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**IAAHS 2007**

IAA Health Section Colloquium

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**Methods for Managing Medical Risk**  
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**Gary Nidds, FSA, MAAA, Chief Actuarial Officer**

**Munich Re America HealthCare**

a division of Munich Reinsurance America, Inc.

# Agenda

The objective for today is to give an overview of current methods insurance and reinsurance companies use to quantify, manage and reduce medical risks found in their insured populations. Approaching risk management from all levels gives actuaries the advantage they need in a competitive environment.

- I. The importance of managing medical risk
- II. Actuarial tools and models (risk avoidance)
- III. Innovative product designs (attracting better risks)
- IV. Disease and medical management (risk management)

# I. The Importance of Managing Medical Risk

Although nothing new, changes in the marketplace are forcing insurers and medical risk takers to improve the way they quantify and manage risk.

Market forces include:

- I. Competitive pressures to improve risk selection
- II. Medical trend continuing to outpace general inflation
- III. Aging population and increased prevalence of chronic illnesses
- IV. Governments' reluctance to continue writing a blank check
- V. Improved data capture and access to healthcare information

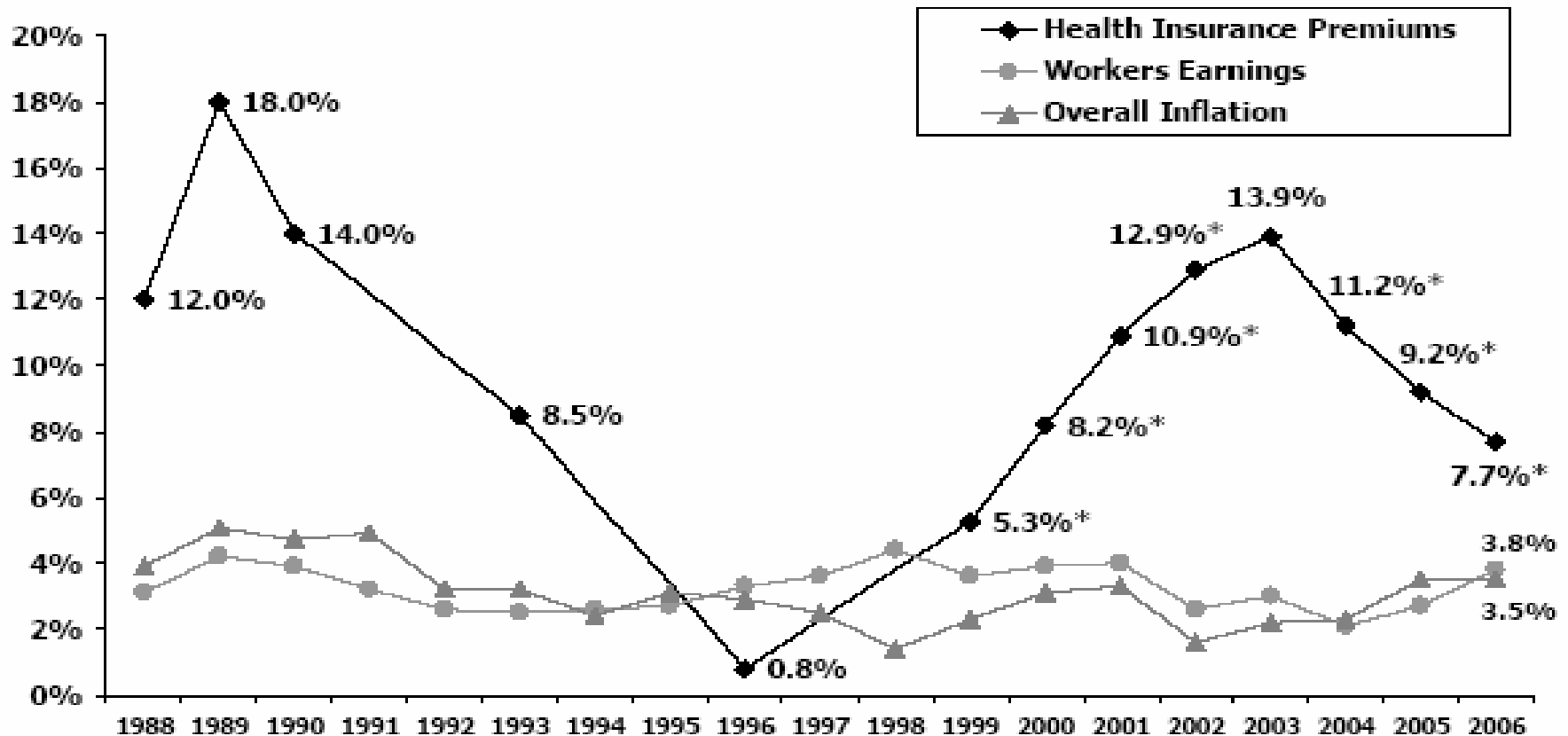
## “Three Rules of Work

1. Out of clutter find simplicity
2. From disorder, find harmony
3. In the middle of difficulty lies opportunity”

Albert Einstein

## I. Importance of Managing Healthcare risk

### Increases in Health Insurance Premiums Compared to Other Indicators, 1988-2006



Source: US Bureau of Labor Statistics

# I. Importance of Managing Healthcare risk

## Employers & Governments Struggling with Rising Healthcare Costs



## **II. Actuarial Tools & Models**

### **What we'll cover...**

1. Benchmark databases
2. Predictive modeling
3. Medical technology and pharmacy pipeline tools
4. Real life examples of each

## II. Actuarial Tools & Models

### 1. Benchmarking

- I. Industry & government publications
  - Health Information Technology (HIT) should improve quality
- II. Consultant or reinsurers' data
- III. Internal data, same or different products
- IV. Database management companies (Ingenix, MedStat, Pharmedics, IHCIS...)

But be careful:

- Level of underwriting - is the data from an insured or general population?
- Has the marketplace or product changed?
