Clinical vs. Insurance Medicine: Meet the Experts

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M.U.D. Group
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Clinical vs Insurance Medicine

<table>
<thead>
<tr>
<th>Clinical</th>
<th>Insurance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Situational focus</td>
<td>Long term focus</td>
</tr>
<tr>
<td>Can change course over time</td>
<td>Decisions become contractual</td>
</tr>
<tr>
<td>Payor constraints and liability</td>
<td>Regulatory restrictions</td>
</tr>
<tr>
<td>Referenced to general population</td>
<td>Referenced to insured population</td>
</tr>
<tr>
<td>Responsible to individual</td>
<td>Responsible to corporate owners</td>
</tr>
</tbody>
</table>
Life Insurance Medicine Principles

1. **Fairness**: each risk should pay “fair share”
2. **Level playing field**: insurer must have same info as proposed insured
3. **Insurer gets one chance** to assess risk; decision becomes contractual
4. **Insurer is assessing risk**: not making diagnoses
5. **Law of large numbers**
6. **Long term perspective**
7. **Standard insured mortality** more favorable than general population
# General Population vs. Insured Mortality

<table>
<thead>
<tr>
<th></th>
<th>Life Expectancy (yrs) for 50 y/o man</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General population</strong></td>
<td></td>
</tr>
<tr>
<td>US Life Tables, 2007</td>
<td>29.0</td>
</tr>
<tr>
<td><strong>2008 VBT 100%</strong></td>
<td>33.8</td>
</tr>
</tbody>
</table>
| **Typical expectation, Percentage of table** | Standard: 33 - 34  
Best Pref: 35 - 37 |
Case # 1

75 y/o female

- Mild HTN controlled on valsartan (Diovan)
- BUN 14 mg/dl, Cr 0.9 mg/dl, no proteinuria
- EKG normal
- Active, does volunteer work
- On insurance app, NTproBNP 950 pg/ml
Background: B-Type Natriuretic Peptides

- Produced by myocardial cells in response to wall stress
- ProBNP → BNP + NTproBNP
- Multiple studies have show it can predict
  - Occult C-V disease
  - All cause mortality
- May be ↑ before clinical onset of C-V disease
- Increasing utilization in insurance screening
NTproBNP and Survival
By Tertile of NT-proBNP

For women, age 65 up

< 101

> 226

The Clinical Perspective

1. Do you routinely get NTproBNP as a screening test? If not, why not?
2. Are there situations where you would order this test?
3. In this case, does this result influence your opinion of this patient’s prognosis?
4. Would you do any further testing?
How is this underwritten?

1. As is, with no additional information?

2. How would additional testing influence underwriting decision?
Interpreting NTproBNP Values

- Insurance ranges – should consider age, gender and renal function:
  - Probably normal: < 100 pg/mL
  - Borderline: 100 – 300
  - Increased: 301 – 1000
  - Very high: > 1000
Case #2

38 y/o male smoker

- FH of premature CAD (Father had MI at age 49)
- Active, no cardiac symptoms
- TC 190 mg/dl, HDL 30mg/dl, ratio 6.33
- Coronary calcium score 369 (120 LM)
The Clinical Perspective

1. What are the clinical indications for calcium scoring?
2. Does this testing change your assessment of this patient’s prognosis?
3. Would you do any additional testing?
4. How would you treat him? Did the calcium score influence your treatment plan?
How is this underwritten?

- Significant inconsistency in industry
- Risk factor profile unfavorable
- Impact of calcium score viewed differently
## Interpretation of Calcium Score: Absolute Value

<table>
<thead>
<tr>
<th>CAC</th>
<th>Plaque</th>
<th>Risk</th>
<th>RR</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No identifiable atherosclerotic plaque</td>
<td>Very low risk for future cardiac event in next 2-5 yrs</td>
<td>1</td>
</tr>
<tr>
<td>1-10</td>
<td>Very early CAD is present</td>
<td>Slightly increased risk of cardiac event</td>
<td></td>
</tr>
<tr>
<td>11-100</td>
<td>Early CAD is present</td>
<td>Moderately high risk of cardiac event in next 2-5 yrs</td>
<td></td>
</tr>
<tr>
<td>101-400</td>
<td>Significant CAD is present</td>
<td>Moderately high risk of cardiac event in next 2-5 yrs(RR 4.3 compared to CAC of 0)</td>
<td>4.3</td>
</tr>
<tr>
<td>401 -1000</td>
<td>Advanced CAD is present</td>
<td>Very high risk of cardiac event. High likelihood of obstruction.</td>
<td>7.2</td>
</tr>
<tr>
<td>&gt;1000</td>
<td>Advanced CAD is present</td>
<td>Very high risk of cardiac event. High likelihood of obstruction.</td>
<td>10.8</td>
</tr>
</tbody>
</table>

