1000	1.25
Maternity	15.5	38	15.5	22.5	1500	1000	3.81
Total IP (less SNF)	66.0	308.0	66.0	242.0	2262.88	1225.62	37.16

Formula For Calculating the cost PMPM
Cost PMPM = (IP Day 1 Days x Average Cost/Day 1 + IP Day 2+ Days x Average Cost/Day 2+)/12000

c)

Target Utilization

Service	Admits/1000	IP Days/1000	ALOS	Day 2+	Day 2 per diem
Source	Question	Question	Calculated	Calculated	Table MC-2
Medical	25.0	80	3.20	55.0	1200
Surgical	15.0	70	4.67	55.0	1500
Psychiatric	4.0	40	10.00	36.0	1000
Alcohol & Drug Abuse	1.5	10	6.67	8.5	1000
Maternity	15.0	30	2.00	15.0	1000
Total IP (less SNF)	60.5	230.0	3.80	169.5	1221.74

Solution #16 (Continued)

Expected Utilization

Service	Admits/1000	IP Days/1000	ALOS
Source	Table MC-2	Table MC-2	Calculated
Medical	27.0	120	4.44
Surgical	18.0	90	5.00
Psychiatric	3.5	45	12.86
Alcohol & Drug Abuse	2.0	15	7.50
Maternity	15.5	38	2.45
Total IP (less SNF)	66.0	308.0	4.67

Targeted ALOS = 4.2 = 90% of 4.67
Member months = 120,000 from problem
Average members = 10,000 = member mos / 12

Profit share criteria:

Paid only if LOS < target LOS, otherwise no payout — from problem

Moderately Managed ALOS — 3.80 — calculated above

Target ALOS — 4.20 — calculated above

Moderately Managed LOS < Target LOS therefore there is a payout

Profit share formula:

Amount paid based on average of 2nd day and later per diems

Formula = (target LOS - Moderately Managed LOS) x (average 2nd day per diem) x members/1000 x admits/1000

A	(target LOS – moderately managed LOS) =	0.40	= 4.2-3.8
B	Average 2nd day Per diem =	1221.74	calculated above
C	Members/100 0	10	
D	Admits/1000	60.5	from problem
	Incentive Pmt = A x B x C x D	$295,661	

Solution #16 (Continued)

d)

	Category	Value	Comments
	Target Premium	$180.00	Given
	Admin Load		
	Margin	3.0%	Given – pricing margin
	Admin	11.0%	Table MC-1
	Taxes	1.2%	Table MC-1
	Investment Income	0.0%	Given
	Total – calculated	15.2%	Calculated
	Total Admin as PMPM	$27.36	Calculated = 180 x .152
	Expected Claim Costs		
	Target Premium	$180.00	From above
-	Total Admin	$27.36	From above
A	Total Expected Claim Costs	$152.64	Calculated
B	IP Clam Costs	$37.16	From Part B. of question
C	Physician Costs	$68.69	From question
D	OP Costs	$46.79	D = A - B – C

Solution #16 (Continued)

e)

Category			
	Value	***Source***	***Comment***
Physician Incurred Claims	$9,000,000	given	
Member Months	120,000	given	
Hospital Incurred Claims	$10,000,000	given	
Target pmpm			
Physician costs pmpm	$68.69	16 D= total pmpm x .45	
Hospital IP PMPM	$37.16	16 D	
Hospital OP PMPM	$46.79	16 D	
Total Hosp pmpm	$83.95	Calculated	
Target Professional	$8,242,560	Calculated	Claims pmpm x Mem Mo x.45
Prof Withhold	$1,800,000	Calculated	From question = 0.2 x $9 M
Target Institutional	$10,074,240	Calculated	tot hosp PMPM x Mem Mo
	Professional	Institutional	Formula
Target Funding	$8,242,560	$10,074,240	See Above
Claim Costs	$9,000,000	$10,000,000	Given in problem
Withhold	$1,800,000		Prof withhold above
Fund Charges	$7,200,000	$10,000,000	Claim Costs – Withhold
Fund Balance	$1,042,560	$74,240	Target - Fund Charges
Withhold Liability *	$1,042,560		
Incentive Liability		$37,120	50% of Institutional Surplus
* Fund Bal >0 but < W/H therefore hold fund balance			
Institutional Incentive liability		$295,661	From Part 16C

