Medical Underwriting: Approaches and Regulatory Restrictions

By
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Dresden, Germany – April 29, 2004

Overview

• Purpose of medical underwriting
• Tools and techniques
• Common problems and challenges
• Impact on potential healthcare costs
• Comparison of approaches
Medical Underwriting

• Used by health plans to maintain competitive, profitable and fair rates

• Internationally, tools do not vary much

• Application of tools does vary:
  – Regulatory environment
  – Available information
  – Custom

Need for Medical Underwriting

• Health costs vary within a population
  – Most costly 15% of individuals generate 80% of healthcare costs
### Need for Medical Underwriting

#### Standard distribution:
- 850 low-cost members, 150 high-cost members

<table>
<thead>
<tr>
<th>Number</th>
<th>Low-Cost</th>
<th>850</th>
<th>24%</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-Cost</td>
<td>150</td>
<td>533%</td>
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<tr>
<td>1,000</td>
<td>100%</td>
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</tbody>
</table>

#### Large proportion of high-cost members:
- 700 low-cost members, 300 high-cost members

<table>
<thead>
<tr>
<th>Number</th>
<th>Low-Cost</th>
<th>700</th>
<th>24%</th>
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</thead>
<tbody>
<tr>
<td>High-Cost</td>
<td>300</td>
<td>533%</td>
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<tr>
<td>1,000</td>
<td>156%</td>
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</table>
Need for Medical Underwriting

• Small proportion of high-cost members:
  – 925 low-cost members, 75 high-cost members

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Cost - % of Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-Cost</td>
<td>925</td>
<td>24%</td>
</tr>
<tr>
<td>High-Cost</td>
<td>75</td>
<td>533%</td>
</tr>
<tr>
<td></td>
<td>1,000</td>
<td>65%</td>
</tr>
</tbody>
</table>

Competitive Need for Medical Underwriting

• Health plan must use at least as sophisticated medical underwriting tools as competitors
  – Could get disproportionate share of high-cost individuals otherwise
  – "Death spiral effect"
Tools and Techniques

- **Tools**
  - Used to gather information

- **Techniques**
  - Use to apply the underwriter's decision

Tools

- **Most common: Medical Application**
  - Information contained:
    1. List of ailments
    2. History of hospitalization
    3. Other medical treatment
    4. Prescription drugs

  - Underwriters may follow up on information by contacting doctors or applicant
Common Problems

• Using judgment instead of data
• Using life insurance guidelines
• Letting guidelines get old
• Adapting from another country

Medical Application: Problems

• Problems:

1. Information not always complete
   • Reference internal and external databases to identify other potential issues

2. Health plans often do not rescind policies containing misrepresentations
   • Difficult to prove applicant was aware of condition
   • Can case difficult public relations
Techniques

• Denial

• Rider out (exclude) conditions

• Rating classes

• Pre-existing condition limitation options
  – Acts as temporary or permanent rider
  – Only cover conditions not disclosed on application
    (encourages better reporting)

Impact on Potential Healthcare Costs

• Milliman Medical Underwriting Guidelines
  – Claims from 400,000 member longitudinal database

  – 7 years of claims experience

  – Identify the start of a particular condition
    • "Realign" claims by year of diagnosis, rather than calendar year
    • Stream of costs for conditions

  – Body systems
    • Can identify whether a rider would be useful
**Acute Condition: Choristoma**
A benign neoplasm of the eye or of the choroid plexus of the brain

- Rider: Treatment associated with neoplasms, benign or malignant

**Graph:**
- **Expected Points**
- **Points With Rider**
- **Points Without Rider**

- Costs recede rapidly after diagnosis
- Rider not useful: 150 debit points still declines
- Underwriting decision:
  - Would likely decline
  - Might accept case, with additional premium and a rider in years 1 and 2, but no rider in years 3 and 4. Standard risk as of year 5.
Acute Condition: Cholelithiasis
The presence of gallstones in the gallbladder

- Rider: Treatment associated with specified diseases of digestive system

- Rider useful: if applied in year of diagnosis, risk is ratable because increase in cost is limited

- Underwriting decision: application of rider would allow coverage to be written
Acute Chronic Condition: Cystocele/Rectocele
Hernia of bladder or rectum

