Solution 1

(a)

- Inadequate front-end control – can't inventory, can't satisfy regulatory.
- Backlog of unpaid claims
  - Internal stress
  - Duplicate billing
  - Regulatory complaints
  - Miss recent trends in claims in claims and IB/IR.
    - Clash between use management claims
  - Use management takes time, slows down claims.
- Informal interpretation of benefits
- System errors in edits
- Corrupted data files
  - Incorrect, outdated codes
- Inadequate support for pending/suspended claims
  - Must have guidelines since claims are time-sensitive.
- Delayed claims can lead to regulatory fines and punitive damages.
- Overpayments increase claims costs.
- Underpayment leads to corrects, increased administrative costs.
- Problems between member and provider.

(b)

- Overall accuracy – Percentage of no errors in either amount or who paid to.
- Payment accuracy – Percentage that has the overpayments and underpayments.
- Financial accuracy $= \dfrac{\text{Overpayments + Underpayments}}{\text{Correct total payments}}$
- Improve quality through technology support.
- Training
- Feedback from claims
- Up-to-date guidelines.
- Guidelines on process for pended claims
- Personal development programs
- Commercial packs on terminology.

(c)

- Advanced technology to aid processing -- helps reduce employees.
- Software that catches bundling of claims.
- Locate to low-cost area.
- Make sure that all requirements to claim have been met
  - Utilization
  - Pre-existing exclusion
  - Referral
  - Pre-authorization
  - Have limits been met?
- Can claim be contested?
- Settle disability claims.
- Use effective rehabilitation program.
- Use disease and case management.

(d)

- Initially:
  - Lack of expertise
  - Outsourcing all systems needed
  - Long time to reach size for efficiency.
- Long-run:
  - Regulatory complains
  - Outdated systems
  - Carve-outs
  - Poor performance
  - Capitated providers
  - Turnover

Solution 2

(a) Concerns include:

- Giving union members choice diminishes the role of the union.
- Too complex benefit design for union members to understand.
- May be perceived as employer's attempt to shift higher costs to union members.

Alternatives:

- Offer the same flexible plan that has been successful with salaried employees to union.
- Keep the union plan around as another option.
- Employer should have shown past efforts to lower health costs so this isn't assumed to be shifting costs.
- Employer can share some of health care savings from moving to flexible benefits programs with union.

Could offer different types of flexible plans:

- Healthcare expense account
- Core and credits and options
- Optional up/down.

(b) Measures of claim quality:

- Need good inventory process for incoming claims
- Need to track TAT (turnaround time) and track where pended claims are in the process.
- Claim area should have a voice in product development since they know the features that are difficult to administer.
- Feedback by claims area on organizational structure can make claim administration more effective.
- Need control process.
- Need to review control process periodically.

Measures to increase quality:

- Administrative difficulty
  - Track choices
  - Track options
  - Track restrictions in moving from one plan.
- Educating employees costs money.
  - The more options and combinations that can be selected, the more possible confusion.
- Claim administration
- Anti-selection
  - Limit movement among plans.
  - Offer healthcare expense account for predictable benefits.
  - Higher subsidy of benefits for higher participation.

- Combine more and less predictable costs together
- Do not give full amount back if opt-out

- Opt-out option:
  - Allow entire opt out?
  - Make employee show evidence of coverage or spousal coverage?
  - Make employee take minimum coverage?
- Selection allows better cost control, cost-management features.
- Consider funding pre-tax credits.
- Selection allows more benefit choices and satisfies needs of more employees.

(c) Basic:

- April 5 – \$125, deductible down \$125 } Palpatine pays \$300
- June 10 – \$180, deductible exhausted }
  Still \$5 split 75/25, so Palpatine pays \$1.25
- July 18 – \$180, maximum \$150. Palpatine pays \$30.
- July 19 – \$180, pays \$30.
- July 20 – pays \$30.
- September 22 – \$60 drug Palpatine pays 25% or \$15.
- December 5 – Vision not covered.

$$\$300 + 1.25 + 30 \times 3 + 15 + 280 = \$686.25$$

I assume deductible is cumulative and not per-incident.

Enhanced:

- April 5 – Palpatine pays \$100 for deductible, pays 10% of remaining \$25 or \$2.50.
- June 10 – Pays 10% of \$180 = \$18.
- June 18, 19, 20 – \$250 per day covers the \$180 per-day hospital charges so no out-of-pocket costs.
- September 22 – 10% of 60 = \$6.
- December 5 – Pays 280 –200 = \$80.

$$\$100 + 2.50 + 18 + 6 + 80 = \$206.50$$

Solution 3

(a) Information required for durational study:

- Experience period for small group business, including number of lives, premium, and claim cost (incurred claims)
- Dates of issue for each group
- Medical underwritten business versus guarantee issue
- Medical underwritten (short form versus long form)
- Pre-existing condition limitations
  $\Rightarrow$ Separate by None, 12-month, etc.
- Duration since issue or last time group was underwritten

(b) Potential Limitations:

- Number of months of experience
- Age/sex and geographic mix
- Lack of exposures (members) in various cells

Normalize (adjust) data for:

- Benefits
- Area
- Demographic
- Trend

(c) Steps to durational study:

- Normalize for age/sex/area, etc and trends
- Divide incurred claims by normalization factor
- Divide adjusted incurred claims by enrollment
- Divide adjusted PMPMs by 2nd year PMPM

Trend = 13.5% annually
Age/sex increase 1% annually
No other changes in block

Year	Age/Sex Norm.	× Trend	= Adjustment
1	1.00	1.00	1.00
2	1.01	1.135	1.146
3	$(1.01)^2$	$(1.135)^2$	1.314
4	$(1.01)^3$	$(1.135)^3$	1.506
5	$(1.01)^4$	$(1.135)^4$	1.727