- Policy duration
- Paid versus incurred data, trend and claims development

## **II. Actuarial Tools & Models**

### **1. Benchmarking**

Uses of benchmark data:

- i. Base rate calculations
- ii. Trend analysis & cost projections
- iii. Underwriting factors (age/sex, geographic, contract type, duration...)
- iv. Credibility factors for experience rating
- v. Carve-out pricing, individual risk evaluation

## II. Actuarial Tools & Models

### 1. Benchmarking Example – Carve Out Risk

Large radiology company assuming full risk of all imaging claims for an insured population via capitation payment from health plan

- Looking to buy carve-out reinsurance to cover risk of claims exceeding 110% of capitation premium
- Actual experience at radiology level not available from health plan
- Solution:
  - Pull experience from benchmark database at the CPT-4 procedural level, sort claims by radiology service (MRI, PET, CT, MRA), evaluate frequency, cost per claim and trends over time.
  - Determine annual trend and volatility of radiology claims.

## II. Actuarial Tools & Models

### 1. Benchmarking Example Carve Out Risk

Radiology CPT-4 Codes	Usage Rate/100 Lives		Frequency
	2001	2005	Trend
<b>MRA</b>			
70544 Mr angiography head v	0.1651	0.2282	6.7%
70549 Mr angiograph neck w/	0.0077	0.0047	-9.5%
74185 MRA, MRI ANGIOGR.	0.0098	0.0116	3.5%
70547 Mr angiography neck v	0.0555	0.0507	-1.8%
73725 MRA, MRI ANGIOGR.	0.0089	0.0190	16.5%
<b>CT</b>			
72193 CT PELVIS WITH COI	1.4800	1.5581	1.0%
74160 CT ABDOMEN WITH I	0.0577	0.0306	-11.9%
74170 CT ABDOMEN WITHC	0.3141	0.1967	-8.9%
70486 CT SINUS, FACE,JAW	0.0666	0.0531	-4.4%
71260 CT CHEST, THORAX	0.0106	0.0073	-7.2%
73202 CT ARM OR UPPER E	0.0779	0.0758	-0.5%
73206 Ct angio upr extrm w/o	0.2169	0.5092	18.6%
72130 CT THORACIC SPINE	0.0927	0.0704	-5.4%
<b>PET</b>			
78815 Tumorimage pet/ct sku	0.0007	0.0006	-3.8%
78812 Tumor image (pet)/sku	0.0025	0.0022	-2.1%
78813 Tumor image (pet) full	0.0000	0.0024	N/A
78811 Tumor imaging (pet), li	0.0000	0.0137	N/A
78814 Tumor image pet/ct, lir	0.0000	0.0013	N/A
78804 Tumor imaging, whole	0.0000	0.0630	N/A
78459 Myocardial imaging, PI	0.0000	0.0135	N/A
<b>MRI</b>			
70553 MRI HEAD,BRAIN,BR,	0.7691	0.9299	3.9%
73721 MRI JOINT OF LOWE	0.0112	0.0091	-4.1%
71551 Mri chest w/dye	0.0004	0.0004	0.8%
75554 CARDIAC MRI FOR F	0.0035	0.0066	13.6%
75552 MRI CARDIAC HEART	0.5047	0.5536	1.9%
75556 Cardiac MRI/flow map	0.0075	0.0066	-2.5%
75553 Magnetic image, myoc	0.1093	0.1282	3.2%
<b>Total Imaging</b>	<b>13.9398</b>	<b>17.2326</b>	<b>4.3%</b>