Solution #17

a)

Advantages	
	With implementation of DRG, there is experience w/ inpatient coding
	Since financial issues at stake for hosp, effort is made to code accurately
	Quality of care info is important for those w/ chronic illness
	Significant portion of plan expenditures come from small number of enrollees
	Mortality info recorded accurately- morbidity should also be measured
	if physician has insufficient number of patients-uses statistical methods to aggregate clinically dissimilar
	patients into categories
Concerns	
	Complication rates do not correlate w/ quality of care abstracted from the medical record

b)

Claim Item	Value	Calculation
Maternity claims for Hosp ID 1	6,006,000	=(13 * 2,200 * 210,000)/1,000 =adm/1000 x case rate x mbrs/1000
Maternity claims for Hosp ID 2	994,000	=7,800,000 - 6,006,000 – 800,000 =total maternity – Hosp ID1 – Hosp ID2
Cost / Maternity Admit ID 2	3,155.56	= 994,000 / 210 / 1.5 = total claims cost / mbrs/1000 / adm/K = claim cost / admit
Cost per Normal Delivery Admit ID 2	2,544.80	Let x=cost of normal delivery, then solve for x where x(70%)+x(1.8)(30%)=3,155.56 => x = 2544.80
Cost per C Section Delivery Admit ID 2	4,580.65	=2,544.80 * 1.8

c)

Claim Item	Value	Calculation
New C Section Delivery Rate	20%	=30% - 10% from problem
New Admits / 1000 for C Section deliveries	0.3	= 1.5 (20%)
New Admits / 1000 for Normal deliveries	1.2	= 1.5 (80%)
New Claims Cost for Normal deliveries	$641,290	= (2,544.80 * 1.2 * 210,000) / 1000 = Avg case rate x adm/1000 x mbrs/1000
New Claims Cost for C Section deliveries	$288,581	= (4,580.65 * .3 * 210,000) / 1000 = Avg case rate x adm/1000 x mbrs/1000
Total New Claims Cost	$929,871	= 288,581 + 641,290
Savings	$14,129	= 994,000 - 929,871 - 50,000

Solution# 18

a)

Fin Stmt Item	2004 amounts in 1000's	2005 amounts in 1000's	Development
Premium	$499,500	$534,465	Premium increase given as 7% 2004 Prem from Tbl MC-1
Medical claims	$384,100	$414,828	Trend given as 8% 2004 claims from Tbl MC-3 HMO + POS
Drug claims	$51,200	$58,880	Trend given as 15% 2004 claims from Tbl MC-3
Change in Prov Liab		$0	Given in problem
Total Incurred Claims		$473,708	Proj Med + Rx claims
Gross Margin		**$60,757**	Premium – Claims
Admin expense			
Admin & Facilities		$1,300	Tbl MC-6, given to be same as 2004, sum of HMO+POS
MIS & IT		$4,538	Tbl MC-6 and info in problem = (2,200+3,500)/1.3 x 1.035
Salaries (remaining items)		$36,225	Tbl MC-6 and given 3 5% incr = $35,000 x 1.035
One time charge		$3,000	Given in problem
Commissions		$13,362	Tbl MC-1, commissions = 2 5% of premium
Premium Tax		$534	Tbl MC-1, prem tax = 0 1% of premium
Total Admin		**$58,959**	
Operating Margin		$1,798	Gross Margin – Admin
Investment Income		X	Need to solve to grow surplus by 20%
Other Income		$0	Given
Earnings before Tax		$1,798+X	=Op Margin + Inv Income
Taxes		0 375 x (1798+X)	Given taxes = 37 5% of Earnings before Tax
Earnings after Tax		0.625 x (1798+X)	Earnings before tax x (1-tax rate)
Operating Earnings after tax (surplus)	$10,000	$12,000	Tbl MC-1 and 20% growth rate needed
Required Inv Income, solve for X		$17,402	12,000= 625 x (1798 + X) and solve for X
Return on Surplus		17 4%	=14,502/100,000 – problem gives ending 2004 surplus @ $100 million

Return on surplus would be a challenge to achieve, prior years are 4-11% range.