(c) Continued

Incurred Claims	Adjusted Inc Clms = Inc Clms × Adjustment	MM Enrollment	PMPM = Adj Inc Clms / Enrollment	Durational Factor = $PMPM_y$ / $PMPM_2$
16,896,000	16,896,000	240,000	$70.40	0.640 = 70.40 / 110.03
24,210,912	21,126,450	192,000	$110.03	1.00
25,533,845	19,432,226	153,600	$126.51	1.150
27,489,027	18,253,006	122,800	$148.64	1.351
26,143,327	15,138,001	98,304	$153.99	1.400

Solution 4

(a)

Group #	(a) Average Employee Exposure	(b) Total Exposure EE Months	(c) Total Premium	(d) Specific Excess Px $20.00	(e) 100% QS Px	(f) Retained QS Premium 70%	(g) Ceded QS Premium 30%	(h) % Ceding Allowance 20%	(i) Claims < $50K	(j) Retained Claims < $50K 70%
1	25	300	54,000	6,000	48,000	33,600	14,400	2,880	34,000	23,800
2	100	1,200	282,000	24,000	258,000	180,600	77,400	15,480	186,000	130,200
3	300	3,600	777,600	72,000	705,600	493,920	211,680	42,336	567,000	396,900
4	1,500	18,000	3,852,000	360,000	3,492,000	2,444,400	1,047,600	209,520	2,520,000	1,764,000
5	2,500	30,000	8,520,000	600,000	7,920,000	5,544,000	2,376,000	475,200	6,265,000	4,385,500
6	3,000	36,000	7,560,000	720,000	6,840,000	4,788,000	2,052,000	410,400	5,336,000	3,735,200
	7,425	89,100	21,045,600	1,782,000	19,263,600	13,484,520	5,779,080	1,155,816	14,908,000	10,435,600

Pre-Tax Operating Gain: = Retained Premium – Retained Claims (j) + Ceding Commission – Operating Expenses +Investment Income.
= $13,484,520 – $10,435,600 + $1,155,816 – $3,177,886 + $404,536
= $1,431,386

Retained Premium: = Total Premium (c) – Specific Excess Premium (d) – Ceded quota share Premium
= $21,045,600 – $1,782,000 – $5,779,080 = $13,484,520

Ceded Quota Share Premium: = 30% × [Total Premium (c) – Specific Excess Premium (d)]
= 30% × [$21,045,600 – $1,782,000]= $5,779,080

Retained Claims (j): = $10,435,600

Ceding Commission: = 20% × Ceded Quota Share Premium (g)
= 20% × $5,779,080 = $1,155,816

Operating Expenses: = 15.1% × Total Premium (c)
= 15.1% × $21,045,600 = $3,177,886

Investment Income: = 3% × Retained QS Premium (f)
= 3% × $13,484,520 = $404,536

Solution 4 – Cont'd.

(b)

No Reinsurance:	
1. Premium	$21,045,600
2. Claims	$17,345,000
3 Expenses	$3,177,886
4. Investment Income (3% or premium)	$631,368
5. Pre-tax Operating Gain (1–2–3+4)	$1,154,082
6. Surplus held (30% of premium)	$6,313,680
7. Pre-tax ROE (gain/surplus)	18.3%
8. Greater than 25% target?	No
With Reinsurance:	
1. Pre-tax operating gain (from (a))	$1,431,386
2. Retained Premium (from (a))	$13,484,520
3. Surplus held (30% of premium)	$4,045,356
4. Pre-tax ROE (gain/surplus)	35.4%
5. Greater than 25% target?	Yes

(c)

- Statutory vs. GAAP
  - GAAP reserves may be much less than statutory.
  - Helpful to look at ratio of earnings to premiums.

- Underwriting gain vs. operating gain
  - Operating gain includes investment income.
  - Look at loss ratios, ratio of incurred claims to earned premium.
  - Adjust for distortions (reserve adjustments, seasonality, cyclicity).

- Economic value added
  - Defined as excess profit (or ROE) above its cost of capital.
  - Helps attractiveness of opportunities that add value but may not increase ROE.

- Return on Investment
  - ROI is ratio of profit to capital invested
  - Not a good measure of service businesses. Can use return on sales or profit per employee instead.

Solution 5

(a)

- Projection Cells: Should be relatively homogeneous and reflect the major characteristics of the business. Should reflect differences used in rating structures.

  Examples:
  - HMO vs. PPO vs. Indemnity
  - Group vs. Individual
  - Community-rated vs. Experience-rated.

- Time Period Projected:
  - Should be $\leq$ two years for predicting results
  - Up to five years for determining effect of possible action.

- Base Period:
  - Base period date should be 12 months to cover seasonal variations.
  - Should allow at least three months for claims run-out.

- When to Run Model: Should allow six months to test and apply actions suggested by the model, so June 30 is a good run date for a calendar-year plan. This allows for presentation to the Board in November as well.

- Comparison to Actuals:
  - Results should be compared to actuals.
  - Financial estimates should be restated where possible (e.g., IBNR, provider liability estimates, ...)
  - Should run model with a start date = base period end date and compare to actuals between then and current date.

(b)

- Need trend assumption, information on changes in demographics (age, sex, region) or benefit changes, provider or reimbursement mechanism changes.
- IBNR estimates in Table 6 should be restated to improve A/E comparisons.
- Should have different scenarios to test. This is where the model becomes useful -- testing various actions that could be implemented.