Note: for illustration only

## II. Actuarial Tools & Models

### 1. Benchmarking Example

#### Carve Out Risk

#### Imaging Claims Extract - Frequency Trend & Variability

Incurred Year	Actual Frequency (per 100)	Annual Trend	2007 Level	Natural Log
2000	12.673		17.8316	2.8810
2001	13.940	10.0%	18.6807	2.9275
2002	16.749	20.2%	21.3766	3.0623
2003	17.603	5.1%	21.3970	3.0633
2004	18.862	7.2%	21.8355	3.0835
2005	17.233	-8.6%	18.9989	2.9444
2006	19.440	12.8%	20.4120	3.0161
2007 Selected	20.412	5.0%		
Standard Deviation of Natural Log				0.0791
Lognormal Parameter Selection				
Sigma				0.07913
Mu				3.01299

Note: Data is fictional – for illustration only

## **II. Actuarial Tools & Models**

### **2. Predictive Modeling and Risk Assessment**

#### Benefits and uses of predictive models

- Identify candidates for disease and care management efforts
- Determine provider reimbursement levels based on riskiness of population
- Improve underwriting, pricing and risk selection
- Physician profiling
- Refine loss ratio estimates by policy duration
- Pay for Performance (P4P)
- Determining lasers, value for ongoing claims
- Risk equalization calculations
- Reinsurance excess of loss pricing

## II. Advanced Actuarial Tools & Models

### 2. Predictive Modeling and Risk Assessment

#### Options Available

- Build your own
- Purchase an available model (DxCG, ACG, Ingenix, CPDS, D2Hawkeye)
  - Models are becoming customized for specific use
  - Engine may be from another company
- Rent or lease (e.g. Web-based access to model)

## II. Advanced Actuarial Tools & Models

### 2. Predictive Modeling and Risk Assessment

#### Types of Models

- Mathematical models (regression analysis, ai, claims only)
- Clinical models
  - Medical-based, ICD-9/10, CPT codes (high predictive value)
  - Pharmacy-based (less accurate, but timely and easy to get data)
  - Self-reported data (surveys, questionnaires, nurse coaching)
- Many models use a combination of the above “all encounter models“
  - Combination of clinical data and prior costs has highest R-squared

## II. Advanced Actuarial Tools & Models

### 2. Predictive Modeling and Risk Assessment

#### Typical Risk Adjuster Algorithm

- Model uses regression analysis to categorize diagnosis by predicted cost
- 10,000 ICD-9/10 codes grouped into 200 condition categories. Drug and procedure information could be used to improve accuracy of grouping.
- The 200 conditions are combined with age/sex and prior year's cost to arrive at 70 hierarchal cost categories.
- A score of "1" could mean an expected cost of say 40% of the "expected"
- A score of "70" could be 100 times the mean cost

## II. Advanced Actuarial Tools & Models

### 2. Predictive Modeling and Risk Assessment

#### Criteria for Choosing a Model

- Predictive power, R-squared (generally not a distinguishing factor)
- Availability and timing of data (Rx vs medical, inpatient, history)
- Use of the model (DM versus UW). Is risk score multiplicative?
- Simplicity of use and output; Easy to explain
- Interface and knowledge of user
- Reinsurance vs insurance (accuracy varies by claim size)
- Sensitivity to data quality
- Cost, resource commitment to implementation and maintain
- Ability for provider or user gaming and manipulation

## Example of Model Accuracy Evaluation

Model A			Model B			Model C		
Risk Score Percentile	Sensitivity		Risk Score Percentile	Sensitivity		Risk Score Percentile	Sensitivity	
	Accuracy	Next Level		Accuracy	Next Level		Accuracy	Next Level
Top 1%	8.6%	18.5%	Top 1%	12.5%	23.4%	Top 1%	16.9%	27.2%
Top 3%	13.8%	23.4%	Top 3%	16.0%	24.2%	Top 3%	18.0%	28.0%
Top 8%	17.2%	26.1%	Top 8%	16.8%	22.5%	Top 8%	22.7%	32.8%
Top 15%	22.0%		Top 15%	18.5%		Top 15%	32.8%	

Model A --- 8.6% of individuals who were assigned a risk score in the top 1% had actual costs in the top 1%

Model A --- 18.5% of individuals who were assigned a risk score in the top 1% had actual costs in the top 3%

Model C --- Performed the "best" based across all percentile tiers

Between Models A and B --- Model B performed better than Model A on the sickest individuals (top 1%), however Model A performed better than Model B across the less sick population (top 15%).