Solution #18 (continued)

b)

Increase Premium
difficult to do short term as premium usually fixed for 12 months
Increase Investment Income
not an easy lever to control
Lower Claims Expense
Medical Management
Provider Contracting: not usually able to change short term
Lower Administrative Costs
Typical corporate reaction

Solution #19

a)

(A) Procedure	(B) 2006 Rate per Service	(C) 3/1/2004 – 2/28/2005 Billed Charges	(D) 3/1/2004 – 2/28/2005 utilization	(E) Billed per procedure = (C)/(D)	(F) 70% of Billed = 0.7 x (E)	(G) Trended Billed = (F) x (1.04) ^ (22/12)
1	$20	$7,361,770	146,067	$50.40	$35.28	$37.91
2	$17	$10,226,250	252,500	$40.50	$28.35	$28.35
3	$30	$6,841,766	85,844	$79.70	$55.79	$55.79

Assume: no change in membership

Billed Cost Trend = 4%

Trend months midpoint to midpoint = 22 months (from 9/1/2004 to 7/1/2006)

Utilization trend = (1+total billed cost trend)/(1+billed charge per service trend)
= (1+.015)/1+.04)-1= 10.58%

Note that the cost per procedure under the new arrangement is less than the cost under the current arrangement for all procedures, therefore it will produce a savings

b)

- Require authorization from a contracted physician
- Physician self-referrals:
  - Prohibit physician self-referral in provider contracts
    - Require doc to disclose fiduciary relationship w/ancillary service providers
    - HIPDB - national healthcare fraud and abuse data collection program
  - Reimburse for self-referral services at a low margin
- Contract for ancillary services through a very limited network of providers & require docs and members to use only contracted providers
- Include ancillary service utilization in performance-based primary care reimbursement systems
- Include in physician profiles and give feedback on test-ordering behavior
  - Adjust for factors that affect utilization
  - should contain adequate data to allow doc to know where performance can be improved
- Adopt indications for use or standards of care
- Limit # of visits for therapy w/o prior approval
- Carve out services and transfer risk to another organization

Solution #19 (continued)

- Capitation
- Case rates or tiered case rates
- Direct discussions between medical director and high utilizing docs

Solution #20

a)

Effects
Reduce the financial impact of the hazard insured to a manageable level
Expenditures focused on those with least financial need rather than those who need it most
Those w/ high drug costs will migrate away from plans containing benefit max
Advantages
Increase in plan costs will be at or below increase in drug costs (reverse leveraging)
Provide incentive for patients to stay under maximum and choose cheaper drugs
Further incentive if only apply benefit maximums to brand drugs/ drive utilization to generics
Avoids Incentives for Expensive drug therapies
Disadvantages
Members can get new benefit maximums if they change plans

b)

Develop cost to Plan

Cost Range	Members	Pct of Members	Annual cost per member	Current Plan cost/ member	Current Plan Costs	Proposed plan cost/ member	Proposed plan costs
0 - 3K	2,220	60%	$615	$461	$1,023,975	$461	$1,023,975
3K - 5K	925	25%	$3,216	$2,358	$2,181,150	$2,250	$2,081,250
5K- 7.5K	370	10%	$6,018	$3,759	$1,390,830	$2,759	$1,020,830
7.5 - 10K	111	3%	$8,127	$4,500	$499,500	$4,064	$451,137
10+K	74	2%	$12,375	$4,500	$333,000	$7,888	$583,675
Total/ Avg	3,700	100%			$5,428,455		$5,160,867

Formula

- formula cost to plan = members x cost/mbr x coins
- cost/mbr = (avg cost - beg cost) x coins + all prior brakets range x coins
- Current plan is expected to be higher than proposed by $267,588

Solution #20 (Continued)

c)

Members	Pct of Members	Avg Scripts per Member	Percent Brand	Scripts w/ Rebate per member
2,220	60%	12.5	20%	2.5
925	25%	44	35%	15.4
370	10%	68	70%	47.6
111	3%	84	90%	75.6
74	2%	110	100%	110