Solution 6

(a)

	Paid Hospital Claims From Table MM-4b	Original Factor		Membership
11/01	39,200 / 4,100 =	9.56098		980
10/01	35,600 / 7,200 =	4.94444	⇐ Lo	976
9/01	38,700 / 3,400 =	11.38235	⇐ High	974
8/01	33,500 / 5,400 =	6.20370		974
	Average	**8.02287**		

(i) $\dfrac{(9.56098 + 6.20370)}{2} = 7.88234$

(ii) Geometric Mean $= (9.56098 \times 4.94444 \times 11.38235 \times 6.20370)^{(1/4)} = 7.60109$

(iii) $\dfrac{39{,}200 + 35{,}600 + 38{,}700 + 33{,}500}{4{,}100 + 7{,}200 + 3{,}400 + 5{,}400} = 7.31343$

(iv) $\dfrac{\frac{39{,}200}{980} + \frac{35{,}600}{976} + \frac{38{,}700}{974} + \frac{33{,}500}{974}}{\frac{4{,}100}{980} + \frac{7{,}200}{976} + \frac{3{,}400}{974} + \frac{5{,}400}{974}} = 7.31236$

(b)

- Average Development Factors
- Simple Averaging:
  - 3, 6, or 12 months averages
  - 3 months has advantage of using more current data
  - 12-month average is typically smoother, but may not recognize current trends.
- Removing Bumps – (No additional points for throw out high/low)
  - Use 6 of last 8 (or 6 of 10) to compute average.
  - Removing shock claims before computing factor
  - Cannot ignore large claim completely.
- Weighted Averaging:
  - Sum of the digits
  - Squared sum of the digits
  - Constantly declining percentage
  - More credibility to more recent development factors.
- Other means – harmonic mean:

- Compute mean of the reciprocals of each data point and take reciprocal of that value.

Solution 7

(a)

	High $250 Option 1	Low $500 Option 2	Total
Total Claims	5,463,000	795,000	6,258,000
Total No. of Employees	2,400	600	3,000
Months	12	12	12
Claim Cost PEPM*	189.69	110.42	173.83

*For period 7/1/00 to 6/30/01

Expected Claim Trend		Months	
2001	0.90%	12	7/1/00 to 6/30/01, midpoint 1/1/01
2002	1.20%	8	Renewal 3/1/02 to 3/1/03, midpoint 9/1/02

$(1+0.009)^{12} \times (1+0.012)^{8} - 1 = 22.5\%$ Use to trend claim experience to renewal period (midpoint to midpoint).

	High $250 Option 1	Low $500 Option 2	Total
Expected claim cost PEPM	232.37	135.26	**212.95**

(b)

				Employees
Option 1 ($250)				
Subgroup 1	80%	199.17	5% higher	1,920
Subgroup 2	20%	151.75	20% lower	480
Option 2 ($500)				
Subgroup 1	90%	104.90	5% lower	540
Subgroup 2	10%	160.10	45% higher	60

Benefit factors (Table MM-2b 9.)

- $250 deductible 0.75
- $500 deductible 0.70

If subgroups 2 switch options:

Rev. Option 1 ($250)				
	199.17	1,920		Trend
Benefit adjustment 0.75/0.70	171.54	60		
New overall cost	198.33	4.6%	Increase to Option 1	$(1+0.046)\times(1+0.225)=28.1\%$

Rev. Option 2 ($500)				
Benefit adjustment 0.70/0.75	141.63	480		
	104.90	540		
New overall cost	122.18	10.7%	Increase to Option 2	$(1+0.107)\times(1+0.225)=35.6\%$

Antiselection magnifies the observed trend above the true level of underlying health care trends.

With subgroup 2 switching options:

$199.17\times(1+0.225)=243.99$	1,920		
$171.54\times(1+0.225)=210.14$	60 switched options		
$141.63\times(1+0.225)=173.50$	480 switched options		
$104.9\times(1+0.225)=128.50$	540		
	211.24	21.521%	−1.0%

Overall trend is −1% less since more employees switched into the lower option plan.

(c)

(i)

	Current Composite Rate per EE	70.0% Current ER Contribution	Total ER Contribution	Current EE Contribution
Option 1	$225 × 0.7 =	$157.50	× 2,400 ees = $378,000	$67.50
Option 2	$150 × 0.7 =	$105.00	× 600 ees = $63,000	$45.00
			$441,000	

$$PEPM = \frac{3000}{\$147.00} \text{ Fixed \$ ER Contribution}$$

	Resulting EE Contribution	Change
Option 1	$225 – $147 = $78	$10.50
Option 2	$150 – $147 = $3	($42.00)

(ii)

What would happen?

- The employer pays the same amount in both schemes.
- Employees in Option 1 would pay more under the fixed-dollar cost scheme.
- Since it cost more, fewer employees will buy Option 1.
- It is unlikely that sick employees will switch from the high-benefit plan since the extra contribution is cheaper than the additional deductible.
- The shift of healthy employees from the high to the low plan causes adverse selection.
- Over time, adverse selection will raise the cost of Option 1.

Solution 8

(a) Refund =

	Formula	Group 4	Group 5
	Prior balance	60,000	25,000
+	Investment income	0	0
+	Premium	3,852,000	8,520,000
−	Claims charged*	3,046,680	7,142,800
−	Administration	$1500(12)(12) = 216K$	$2500(12)(12) = 360K$
−	Commission	$(0.05)(3852K) = \$192.6K$	$(0.05)(8520K) = \$426K$
−	Risk charge	$(0.03)(3852K) = \$115.56K$	$(0.03)(8520K) = 255.60K$
−	Rate stabilization reserve	50,000	50,000
	REFUND	\$291,160	\$310,600

*Claims charged =

	Total claims	2,831,000	6,265,000
−	Pooled claims	311,000	
+	Pooled charge**	$(29.26)(1500)(12) = 526,680$	$(20.26)(2500)(12) = 877,800$
	Claims charged	3,046,680	7,142,800

$$**\text{Pooled charged PMPM} = \frac{\text{Pooled PMPM}}{\text{Trend}} = \frac{\$35}{(1.012)^6(1.009)^{12}} = \$29.26$$

Total annual cost = $PMPM \times 12 \times$ number of members

(b) Steps: Calculate manual rate.
Calculate experience rate.
Blend together.
Calculate required revenue.
Calculate tiered rates.