Decision may come down to cost or other factors

Note: for illustration only

## Predictive Models - SOA Published Results

Table I.1 - R-Squared and MAPE for Prospective Nonlagged - Offered vs. Optimized (Recalibrated, with Prior Cost, 250k Claim Truncation)						
Risk Adjuster Tool	Developer	Inputs	Offered Models		Optimized Models w/Prior Cost	
			R-2 <sup>(1)</sup>	MAPE % <sup>(2)</sup>	R-2	MAPE %
ACG	Johns Hopkins	Diag	19.20%	89.90%	23.00%	86.20%
CDPS	Kronick / UCSD	Diag	14.90%	95.30%	24.60%	85.60%
Clinical Risk Groups	3M	Diag	17.50%	90.90%	20.50%	86.60%
DxCG DCG	DxCG	Diag	20.60%	87.50%	26.50%	82.50%
DxCG RxGroups	DxCG	Rx	20.40%	85.30%	27.10%	80.70%
Ingenix PRG	Ingenix	Rx	20.50%	85.80%	27.40%	80.90%
MedicaidRx	Gilmer / UCSD	Rx	15.80%	89.60%	26.30%	81.90%
Impact Pro	Ingenix	Med+Rx+Use	24.40%	81.80%	27.20%	80.60%
Ingenix ERG	Ingenix	Med+Rx	19.70%	86.40%	26.50%	81.20%
ACG - w/ Prior Cost	Johns Hopkins	Diag+\$Rx	22.40%	85.60%	25.40%	82.10%
DxCG UW Model	DxCG	Diag+\$Total	27.40%	80.40%	29.10%	78.30%
<b>Service Vendor</b>						
MEDai	MEDai	All	N/A	N/A	32.10%	75.20%
(1) R-2 is R-square, a measure of predictive accuracy. $R\text{-squared} = 1 - (\text{Sum}(\text{Actual}-\text{Predicted})) / (\text{Sum}(\text{Actual}-\text{Average of Actual}))$						
(2) MAPE is Mean Absolute Prediction Error, another measure of predictive accuracy. $\text{MAPE} = (\text{Sum}(\text{Actual}-\text{Predicted})) / \text{Sample Size}$						

Source: A Comparative Analysis of Claims-Based Tools for Health Risk Assessment, The Society of Actuaries, SOA.com, April 23<sup>rd</sup> 2007  
written by Ross Winkelman and Syed Mehmud of the Denver office of Milliman, Inc. (Mr. Winkelman has since joined Wakely Consulting)

## II. Advanced Actuarial Tools & Models

### 2. Predictive Modeling Case Study

- US portfolio of Small Group Employers (2-50 lives)
- Program manager currently applies traditional underwriting methodology to price new and renewal business, using:
  - Prior loss ratio experience
  - Changes in UW manual (age, sex, location, network ,trend, etc)
- 3 underwriting tiers generated - “the good, the bad and the ugly“
- Rate change upon renewal based solely on tier
- Adverse selection was observed, hence a need for refined underwriting

## II. Advanced Actuarial Tools & Models

### 2. Predictive Modeling Case Study

#### Considerations:

- Above-average risk may not need higher-than-average renewal increase
- Statutory rating limitations may not allow for full application of risk adjustment
- Need to redefine “average” risk score to match underwriting methodology
- **Needs to be viewed as a supplement or enhancement to current process, not replacement.**
  - Can’t disregard manual “underwriting” process
  - Makes it an easier internal sale

## **II. Advanced Actuarial Tools & Models**

### **2. Predictive Modeling Case Study**

- Used actual block of small group business, including actual underwriting decisions.
- Historical (Yr 1) clinical information available at time of underwriting was run through predictive model
- Actual (Yr 2) experience compared against risk score premium and against historical premium

## II. Advanced Actuarial Tools & Models

### 2. Predictive Modeling Case Study

Current UW process using three tiers

Average Employees per Employer:	6
Year 1 Premium PEPM:	\$300
Annual Trend:	10.0%
Target Loss Ratio:	60.0%

Renewal Tier	Employer Groups	Year 1 Premium	Year 1 Loss Ratio	Target Rate Increase	Year 2 Premium	Year 2 Loss Ratio	Renewal Persistency
Good	1500	32,400,000	40.0%	-26.7%	19,440,000	53.0%	60.0%
Bad	800	17,280,000	70.0%	28.3%	12,096,000	63.0%	70.0%
Ugly	300	6,480,000	175.0%	220.8%	5,184,000	122.0%	80.0%
Total	2600	56,160,000	64.8%	18.8%	36,720,000	66.0%	

Note: Data is fictional – for illustration only

## II. Advanced Actuarial Tools & Models

### 2. Predictive Modeling Case Study

Predictive Modeling Approach:

- Expand 3 tier traditional breakdown to a 3 by 3 matrix including risk score

	Actual Yr2 Loss Ratios by DxCG Risk Classification			
Current Class	Class 1	Class 2	Class 3	TOTAL
Good	54%	41%	73%	53%
Bad	40%	75%	102%	63%
Ugly	85%	89%	186%	122%
TOTAL	50%	75%	126%	66%

Note: Data is fictional – for illustration only

## II. Advanced Actuarial Tools & Models

### 2. Predictive Modeling Case Study

Result:

- More refined rate changes assignment by underwriting tier and risk score (9 bands instead of 3)
- Improved isolation of best and worst cases. These are the cases worth investigating further.
- Gives underwriter a sanity check on traditional underwriting process
- Identifies individuals with poor prognosis and likely very high costs
  - Laser or price separately
  - Contact for DM or CM

## **II. Advanced Actuarial Tools & Models**

### **2. Predictive Modeling**

#### **Case Study 2 – Duration, Individual Insurance Block Analysis**

##### Situation

- Block of Individual business
- Fully underwritten on entry, guaranteed renewable
- Adverse selection at renewal as healthy individuals are priced out

##### Solution

- Run lives through model and stratify by risk score
- Assume propensity to lapse a function of risk score and rate change
- Balance rate change for the class by risk score, policy duration and lapse

## II. Advanced Actuarial Tools & Models

### 2. Predictive Modeling

#### Case Study 2 – Duration Analysis

#### Risk Score by Duration Individual Medical Insurance Policies

<u>Duration</u>	Risk <u>Score</u>	<u>Risk Score for those who...</u>	
		<u>Terminated</u>	<u>Renewed</u>
Months 1-6	0.63	0.53	0.75
Months 7-12	0.89	0.60	0.99
Year 2	0.95	0.71	1.03
Year 3	1.05	0.83	1.12
Year 4	1.15	0.75	1.15
Year 5	1.22	0.92	1.20
Year 6	1.19	0.81	1.19

Note: Data is fictional – for illustration only

## II. Advanced Actuarial Tools & Models

### 2. Predictive Modeling

#### Case Study 2 – By product type, deductible and network

#### Risk Score by Product Type Individual Medical Insurance Policies

<u>Plan</u>	<u>Benefits</u>	<u>Deductible</u>	<u>Network</u>	<u>Risk Score</u>
Health Logic	Moderate	Medium	PPO Weak	1.016
Health Next	Rich	Low	PPO Weak	1.260
Health Vantage	Rich	Low	PPO Weak	1.129
Spectra One	Moderate	High	PPO	0.773
Star Care	Moderate	High	PPO	0.841
Star Care 2	Rich	High	PPO	0.822
HSA Plus	Rich	Very High	PPO Strong	0.750

Note: Data is fictional – for illustration only

## II. Advanced Actuarial Tools & Models

### 2. Predictive Modeling – Other Applications

#### Excess of Loss Pricing

- Individual “Discrete” distribution – calculate expected claims above certain retention levels
- Individual “Parametric” distribution – predict individual mean and variance
- Risk “buckets” – Put individuals in buckets using predictive model risk scores

## II. Advanced Actuarial Tools & Models

### 2. Predictive Modeling – Other Applications

#### Excess of Loss Pricing Example

Reinsurance Retention	Expected Annual Costs Above Retention			Multiple of "Healthy" Costs	
	Healthy RS = 1.00	CHF Only RS = 4.85	Diabetes & CHF RS = 24.29	CHF Only	Diabetes & CHF
-	1,778	8,630	43,195	4.85	24.29
10,000	281	4,488	34,050	15.99	121.32
25,000	99	2,719	24,760	27.49	250.31
50,000	36	1,598	16,059	44.03	442.54
100,000	11	804	8,302	73.57	759.44

Note: for illustration only

Our life is frittered away by detail. Simplify, simplify.

Henry David Thoreau

## II. Advanced Actuarial Tools & Models

### 3. Drug and medical Device Pipeline Tools

These are tools that identify and forecast the financial or clinical impact of emerging healthcare technology.