- Rider: Treatment associated with the genitourinary system

- High costs maintained over long period of time

- Rider not useful: does not significantly reduce costs

- Underwriting decision: would likely decline
Chronic Condition: Spondylolisthesis
Forward slippage of a lumbar vertebra

- Rider: Treatment associated with the musculoskeletal system or related

Chronic Condition: Spondylolisthesis
Forward slippage of a lumbar vertebra

- Rider useful: removes a meaningful portion of excess claim costs
- Underwriting decision: application of a rider would allow coverage to be written
Relapsing Condition: Alcoholism

- Rider: Treatment associated with mental disorders

- Costs increase after an apparent recovery

- Rider useful: only in early years, not during relapse

- Underwriting decision: pay special attention to these conditions
Progressive Condition: Osteoarthritis

- Rider: Treatment associated with arthropathies and dorsopathies

- Small cost decrease for a couple of years after diagnosis, then begins to increase steadily

- Rider: does remove a portion of costs

- Underwriting decision: long-term effects due to the steady increase may cause decline instead
Challenges in Adaptation

- Differing frequencies
- Differing cost structures
- Travel costs
- Regulatory/custom differences

Comparison of Approaches

- United States
- Brazil
- United Kingdom
- Hong Kong
- Australia
- Mexico
- Colombia
- Chile
United States

• Underwriting techniques vary significantly
  – Individual
  – Small group

United States: Individual

• If no history of medical coverage, laws do not limit tools available to underwriter
  – Tools:
    • Denial of coverage
    • Permanent or temporary riders
    • Rate classes
    • Pre-existing condition limitation
      – 12-month lookback and 12-month exclusion period

• If uninterrupted creditable coverage
  – Only tool is rating class
United States: Small Group

- Law requires that everyone be issued:
  - Without riders
  - Without pre-existing condition limitations for those with uninterrupted coverage

- State law limits rate variation from one employer to another
  - I.e. Limited to 25% deviation from base rate
    - Base rate may be adjusted for demographics of group

Brazil

- If medical condition disclosed on application, federal law limits underwriting:
  - A rated-up premium with full coverage
  - Condition is excluded for 24 months, but at standard premium

- Since some conditions require immediate surgery, first option can cause significant adverse selection
  - Enables applicant to pay high premiums for 1 or 2 months, then lapse
  - No level of premium can cover that risk
United Kingdom

- Most carriers use riders (endorsements) to eliminate coverage of conditions
- One carrier uses rating-up system
- Pre-existing conditions have a 5-year look back, and a 2-year forward exclusion

Hong Kong

- Conditions not at all covered by insurers unless they are disclosed on application
- Underwriter can decide to accept or decline
- Extensive pre-existing condition clause, depending on condition
Australia

- Private medical coverage supplements a public health care system
  - Coverage viewed as way to speed up treatment, and to supplement public coverage

- Underwriter can accept or decline, based on any criteria, except for protected classes

- Undisclosed pre-existing conditions are not required to be covered

Mexico

- There are no specific underwriting regulations

- Most medical insurers use underwriting manuals:
  - Provided by their reinsurers
  - Adapted from life insurance
Colombia & Chile

- Both countries have private healthcare integrated with social security system
- For coverage written on this basis, no medical underwriting allowed
- Full underwriting allowed for supplemental coverages

Thank You

QUESTIONNS?

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Adapting
Actuarial Tools
for Use in Other Countries

By Aree Bly, FSA, MAAA
Presented by Jon Shreve, FSA, MAAA
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Dresden, Germany – April 29, 2004

Overview

• Actuarial tools – what are they?
• Who should be interested
• Reasons for adaptation
• Types of tools
• Considerations
• Case study
Actuarial Tools – What Are They?