- Manual Rate Calculation:

-- Rate per employee $= \dfrac{PEPM \times \text{weighted relativity}}{\text{Adjustment}}$

$$PEPM = 263 - \text{weighted relativity}$$
$$= (\%\ \text{ee's} \times 1.0) + (\&\ \text{ee's/Fam} \times 2.5)$$
$$= (0.3)(1.0) + (0.7)(2.5)$$
$$= 2.05$$

Adjustment = 1.75

$$\text{Rate per employee} = \frac{(263)(2.05)}{1.75} = \$308.09$$

Adjust for:

A/S	1.05
Benefit	0.75
Region	1.00
Trend	$(1+0.012)^2$
Adjusted manual rate =	248.48

- Experience Rate Calculation:

$$\text{Net Claims } PEPM = \frac{\overbrace{3900}^{PEPM} - \dfrac{\overbrace{540{,}000}^{\text{Pooled claims}}}{\underbrace{900}_{\#\text{ of employees}}}}{12} = \$275$$

Trend from 1/00 to 7/02	$=(1.009)^{12}(1.012)^{8} = 1.225$
Trend claims	= 336.88
+ Pool charge	= 35.00
PEPM	= 371.88

- Weight Together:

  Credibility = 75%

  Weighted *PEPM* = (0.75)(Experience rate) + (0.25)(Manual)
  = (0.75) (371.88) + (0.25)(248.48)
  = 341.03

- Required Revenue (Gross Premium):

$$\text{Gross Premium} = \frac{\text{Net Premium + Admin.}}{(1 - \text{Commission} - \text{Profit})}$$
$$= \frac{341.03 + 12}{(1 - 0.05 - 0.03)}$$
$$= \$383.73$$

- Tiered Rate Calculation:

$$\text{EE Rate} = \frac{\text{Gross Premium}}{\text{Weighted Premium}}$$
$$= \frac{383.73}{2.05}$$
$$= \$187.18$$

$$\text{EE / Fam. Rate} = (\text{EE Rate}) \times (\text{Tier Factor})$$
$$= 187.18 \times 2.5$$
$$= \$467.96$$

(c) Considerations:

- Trend (utilization + cost): Need to project from midpoint to midpoint.
- One-time events and/or shock claims.
- Mix of business (historical vs. projected).
- Match claims with exposure.
- Other factors:
  - Demographics (A/S, industry)
  - Policy Δ's.
  - Benefit Δ's.
  - Δ's in administrative procedures (e.g., governmental requirements, delivery system, competition).

Solution 9

(a) Recent Managed Care trends affecting all employers

(1) Industry restructuring and consolidation

- Fewer small MCOs and carriers reduce employer leverage
- Restructuring of physicians into single or multi-specialty groups
- Consolidation makes it harder to differentiate networks and select best for employer

(2) Healthcare company competition

- More healthcare providers/carriers have converted to "for profit" status
- Shareholders focused on earnings
- This competition has driven the industry to look for quick fixes rather than long term solutions

(3) Cost increases

- Despite utilization controls and managed care, costs continue to increase especially for prescriptions, mental health and others
- Aging population increasing costs
- Provider organizations resisting managed care discounts
- This combined with decreased capital to fund care makes decisions tougher

(4) Consumerism

- Part empowerment and part managed care backlash
- Employees more aware of benefits and demand care that meets their access and convenience needs
- Employees have diverse needs
- Internet – helping to fuel consumerism with information

(5) Quality Initiatives

- Has become more than just "talk"
- Now defining and measuring quality in response to consumer demand for quality
- Better data facilitating measurement and improvement
- NCQA accreditation

(b) Recent factors specific to group size:

(1) Large/jumbo (5000+)

- More resources
- Concerned with flexibility and national network quality
- Leverage in rate negotiations reduced with consolidation of large health plans
- Concerned with reporting if self-funded
- Usually represented by HR or benefits consultant
- Access important too
- Price used to be less significant but is becoming an issue

(2) Large groups (500-5000)

- Less concerned with national network
- Uses brokers and consultants
- Still concerned with quality
- Little self-funding so less concerned with reporting except related to experience rating
- Access and flexibility important
- Price increasing in importance

(3) Small groups

- Usually sold through broker/agent
- Cannot afford to hire benefits specialist
- Usually sole carrier, one plan of benefits situation
- Flexibility and reporting not important
- Main focus is price but also has paternal feelings toward quality

Solution 10

(a) Retiree COB:

1. Standard COB:
   Pay the lesser of charges (Medicare or charges × %. Entire cost is often covered.

2. Exclusion:
   $(C - M) \times \%$
   Exclude Medicare payment before calculating amount payable.

3. Carve out:
   $(C \times \%) - M$
   Lowest payment method.

4. Medicare Supplement:
   Separate plans to wrap around Medicare benefit.

5. Variations:
   Payments vary by order of claims submitted. Not in this situation.

(b) Medicare plan is primary:

Jill's Claims:

Cost = Utilization × (cost per script – co-payment)

Acme Current:

Generic cost =	5 *PMPM* × (20 – 10)	= 50 *PMPM*
Brand cost =	5 *PMPM* × (100 – 20)	= 400 *PMPM*
Total cost =		450 *PMPM* = *5400* PMPY

Total:

Generic =	5 × 20	= 100 *PMPM*
Brand =	5 × 100	= 500 *PMPM*
Total		= 600 *PMPM* = 7200 *PMPY*

Medicare:

Generic = 5 × 20 = 100 × 12 months =	1,200
Deductible =	– 50
Coinsurance @ 90% =	1,035
Brand = 5 ×100 = 500 × 12 months =	6,000
Deductible =	– 100
Coinsurance @ 80% =	4,720
Total Medicare = Generic + Brand =	5,755

Standard COB:
Lesser of total – Medicare or total × percentage covered.
Total – Medicare = 7200 – 5755 = 1445
Total covered = 5400

∴ ACME annual cost is $1,445. Jill has entire cost paid.