Example:

Ingenix Pipeline Tool

- Assesses impact of drugs, medical devices and therapeutics pending FDA approval within the next 3 years
- Forecasts the financial impact on a PMPM basis in terms of price and utilization
- Considers impact of offsetting current protocols and possible reduction in overall costs
- Intended to adjust costs in addition to regular trend

## **II. Advanced Actuarial Tools & Models**

### **3. Drug and medical Device Pipeline Tools**

Benefits:

1. Improve trend estimates
2. Adjust and price benefit design changes
3. Redeploy medical management efforts
4. Better prepare for provider negotiations
5. Support rate filings with regulators

## II. Advanced Actuarial Tools & Models

### 3. Drug and Device Pipeline Tools – Ingenix Example

**ACS Breast Cancer Screening Guidelines Add MRI.** In March 2007, the American Cancer Society (ACS) issued new guidelines that recommend annual screening with magnetic resonance imaging (MRI) as an adjunct to routine mammograms for women considered at high risk of developing breast cancer. ACS defines “high risk” as women who have a 20% to 25% or greater lifetime risk of breast cancer, as calculated by one of several risk-stratification models in widespread clinical use. The new recommendations specifically include women who test positive for a BRCA1 or BRCA2 gene mutation linked to aggressive cancers, women who received radiation therapy targeting the chest (eg, radiation treatment for Hodgkin's disease), or women with a family history of specific genetic syndromes that have been linked to breast cancers. Although screening guidelines remain unchanged for the majority of women, the new recommendations identify approximately 1.4 to 1.7 million women between the ages of 30 and 70 who would benefit from the addition of MRI to an annual screening regimen.

Ultimate Utilization: 6.41 MRIs per thousand members

PMPM Estimate: 2007: \$.10, 2008: \$.76, 2009: \$2.09, Peak: \$2.09

**Private Sector Likely to See Steep Increase in Share of ESRD Costs.** The FY 2008 budget request for the U.S. Department of Health and Human Services (HHS) includes a legislative proposal that significantly extends the time that employer-sponsored private insurance programs—collectively known as Group Health Plans (GHPs)—will be liable for health care costs incurred by their members eligible for Medicare on the basis of End Stage Renal Disease (ESRD). The budget proposal would extend the Medicare Coordination of Benefits (CoB) period for ESRD from 30 to 60 months. The change is projected to reduce Medicare spending for ESRD by \$160 million in 2008 and more than \$1 billion over the next 5 years. Although the proposed extension requires specific legislative approval in order to take effect, the newly adopted “Pay-As-You-Go” (PAYGO) Rule passed by the House in January 2007 makes extension of the CoB period a near certainty. Actuarial models developed by Reden & Anders suggest that the additional 30 months of CoB will increase the cost of health care dramatically in the next 4 years.

Ultimate Utilization: 21.97 visits per thousand members

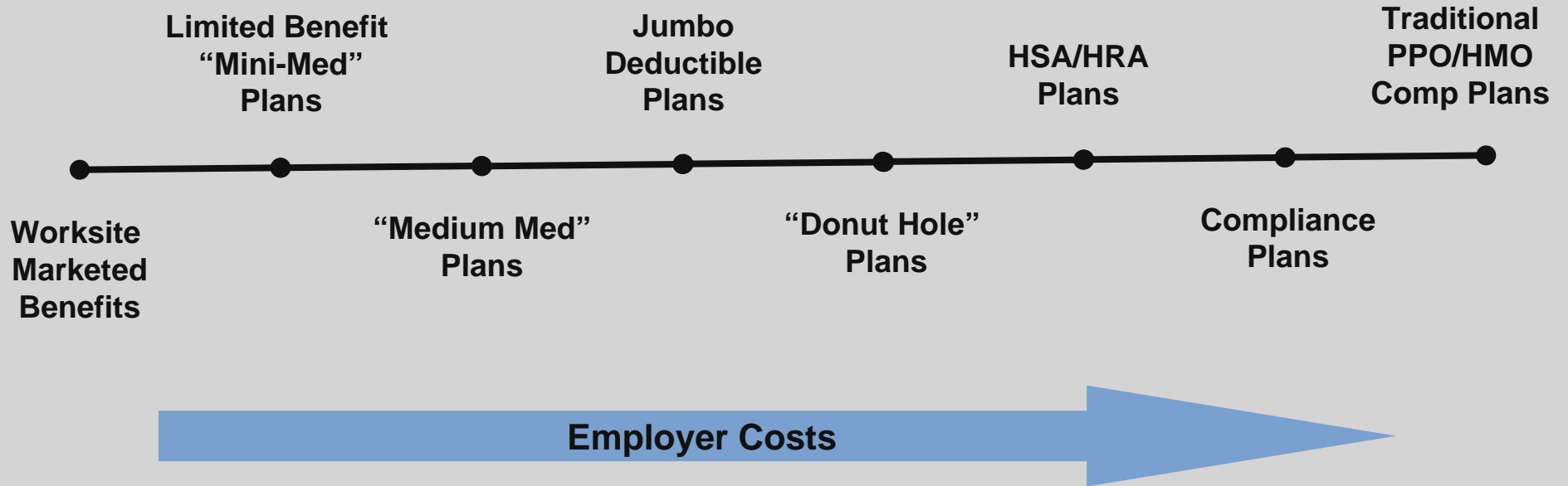
PMPM Estimate: 2008: \$.31, 2009: \$.75, Peak: \$1.09

The future depends on what we do in the present.