Based on actuarial principles
- Risk analysis
- Prediction of future events
- Financial
- Technical

Used to:
- Analyze experience or book of business
- Predict future risks
- Develop new products and expected profitability
- Calculate reserves

Examples of tools

Table of Values – e.g. Table of disability rates by age

Spreadsheet - e.g. Predict annual expected cost for a book of business

Software - e.g. Project LTC cash flow and sensitivities, and produce financial statements
Who Should Be Interested

Multinational companies
- Consistency across countries
- Consolidated reporting
- Manage cross-border products
- Economies of scale

Consulting companies
- Similar services offered in different countries
- Consistency
- Efficiency
- Benefit clients by using well-tested tools

Who should be Interested

Local companies
- Transfer of knowledge for steeper learning curve
- Faster evolution
- External information not available locally

Regulators
- Simulation of reform impacts
- Consistent analysis of market players
- Learn from others
Reasons for Adaptation

- Globalization – operation and expansion
- Summarize results
- Apply lessons learned
- Continuous evolution of tools
- Financial benefits
- Maintain consistency
- Improve efficiency

Types of Tools

The following are some types of tools that tend to be well suited for adaptation based on cost/benefit trade off

- Experience analysis
- Reserving
  - IBNR
  - Premium deficiency
  - Claims
- Reporting
- Cashflow projection
Considerations

Which tools make sense to adapt?
Would it be easier to adapt a current tool or build a new one?

- Regulatory requirements
- Structure of health insurance (private and public) in each country
- Cost vs. Benefit
- Cultural issues

Case Study:
Milliman Chile Health Cost Guidelines

US Health Cost Guidelines
- Tool in US healthcare industry for 40+ years
- Flexible, reliable, consistent information
- Constantly evolving
- Used for
  - Pricing
  - Benchmarking
  - Managing utilization
  - Experience analysis
- Reflect US market
Case Study: Milliman Chile Health Cost Guidelines

What country to go to?
Latin America
- Developing markets
- Some going in similar direction as US
- Relatively small, easy to understand markets

Chile
- Significantly developed private market
- Similar structure
- Competitive market
- Changes in regulations add to value of tool - both for insurers (Isapres) and for regulators

Considerations once market was initially chosen
- Structure of market
- Availability and consistency of data
- User interest
- Confidentiality of information

Process
- Consolidate information
- Analysis
- Checks for consistency, completeness
- Ongoing improvements
Case Study:
Milliman Chile Health Cost Guidelines

Results

- Simplified tool compared to US Health Cost Guidelines
- Fits market needs in Chile
- Accepted by market
- Timely for market
- Ongoing evolution

Note: also has been done in other countries U.K., South Africa

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### Chile HCGs – Rating Structures

<table>
<thead>
<tr>
<th>Health Cost Guidelines for ISAPRE System</th>
<th>Composite Utilization and Costs of Monthly PMPM</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Annual Admissions</td>
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<tr>
<td>Inpatient</td>
<td></td>
</tr>
<tr>
<td>I. Hospital</td>
<td></td>
</tr>
<tr>
<td>1. Medical / Surgical</td>
<td>63.17</td>
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<td>2. Mother</td>
<td>43.08</td>
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<tr>
<td>3. Newborn</td>
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<tr>
<td>4. Psychiatric</td>
<td>0.39</td>
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<td>5. Other</td>
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<td>6. Clinical Material</td>
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<td>II. Pharmacy and Blood Bank</td>
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<td>III. Physician Fees</td>
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<tr>
<td>1. Hospital Visits</td>
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<td>2. Surgeries</td>
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<td>3. Maternity</td>
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<td>Subtotal Inpatient Physician Fees</td>
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<td>IV. Exams</td>
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<td>1. Pathology</td>
<td>782.52</td>
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<tr>
<td>2. Radiology</td>
<td>79.07</td>
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<tr>
<td>3. Diagnostic / Therapeutic</td>
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<td>Total Inpatient Exams</td>
<td>929.08</td>
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<tr>
<td>Subtotal Inpatient</td>
<td>1,585.12</td>
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</table>
## Chile HCGs – Rating Structures