Formula for scripts w/ rebate (Pct SS + MS Brand) x avg no of scripts
Average no. of rebates / month = 1.215
Average rebate = $1.20 per script
Fee = 1.215 x 1.2 = $1.46 pmpm < $1.50 pmpm required by CFO
Therfore no deal
Total scripts = 53,939

Solution #21

a)

Select diagnosis, procedure, or condition		
	-	Should be strong reason to change and a champion
	-	initial sensitivity of where extra costs and problems exist
	-	Look for services that contribute most to the length of stay and costs
Define scope		
Select a multidisciplinary team		
Flowchart the process and collect baseline information		
	-	Flowchart current process and note current practices and outcomes
	-	understand precedent relationships, current variations in practice
	-	time estimates for different activities are helpful to clarify understanding
Identify outcomes		
	-	Define the outcome criteria to be discharged, to return home, and to return to daily activity
	-	Be specific
	-	Be alert to changes in criteria due to new clinical practices, new technology, changing resources available in other settings, and other changes
Define intermediate patient care objectives		
	-	relate to patient condition
Determine the activities that are necessary to achieve outcomes		
	-	Activities - actions that require time and resources to complete
	-	Events - milestones that have no time factor
Determine precedent relationships		
	-	Precedent - activity that must be completed before a subsequent activity can begin
	-	Flowchart/network format showing steps of the care process helps providers reach consensus and discover opportunities for improvement
Question current practices		
	-	Question what is done, when it is done, who does it, where it is done, how it is done and why it is done
	-	Analyze current practices to identify activities that help attain and improve outcomes and eliminate or give less attention to those that are less important
	-	Ask whether hard evidence exists to prove that an approach will not work
Determine activity times		
	-	Determine time for each activity to be able to calculate the time limiting path
	-	Develop consensus estimate with small interdisciplinary efforts
	-	Analyze medical records to provide frequency data and times of certain events
	-	Formalized time studies most accurate but infrequently done
Determine the critical path		
	-	Summing times of respective activities and intermediate outcomes to calculate the total duration of each path through the network or flowchart
	-	Path with longest time is the critical path
Implement and monitor pathways		
	-	Pathway should be viewed as guideline for coordinated care that change based on changes in clinical practice, new technology, and resources available
	-	Variations in patient condition may require alterations in pathway activities
	-	Use outlier data and their outcome to review and revise pathway

Solution #21 (Continued)

b)

Activity/Precedent table format		
	Adv	helpful for listing all activities and their require precedents, durations, and resource requirements
	Adv	Can display calculated start times, finish times and float/slack times
	Adv	Forces formal consideration of the precedent relations and duration of all activities - raises questions about availability of ancillary services to expedite patient recovery
	Dis	Relationships among activities more difficult to understand in this format than in flowchart/network format
	Dis	Difficult to visualize which activities are done on the same day
Gantt chart format		
	Adv	Shows beginning and ending times for each activity on bar chart along a timeline in the units being used
	Adv	Presents a concise, easy-to-understand picture of the activities and some times expected outcomes for each day
	Adv	Helpful in communicating which activities are being done during each time period
	Adv	Excellent tool for communications among staff, patients and family members
	Adv	Useful for teaching, orientation, and education of clinicians related to care requirements
	Adv	Useful to display activities by day for communication purposes
	Dis	Does not work well to illustrate the precedent relationships among activities
	Dis	Does not identify which activities are on the critical path
Flowchart/network format		
	Adv	Graphically illustrates the precedent relationships among activities and shows the time-limiting or critical path
	Adv	May allow creation of the pathway in less time because easier to visualize
	Adv	Helpful for discussions about existing or changing precedent relationships, clinical practices and sequences of activities
	Dis	Require more space than tables of activities and care be quite large
	Dis	Does not work well to communicate what will be done each day
	Dis	Seldom have supplemental information such as durations of activities or float times
Resource format		
	Adv	Helpful when planning and scheduling resource requirements and evaluating changes in resource use as more patients are put on computerized clinical pathways
	Dis	Calculations related to float time are detailed and best done by computer program
	Dis	Does not communicate precedent relationships
	Dis	Does not have information about the duration of each activity