Mahatma Gandhi

### III. Innovative Product Designs

#### Health Insurers Providing a Range of Options



### III. Innovative Product Designs in the U.S. Limited Benefit – “Mini-Med” Plans

#### Typical Benefit Design Options

##### Office Visits:

Visits per Year: 1 to 8  
Plan Pays: \$30 to \$100 / visit

##### Daily In-Hospital:

Annual: 30-90 days per yr.  
Plan Pays: \$100-\$2,000 / day

##### Surgical:

Proc. Per Year: 1 to 5  
Plan Pays: \$500-\$2,500 / proc.

##### Outpatient Testing:

Test Days per Year: 1 to 3  
Plan Pays: \$50-\$500 per day

Additional Benefits can be added

Annual Maximum: \$5,000 to \$50,000

#### Characteristics

- Premium typically < \$50 / month
- ER Contribution varies
- No medical underwriting
- Low participation req. (25%)
- Popular with ERs with low wage workers or part time employees
- High percentage of EE only coverage
- Network access an important benefit
- Offered by a growing # of carriers
- Mostly offered as Fully Insured
- High Commission Rates (20+%)
- Active enrollment essential

### **III. Innovative Product Designs in the U.S. The Pros and Cons of mini-med products**

#### **Good**

- 1. Affordable**
- 2. Provides access to networks**
- 3. Can be flexible in design**
- 4. Adequately covers 70% of individuals**
- 5. Easy to qualify for**
- 6. Predictable premiums**

#### **Bad**

- 1. Leaves a potentially big exposure to catastrophic illness**
- 2. May create a false sense of security**
- 3. High level of expenses reduces its consumer/patient value**

### **III. Innovative Product Designs in the U.S.**

#### **“Medium Med” Plans**

- Includes annual maximums and inside limits to reduce premium levels.
- Example: annual maximum - \$50,000, \$50,000/yr max hospital benefits.
- Reimbursement based coverage.
- Monthly per EE premium in the range of \$200 (compared to \$400 CMM).
- No medical underwriting but stringent participation requirement (e.g. 75%)
- Bought by small ER's on the verge of dropping coverage or significantly increasing cost sharing.
- Smaller market than “Mini-Meds” but fits a need.

### **III. Innovative Product Designs in the U.S. Jumbo Deductible Plans**

- Comprehensive benefits - typical annual maximums of \$2 million.
- Characterized by deductibles of \$20,000 or greater per person.
- Monthly per EE premium in the range of \$200 (compared to \$400 CMM).
- Catastrophic coverage – up-front cost savings drives premium savings.
- Not as popular with employees as limited benefit plans since the value of the protection is not as apparent.
- Still provides access to networks and discounts on employee paid services.
- Underwritten using standard group techniques.

### **III. Innovative Product Designs in the U.S.**

#### **Donut Hole Plans**

- Combining a limited benefit plan with a jumbo deductible plan.
- Premium savings through the cost sharing or benefits “hole” in the middle of the distribution of costs.
- Premium can be reduced by 20% or more depending upon size of “hole” (as compared to a typical comprehensive plan).
- Provider of limited benefit plan need not be the same as the catastrophic insurer.
  - (Donut hole approach used by CMS for Medicare Part D structure)

### **III. Innovative Product Designs in the U.S. Consumer Directed Health Plans (CDHP)**

- High deductible health plans
- Frequently include tax advantages, portability and accumulation of assets
- Typically associated with wellness programs, electronic enrollment & services, on-line medical advise
- Examples include HSA or HRA

### **III. Innovative Product Designs**

#### **Health Savings Accounts**

#### **Health Reimbursement Arrangements**

- Combining a savings account with a high(er) deductible plan with tax advantages
- Deductibles in the range of \$1,500 to \$3,000 per person.
- Account balances can be rolled over to subsequent year and may be portable.
- Employer and/or Employee may contribute to account.
- Referred to as “Defined Contribution” or “Consumer Driven” health plans as consumers are managing their routine expenses.
- Premium often 20% or more lower than typical comprehensive plans before account contributions (if any).
- Less than 10% of U.S. workers are covered under such plans yet over 60% of plan to offer an HSA/HRA compatible plan in the future.