Carve Out:
(Total × %) – *M*

Total covered =	5,400
– Medicare	–5,755
	– 355

No payment made by ACME

Exclusion COB:

	Generic				Brand			
Drug	Cost	Medicare	Jill	ACME	Cost	Medicare	Jill	ACME
1	20	0	10	10	100	0	20	80
2	20	0	10	10	100	80	20	0
3	20	9	10	1	100	80	20	0
4-60	20	18	2	0	100	80	20	0
				21				80

21 + 80 = $101 annually paid by ACME.

Solution 11

(a) Expense may be allocated by:

- Percentage of premiums
- Per policy
- Per benefit unit
- Per percentage of claims.

The allocation may also be different between the first year and the renewal years.

(b) The following expenses are usually taken into account:

- Acquisition expenses: Often expressed on a per-policy basis.
- Commissions: Usually higher in first year.
- Agency expenses: Expressed as percentage of premium.
- Claim administration expenses: Usually on a per-claim or percentage-of-claims basis.
- Policy administration expenses: Most likely to be per-policy (or per-unit).
- Premium tax and other state taxes: Usually as a percent of premium.
- Company overhead: Often as a percent of premium.
- Federal income tax: Usually as a percent of premium.

(c)

- The overall expense level expected to be incurred by the block of policies will be equal to aggregate expense charges expe3cted to be collected by the company for these policies.
- The formula expresses a reasonable and rational allocation of the expenses by rating cell within the block of policies.
- No competitive problems are created due to the resulting slope of premiums.

Solution 12

Life Insurance

Employees' Perspective

Life Insurance Premium

United States

Section 79 provides that employer provided contributions attributable to amounts in excess of $50,000 are taxable income to employee

Canada

Employer provided contributions for employee are taxable income to employees. Amount of provincial sales taxes on premiums is also taxable.

Life Insurance Benefits

Benefits are not taxable in US and Canada

First $10,000 of Death benefits paid directly by employer in Canada are tax free

Employers' Perspective

Life Insurance Premium

Employer provided premium are tax deductible as a business expense in US and Canada

Disability

Employees' Prospective

Disability Premium

Employee may not deduct any premiums paid with after tax income

Employer provided contributions for employee are not taxable income to employee in US and Canada

Disability Benefits

United States

When an employee contributes a portion of premium, the respective portion of the benefits would be tax-free.

Canada

All benefits paid for by the employer are taxable to the employee.

When plan is fully paid for by employee, benefits paid are not taxable

Employers' Perspective

Disability Premium

Employer provided contributions are deductible as a business expense in the US and Canada

Medical

Employees' Prospective

Medical Contributions/Premiums

United States:

Employees may deduct premiums they paid with after-tax dollars on the individual federal income tax returns - subject to the 7.5% of Adjusted Gross Income limitation.

Employer provided contributions are not taxable income to employee

Canada

Employer provided contributions are not taxable income to employee

Medical Benefits

Benefits are tax-exempt in US and Canada

Employers' Prospective

Medical Contributions

Employer provided contributions are deductible as a business expense in the US and Canada

Employer provided contributions for domestic partners are not deductible

Long Term Care Insurance

Employees' Prospective

Long Term Care Insurance Premium

United States

Plan must be qualified to be considered for tax treatment

Employee may deduct any premiums paid with after tax income

Canada

Employer provided contributions for employee are not taxable income to employees

Long Term Care Insurance Benefits

Benefits are tax-exempt in US and Canada

Employers' Prospective

Long Term Care Insurance Premium

Employer provided premium are deductible as a business expense in U.S. and Canada

Solution 13

(a) Renewal guarantees

1 Optionally renewable
- Weakest form
- Can be cancel by insurer
- Can change premium rate

2 Conditionally renewable
- No action on single individuals is allowed
- Change in rate/cancellation must apply to entire calls or policies sold in state (same class)
- May require approval by regulators

3 Guaranteed renewable
- Cannot cancel
- Can change rate for whole class risks and for all class risks in that state
- May require approval from regulator

4 Non-cancellable
- Strongest form
- No rate change or cancellation allowed

(b) Factors influencing lapsation

Lapsation varies by:
1. Duration – decreases as duration increases
2. Age – increases as age decreases generally
3. Mode of premium payment – annual has lower lapse rates than monthly
4. Premium level and rate increases – lower lapse rates for lower levels of premium and for level rates (no increases)
5. Types of products – higher lapse rates for medical than for life
6. Occupation – wealthier occupations and those with more stability lapse less

(c) Differences between individual life insurance underwriting and major medical underwriting

1. Medical claim has high frequency low amount
   - Life claim can only die once
   - Assess expected claim amount rather than an earlier than usual claim
2. Medical claim more predictable for insured, subject to anti-selection
   - Surgical procedures desired but not life-threatening
3. Medical claim costs unknown in advance.
4. Duration of disability varies.
5. Medical claim reimbursement paid to insured self, not beneficiary.
6. Medical treatment more elective.
7. Experience data less due to:
   - Variations by product and small volume
   - Different practice in different area
   - Technology.

(d) Sources of information an underwriter can use:

1. Application and other supplemental questionnaires, medical info provided by the applicant
2. Medical examination: may request a more current medical exam.
3. Medical impairment bureau – collection of data from many health carriers.
4 Financial questionnaires – what sources of income but this is medical not disability.
5. Attending physician's statement – medical records from physician seen recently.
6. Doctor at company/medical director – help underwrite difficult cases.
7. Inspection report – general reputation, moral hazards, driving record, finances.
8. Agent – underwrite the agent as well as agent being a source of info about client.