### Health Cost Guidelines for ISAPRE System

#### Composite Utilization and Costs of Monthly PMPM

<table>
<thead>
<tr>
<th></th>
<th>Annual</th>
<th>Length of Stay</th>
<th>Annual</th>
<th>Average Cost per</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>per 1000</td>
<td>per 1000</td>
<td>per 1000</td>
<td>Service</td>
</tr>
<tr>
<td>Hospital / Physician Fees</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outpatient</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Home consults</td>
<td>123.08</td>
<td>123.08</td>
<td>$18,719</td>
<td></td>
</tr>
<tr>
<td>2. Office visits</td>
<td>4,079.25</td>
<td>4,079.25</td>
<td>$14,501</td>
<td></td>
</tr>
<tr>
<td>4. Emergency consult</td>
<td>148.35</td>
<td>148.35</td>
<td>$20,169</td>
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<tr>
<td>5. Psychiatric</td>
<td>100.45</td>
<td>100.45</td>
<td>$22,525</td>
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<tr>
<td>6. Physical Therapy</td>
<td>395.96</td>
<td>395.96</td>
<td>$14,675</td>
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<tr>
<td>7. Other</td>
<td>33.62</td>
<td>33.62</td>
<td>$12,283</td>
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<tr>
<td>Subtotal Outpatient Hospital / Physician Fees</td>
<td>4,899.55</td>
<td>4,899.55</td>
<td>$15,913</td>
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<tr>
<td>Inpatient</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Pathology</td>
<td>4,889.35</td>
<td>4,889.35</td>
<td>$3,969</td>
<td></td>
</tr>
<tr>
<td>Exams</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Radiology</td>
<td>1,132.16</td>
<td>1,132.16</td>
<td>$24,396</td>
<td></td>
</tr>
<tr>
<td>3. Diagnostic / Therapeutic</td>
<td>624.16</td>
<td>624.16</td>
<td>$22,844</td>
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<tr>
<td>Subtotal Inpatient Exams</td>
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<td>Subtotal Inpatient</td>
<td>12,134.14</td>
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<tr>
<td>Subtotal Outpatient</td>
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<tr>
<td>TOTAL</td>
<td>13,699.26</td>
<td>14,060.87</td>
<td>$20,987</td>
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</tr>
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</table>

#### Chile HCGs – Basic Tables

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
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<td>Size / Age Range</td>
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<tr>
<td>Primary</td>
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<tr>
<td>To 25</td>
<td>74.107</td>
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<td>26 - 29</td>
<td>120,972</td>
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<td>30 - 34</td>
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<td>3,147</td>
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<td>35 - 39</td>
<td>132,618</td>
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<td>40 - 44</td>
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<td>45 - 49</td>
<td>81,021</td>
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<td>50 - 54</td>
<td>62,843</td>
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<td>55 - 59</td>
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<tr>
<td>60 - 64</td>
<td>27,955</td>
<td>1,560</td>
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<td>65 +</td>
<td>25,156</td>
<td>5,960</td>
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#### Composite Utilization and Costs of Monthly PMPM

<table>
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<td>$20,987</td>
<td></td>
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</table>
## Chile HCGs - Cumulative Probability Distributions

<table>
<thead>
<tr>
<th>Average Cost per Day</th>
<th>Adjusted for Trend and Area Factor</th>
<th>Adjusted for Maximum Distribution</th>
<th>Probability</th>
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<tbody>
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<td>448</td>
<td>448</td>
<td>-</td>
<td>0.00%</td>
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<tr>
<td>1,418</td>
<td>1,418</td>
<td>-</td>
<td>0.18%</td>
</tr>
<tr>
<td>4,882</td>
<td>4,882</td>
<td>-</td>
<td>0.03%</td>
</tr>
<tr>
<td>5,000</td>
<td>5,000</td>
<td>-</td>
<td>0.03%</td>
</tr>
<tr>
<td>79,469</td>
<td>79,469</td>
<td>-</td>
<td>0.06%</td>
</tr>
<tr>
<td>11,428</td>
<td>11,428</td>
<td>-</td>
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</tr>
<tr>
<td>12,425</td>
<td>12,425</td>
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<td>0.03%</td>
</tr>
<tr>
<td>15,205</td>
<td>15,205</td>
<td>-</td>
<td>0.03%</td>
</tr>
<tr>
<td>16,358</td>
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<td>-</td>
<td>0.02%</td>
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<tr>
<td>20,373</td>
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<tr>
<td>21,493</td>
<td>21,493</td>
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<tr>
<td>23,375</td>
<td>23,375</td>
<td>-</td>
<td>0.03%</td>
</tr>
<tr>
<td>26,955</td>
<td>26,955</td>
<td>-</td>
<td>0.02%</td>
</tr>
<tr>
<td>27,318</td>
<td>27,318</td>
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<td>0.03%</td>
</tr>
<tr>
<td>29,451</td>
<td>29,451</td>
<td>-</td>
<td>0.02%</td>
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<tr>
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**Thank You**

**QUESTIONS?**

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