### III. Innovative Product Designs

#### High Deductible Health Plans in the U.S.

#### Health Savings Account Enrollment Growth

<u>as of</u>	<u>Enrolled Lives</u>	<u>% of Commercial Insured Lives</u>
Sep 2004	438,000	0.26%
Mar 2005	1,031,000	0.62%
Jan 2006	3,168,000	1.91%
Apr 2007	4,500,000	2.71%

Source: US Census Bureau & AHIP

## III. Innovative Product Designs Wellness Programs

### Standard attributes of a Wellness Program

A program that reimburses all or part of the cost for memberships in a **fitness center**,

A **diagnostic testing** program that provides a **reward for participation** and does not base any part of the reward on outcomes,

A program that encourages **preventive care** through the waiver of the copayment or deductible requirement under a group health plan for the costs of, for example, prenatal care or well-baby visits,

A program that **reimburses employees for the costs of smoking cessation programs** without regard to whether the employee quits smoking,

A program that provides a **reward to employees for attending a monthly health education seminar**.

Programs under which any of the **conditions for obtaining a reward is based on an individual satisfying a standard related to a health factor** must meet five additional requirements described in the regulations in order to comply with the nondiscrimination requirements

### **III. Innovative Product Designs Award Programs**

#### **Award Forms**

- A discount or rebate of a premium or contribution,
- A waiver of all or part of a cost-sharing mechanism (such as deductibles, copayments, or coinsurance),
- The absence of a surcharge, or
- The value of a benefit that would otherwise not be provided under the plan.

Per US regulations, the value of an award must not exceed 20% of the total cost of coverage under the plan

### **III. Innovative Product Designs Award Programs**

Some plans are going as far as offering:

- Cash
- TVs
- Gift cards
- Gym memberships and other monetary prizes if they stay healthy or get in shape.

### **III. Innovative Product Designs Compliance Plans**

- A variation of consumer-driven plans.
- Combines a disease management program with financial incentives for employees to comply.
- Incentives take the form of HSA/HRA contributions, “Frequent Flyer Points” or increased benefits.
- Initial premium levels may be slightly lower than traditional medical plans but the promise is lower long-term medical costs and improved EE health.
- Adherence and monitoring of compliance may prove difficult.

### **III. Innovative Product Designs in the US Compliance Plan Example – Creenaght Program**

At the beginning of each year members can choose to participate in the HealthCorridor plan. To be eligible they must comply with the following:

- Step 1: Complete a biometric health screen and risk assessment within 30 days.
- Step 2: If any conditions or risks are identified, the member must see a physician within the next 60 days.
- Step 3: Upon the diagnosis of one of a list of conditions, the member must comply with a disease-specific care management plan.

If at any point during the year the member does not comply with the requirements, they are switched to the Core Benefit plan for the remainder of the plan year.

“Whenever you find that you are on the side of the majority, it is time to reform.”

Mark Twain

“Whenever people agree with me I always feel I must be wrong.”

Oscar Wilde

## **IV. Disease & Care Management**

### **“Biggest Health Care Purchasers Bullish on Care Management”**

#### **Businesses see care management, not cost shifting, as the most important trend in health coverage**

“As they struggle to control health care spending, America's employers are focusing on an ever-growing array of so-called care management services — ranging from health risk assessments to end-of-life case management — with the goal of training their workers to use health care resources in new ways”

“The movement brings a raft of new opportunities — and competitive pressures — for health plans as their clients demand services far afield from claim processing and plan design.”

“While health plans are not currently the primary provider of care management services, the fast-growing market is on the radar screen of virtually everyone in the industry.”

## **IV. Disease Management Various Approaches**

### **I. Health Coaching**

- a. Identify sickest patients
- b. Nursing staff contact and actively manage patients
- c. Idea is to avoid unnecessary ER and hospital visits

### **II. Home Health approach**

- a. Physicians actually visit patients at home or in nursing home
- b. Expensive but huge savings potential.
- c. Targets sickest patients only

## IV. Disease Management

### Savings measurement

#### Problems with measuring savings

- How do you measure what didn't happen?
- Regression to the mean
- Chronic condition claim trend is different than non-chronic trend
- Separate intervention and control populations works well, but credibility may be an issue.
  - Random sampling could be a problem
  - Eventually control group joins intervention group
- Different populations have different responses to intervention
- Need to set a pooling point on large claims

## Summary

- Our responsibility as actuaries is to quantify, price and manage risk. How do we turn risk into opportunity for our employers?
- Competition in a global economic environment is moving fast
- As actuaries, we must use every tool available to stay ahead of the competition
- A well-rounded approach that improves risk selection and offers creative products is optimal
- Actuarial methods to manage risk include predictive modeling, technology pipeline tools and database benchmarking (risk avoidance).
- Non-actuarial options include creative product design, consumer-driven healthcare, disease management (risk avoidance and risk management)

## Last one...

He who asks a question is a fool for five minutes; he who does not ask a question remains a fool forever.

- Chinese proverb

**Thank you for your attention.**

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