Solution 14

(a) **Challenges**

- **Consistency:**
  Numerical reports should consistently include or exclude data. Consistency of information is important. To ascertain the extent of it one may need to educate the audience on differences from other reports if inconsistent. For example, use consistent paid dates, either when the check is issued or when check clears. In addition, if you are using restated reserves, consider the impact on the results. Another reason for consistency is that results may be reported differently by company. As a result, you need to put all reporting on a single basis whenever possible.

- **Availability of Data:**
  Consider the source of data being reported. Is the data to be retrieved available only on a manual basis? Are there similar reports?

- **Reliability of Data:**
  Check the validity of the data unless the data is self-correcting. Compare multiple sources of the same data. Check the data by incorporating edits. Ascertain the accuracy of systems as they may change over time. Verify that certain values are within reasonable ranges of each other.

- **Value of the Data:**
  Ask what actions could be taken from a given report. Retire reports that are not providing useful information or providing action items. In addition, consider the cost of producing the report.

- **Extracting Information from the Data:**
  Consider the best way to present data to provide the most information (i.e. text, numbers, or graphics) Consider the amount of time available to analyze reports in determining the best format for the intended audience. Be concise.

(b) **Information/Reports to Analyze Expenses**

Report expenses from a total company perspective. Break down the cost of operations by chief components such as Commissions and Overrides, General Expenses including Salaries and Benefits, Computer Operations, Service Fees, Provider Benefits, Corporate Overhead, and all other expenses such as premium taxes, licenses, and fees for each line of business.

A check on expense levels would be to present them as a percent of earned premium and equivalents. Split expenses into people related, corporate overhead, computer systems, external fees to vendors and provider networks. Distribute global expenses into functional activity centers. Expense monitoring can be developed from budget reports.

Use the current budget, the prior budget, prior actual expenses, variance amount and percentages, and the remaining estimates. Split reports by organizational area to monitor and control cost by area. Roll up by department, division, and entire the company. Develop work effort budgets. Total expenses should correspond to anticipated future work effort to project and monitor unit costs. Develop unit cost reports, as expenses need to be shown in terms of the results produced and the work effort extended.

Information/Reports to Analyze Claims

Consider the financial results. Look at ratios of incurred claims to earned premiums as well as expenses to earned premiums or fee income to claim equivalents. Develop PMPMs for managed care. Mortality studies would include various factors such as type of schedule, age, sex, type of underwriting, and lifestyle status. Disability studies would include various factors such as frequency, initial severity and recovery rates. Divide recovery statistics into various classes such as mental illness and AIDS.

Develop Claim Lag Studies. (Dates would include date paid as well as date incurred.)

Report to policyholders would include reports on charge amounts and reasons for not paying all charges. Breakdown submitted charges into sources. Compare time periods and sub-groups against normative data. Develop utilization and average charge per service per member reports. Develop bank reconciliation reports. Develop large claim reports as well as claim payment detail reports and claim lag reports.

Monitor providers and networks. Measurements include number of office visits, specialist referral, high frequency/high dollar services, inpatient/out patient utilization per member per month and frequently used laboratory tests.

HEDIS

Industry standard for managed care reporting for Medicaid, Medicare and commercial populations. Reporting covers effectiveness of care, access/availability of care, satisfaction with care, health plan stability, use of services, costs of care, informed health care choices, and health plan descriptive information.

Solution 15

Part A.

Direct Contract with Individual Physicians

- Advantage: direct relationship with physicians
- Advantage: can hand pick providers
- Disadvantage: large effort to contract with each physician

Medical Group

- Advantage: same effort as direct contracting but yields more physicians
- Advantage: both PCPs and specialists are obtained if a multi-specialty group
- Disadvantage: disruption if a group cancels
- Disadvantage: multi-specialty group dominated by specialists-referrals, overutilization
- Disadvantage: may get providers that you don't want

Independent Practice Associations

- Advantage: large number of providers come with contract
- Advantage: if having good relations, then confluence of goals
- Disadvantage: may be tough to negotiate with
- Disadvantage: disruption if they cancel
- Disadvantage: inability to select individual physicians

Integrated Delivery System

- Advantage: ability to have a network in short time period
- Advantage: may have substantial savings as compared with direct contracting
- Disadvantage: removes control of entire portion of delivery system
- Disadvantage: may increase hospital utilization
- Disadvantage: similar to IPAs

Faculty Practice Plans

- Advantage: provide highly specialized care
- Advantage: adds prestige
- Advantage: may be willing to discount or accept risk
- Disadvantage: less cost effective
- Disadvantage: may lack claim and encounter data
- Disadvantage: unable to deselect physicians
- Disadvantage: less cost efficient since use house officers and med students
- Disadvantage: care not coordinated nor set up for case management

Part B.

IPA is a legal entity that contracts with providers and managed care plans.

Reasons for consolidation:

- Advantage in contract negotiations
- Reduce administrative burden
- Gain market share

Reasons for not consolidating:

- Less autonomy
- If one IPA is of poor quality, may affect other
- May cause reduction in reimbursement

Part C. (Case Study)

Primary Care Physicians: Avg cost in 2001 = \$13.85 (Table MC-5)

Percent of Medicare fee schedule = $0.95 \times 1.2 + 0.05 \times 1.5 = 121.5\%$
(Tables MC-5 & MC-7)

Medicare PCP Rate = 13.85 / 1.215 = \$11.40

Specialty Care Physicians: Avg cost = \$66.49 (Table MC-5)

Percent of Medicare fee schedule = $0.45 \times 1.2 + 0.40 \times 1.35 + 0.15 \times 1.50 = 130.5\%$
(Tables MC-5 & MC-7)

Medicare Specialty Rate = 66.49 / 1.305 = \$50.95

Medicare Rate = 11.40 + 50.95 = \$62.35

Percent RBRVS = 80.34 / 62.35 = 128.85%

Part D. (Case Study)

Let Y = pct to negotiate to be 125% of 2000 Medicare RBRVS
Primary Care = $\$11.40Y$

Specialty Care = $50.95 \times (0.60Y + 0.40 \times 1.35)$

Combined = $11.40Y + 50.95\ (0.60Y + 0.40 \times 1.35) = 62.35 \times 125\%$

Solve for Y:

$41.97Y + 27.513 = 77.9375$

$41.97Y = 50.4245$

$Y = 120.1\%$

Solution 16

Part A.

Case Rate – Fixed payment regardless of length of stay per admit
- payment may vary by type of service (medical, surgical, etc.) or by DRG

Capitation – hospital reimbursed fixed amount per member per month (pmpm) for a defined member base.
- may vary by age/gender or equal a percent of premium.

Per Diem – hospital reimbursed a fixed cost per day
- may vary by type of services
- first day sometimes paid at a higher rate

Why Change: - Hospital believes it can manage utilization and gain financially
- choose case rate if utilization management will lower length of stay
- choose capitation if they believe they can manage overall utilization better

Part B.

Medical:	70 days × $1,200 per day	= $84,000
Surgical:	60 days × $1,500 per day	= $90,000
		= $174,000

No. of Admits per 1000: 20 Medical, 14 Surgical = 34
Cost per Admit: $174,000 / 34 = $5,117.65

Part C.

- Does hospital's current contract cover expenses?
- Hospital is at risk for length of stay
- Hospital may want to insure against outliers
- How will risk-sharing arrangement differ after the merge?

Solution 17

Part A.

Similarities:

- Both are preventive (i.e., focus on trying to prevent the need for care)
- Both are often performed over the phone or internet
- Both are often performed by non-physician providers
- Both are education focused (educating members)
- Both involve collection of data to be used in management of care

Demand Management:

- Focuses on the member population in general
- Tries to reduce overall utilization of services
- May involve nurse hot lines, handbooks, medical infomatics, prevention programs
- Promotes self-care and prevention

Disease Management:

- Focuses on members with specific chronic conditions
- Tries to reduce the need for care for that condition
- Tries to perform care in outpatient setting
- Disease specific approach to manage health care for chronic illness

Part B.

Clinical pathways or clinical protocols are:

- Optimal sequencing of interventions by a multi-disciplinary team to maximize quality of treatment for a specific condition and minimize unnecessary utilization
- Can use CPM, PERT, algorithms, CareMaps
- Used for planning and coordinating care, establishing expectations, education, benchmarking, improved work environment, clarifying patient responsibilities, better communication

Part C.

	Current			Demand Management		Clinical Pathways		
	Util	Cost	pmpm		pmpm	Util	Cost	pmpm
Medical	70.0	$1,200	$7.00	95%	$6.65	63.0	$1,260	$6.62
Surgical	60.0	$1,500	$7.50	95%	$7.13	54.0	$1,575	$7.09
Psyche	0	0	0	100%	0	0	0	0
Sub Abuse	2.0	$600	$0.10	100%	$0.10	2.0	$600	$0.10
Maternity	13.0	$2,200	$2.38	100%	$2.38	13.0	$2,200	$2.38
SNF	0.5	$600	$0.03	100%	$0.03	0.5	$600	$0.03
Total			$17.01		$16.28			$16.21

(note: Maternity and SNF are paid per case, others are paid per diem)

Members	210,000		
Months	12		
Inpatient Costs	$42,861,000	$41,034,000	$40,851,300
Outpatient Costs	$57,960,000	$57,960,000	$57,960,000
Total I/P & O/P	$100,821,000	$98,994,000	$98,811,300
Total pmpm	$40.01	$39.28	$39.21
Target pmpm	$35.00	$35.00	$35.00
Risk Corridor (Table MC-8)			
Upper (+5% of $35)	$36.75	$36.75	$36.75
Lower (-5% of $35)	$33.25	$33.25	$33.25
10% Cap	$3.50	$3.50	$3.50
Excess (Total – Upper pmpm)	$3.26	$2.53	$2.46
50% of Excess	$1.63	$1.27	$1.23
(All inside $3.50 cap)			
Risk Share Savings	$4,107,600	$3,187,800	$3,099,600
Net Hospital Revenue	$96,713,500	$95,806,200	$95,711,700
(Total I/P & O/P – Risk Share Savings)			

Part D.

	Current	Demand Management	Clinical Pathways
Hosp Rev	$96,713,500	$95,806,200	$95,711,700
+ Admin Costs	0	$150,000	$125,000
= Cost to Bedford	$96,713,500	$95,956,200	$95,836,700
Savings over Current	$0	$757,300	$876,800

Clinical pathways program has greater savings in first year and the implementation costs are first year only. Will maximize quality of care and reduce unnecessary inpatient utilization. Will improve relationship with hospital by helping them with capacity problem.

Solution 18

Part (a)(i).

Total drug cost for 2000 (in millions):

403 + 173 + 9240 + 3960 + 8,400 + 3,600 + 7,350 + 3,150 + 260 + 6,250 + 4,820 + 3,600
= $51,206 (groups with and without drug coverage)

× 1.5011 (3 years trend at 14.5% per year)

= $76,867

Part (a)(ii).

3 years trend is approximately 50% increase. All claims under $3,000 are not reimbursed, therefore only review current average expenditure over $2,000.

2000 Expenditure	**with Drug Coverage**	**Trended**
$2,001 - $3,000	$8,400 + $3,600 = $12,000	$18,013
Deductible	5 people @ $3,000 deductible	$15,000
Plan cost		$3,013
$3,000 +	$7,350 + $3,150 = $10,500	$15,762
Deductible	3 people @ $3,000 deductible	$9,000
Plan cost		$6,762

2000 Expenditure	**without Drug Coverage**	**Trended**
$2,001 - $3,000	$4,820	$7,235
Deductible	2 people @ $3,000 deductible	$6,000
Plan cost		$1,235
$3,000 +	$3,600	$5,404
Deductible	1 person @ $3,000 deductible	$3,000
Plan cost		$2,404

Medicare Total in millions	= 3,013 + 6,762 + 1,235 + 2,404 =	$13,414

Part B.

- Deductibles are bad because of leveraging, they will represent less of the percent of costs over time.
- Should charge coinsurance – much more effective at controlling drug costs through cost shifting and increases with drug trend
- Use copays for drugs – same problem with leveraging as deductibles and incents manufacturers to develop expensive drugs
- Negotiate discounts with preferred pharmacies
- Maximum drug benefit will control costs – reverse leveraging effect
- Medicare should consider negotiating rebates to offset costs

Solution 19

Part A.

1 Benchmark against other providers
2. Benchmark for MCO in total
3. Peer review
4. Adjust for case mix, severity, age/gender, geographic locale
5. Look for utilization at inappropriate site of care
6 Referral rates
7. Prescribing behavior
8. Consider statistical significance
9 Examples include visits/1000, procedures/1000, number of admits

Part B.

1. Medical records
2. Claims data
3 Utilization or case management system (medical management reports)
4. Grievance/complaints from members
5. Credentialing data
6. National practitioner data bank
7. Healthcare integrity and protection data bank
8. Public use state data tapes

Part C.

1 Fee-for-service with withhold, provider has financial incentive to:
   - churn: more procedures than necessary
   - upcode: charge for services more expensive than those actually used
   - unbundle: charge separately for services that are normally packaged
2. Could negotiate a capitation, or a bonus pool
3. Apply bonus/withhold based on physician's performance, ie., put physicians at risk

Part D.

1. Quality of care
2. Member satisfaction
3. Impact of losing the provider on the quality/market position of the MCO
4. Member disruption
5 Geographic coverage
6. HMOs competitive position if provider is not in the network
7. Contracting arrangements may create obstacles

Solution 20

Part A. Managed Care Regulation

Regulations vary by state

Any Willing Provider
- prevents HMOs from selectively contracting with providers

Access to Specialty Care
- direct access without PCP referral
- members with ongoing care can designate specialist as PCP

Drug Formularies
- disclose formularies

Health Plan Liabilities
- liable for coverage determination and UR activities
- consumer fraud and misrepresentation

Physician Antitrust Exemption
- current federal laws prohibits physicians from collusion

Utilization Review as Practice of Medicine
- some states have ruled UR as practicing medicine

Emergency Care
- prudent Layperson Laws: standard for determining when emergency exists

Clinical Mandates
- only physician determines inpatient length of stay
- mandates on maternity length of stay

Mandated Benefits
- Mental Health Parity: MH paid like other benefits
- reduces HMOs flexibility

Part B. Obligations to Perform Medical Management and Penalties

The HMO will be obliged to:
- Maintain license of authority
- Establish medical management programs
- Reasonable standards of quality consistent with medical practice
- Establish grievance procedures
- Fed Qualified HMOs have quality assurance programs stressing outcomes

Failure to comply could result in:
- Increased regulatory oversight
- Loss of business
- Legal liability
- Fined, suspended, or license revoked

Solution 21

Part A.

- Transfer of risk to providers:
  - capitation contracts
  – physician withholds
  – financial position of risk providers
  - stop loss provisions for risk providers
  - provision for year-end settlements
- Management of care delivery
  – changes in provider reimbursement levels
  - mix of provider reimbursement methods (capitation, fee for service, etc)
  – utilization review procedures
- Data
  – source of data (paid claims, authorization data, etc.)
  – is it reliable?
- Change in mix of delivery systems
- Assumptions consistent with business plans

Part B.

Reimbursement:

	Pct of Days	Thru 9/30/2001	Adjusted 10/1/2001
Hospital A	25%	$1,000	$1,100
Hospital B	50%	$1,100	$1,210
Hospital C	25%	$1,200	$1,440
Average		$1,100	$1,240

All hospitals update their per diems by 10% on 10/1/2001 except for Hospital C which has a 20% increase in its per diem.

Month	(a) Authorization Hospital Days	(b) Theoretical Cost/Day Estimates	(c) Authorization Incurred Estimates	(d) Lag Paid and Incurred	(e) Completion Factor	(f) Completion Incurred Estimates
July	2,205	$1,100	$2,425,500	$2,475,000	1.00	$2,475,000
August	2,200	$1,100	$2,420,000	$1,950,000	0.85	$2,294,118
September	2,225	$1,100	$2,447,500	$2,150,000	0.80	$2,687,500
October	2,050	$1,240	$2,542,000	$1,700,000	0.60	$2,833,333
November	2,025	$1,240	$2,511,000	$1,070,000	0.35	$3,057,143
December	1,950	$1,240	$2,418,000	$247,500	0.10	$2,475,000
Total				$9,592,500		
Formula:	given	from above	(a) × (b)	given	given	(d)/(e)

Month	(g) Authorization Cost/Day Credibility	(h) Weighted Incurred Estimates
July	0.00	$2,475,000
August	0.00	$2,294,118
September	0.25	$2,627,500
October	0.50	$2,687,666
November	0.75	$2,647,536
December	1.00	$2,418,000
Total		$15,149,820

Formula: given $g \times (c) + (1-(g)) \times (f)$

IBNR Estimate = $15,149,820 – $9,592,500 = $5,557,320

Part C.

- Services may be authorized but not rendered
- Actual length of stay may be different due to complications or better than average recovery times
- Services may be rendered without prior authorization due to emergencies
- Services may be added due to appeals or follow-up notifications