Adapted from Greenland, JACC 2010;56:2182-2199.
**Expected Calcium Scores**

*based on screening in >35,000 asymptomatic patients*

<table>
<thead>
<tr>
<th>Age</th>
<th>40-44</th>
<th>45-49</th>
<th>50-54</th>
<th>55-59</th>
<th>60-64</th>
<th>65-69</th>
<th>70-74</th>
<th>&gt;74</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Percentiles</strong></td>
<td></td>
<td></td>
<td>Calcium Score for Men</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>13</td>
<td>32</td>
<td>64</td>
<td>166</td>
</tr>
<tr>
<td>50</td>
<td>1</td>
<td>3</td>
<td>15</td>
<td>48</td>
<td>113</td>
<td>180</td>
<td>310</td>
<td>473</td>
</tr>
<tr>
<td>75</td>
<td>9</td>
<td>36</td>
<td>103</td>
<td>215</td>
<td>410</td>
<td>566</td>
<td>892</td>
<td>1,071</td>
</tr>
<tr>
<td>90</td>
<td>59</td>
<td>154</td>
<td>332</td>
<td>554</td>
<td>994</td>
<td>1299</td>
<td>1774</td>
<td>1,982</td>
</tr>
</tbody>
</table>

| Percentiles | Ca Score for Women |       |       |       |       |       |       |     |
| 25          | 0     | 0     | 0     | 0     | 0     | 1     | 3     | 9   |
| 50          | 0     | 0     | 0     | 1     | 3     | 24    | 52    | 75  |
| 75          | 1     | 2     | 5     | 23    | 57    | 145   | 210   | 241 |
| 90          | 4     | 22    | 55    | 121   | 193   | 410   | 631   | 709 |
Case #2 cont

- Quit smoking
- Next year, presented to ER with sharp left-sided chest pain and SOB
- EKG WNL
- CPK WNL, but troponin slightly elevated at 0.7 ng/ml
- CTA: < 50% stenosis proximal LAD and mid-RCA
- Begun on ASA
The Clinical Perspective

1. How would you interpret this episode of chest pain and lab data?
2. Does this episode change his prognosis?
3. What do you think of the CTA results?
4. Would you do any further evaluation?
How is this underwritten?

1. Does this episode change the risk assessment for underwriting?
2. Would additional information change this assessment?
Case #3

70 y/o man

- HTN treated with atenolol (Tenormin)
- Hyperlipidemia treated with rosuvastatin (Crestor)
- Active, no cardiac complaints
- Insurance EKG: atrial fibrillation with ventricular response of 82 beats/min
- Postponed for life insurance
The Clinical Perspective

1. What are your concerns?
2. What is your assessment of his prognosis?
3. Would you do any further testing?
Case #3 cont.

- Echo shows
  - Normal LV size and contraction
  - Mild concentric LVH (walls 1.2 cm)
  - Biastral dilatation (LA 5.0 cm)

- Stress mibi
  - Exercised to 10 mets
  - No evidence of ischemia
  - LVEF 57%
The Clinical Perspective

1. How would you treat this patient?
2. Do the results of these tests change your assessment of prognosis?
## CHADS2 Classification

Cardiac failure, **Hypertension**, **Age**, **Diabetes**, Stroke (doubled)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior stroke or TIA</td>
<td>2</td>
</tr>
<tr>
<td>Age &gt; 75</td>
<td>1</td>
</tr>
<tr>
<td>Hypertension</td>
<td>1</td>
</tr>
<tr>
<td>Diabetes</td>
<td>1</td>
</tr>
<tr>
<td>Heart failure</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHADS2 Score</th>
<th>Stroke Rate (%/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1.9</td>
</tr>
<tr>
<td>1</td>
<td>2.8</td>
</tr>
<tr>
<td>2</td>
<td>4.0</td>
</tr>
<tr>
<td>3</td>
<td>5.9</td>
</tr>
<tr>
<td>4</td>
<td>8.5</td>
</tr>
<tr>
<td>5</td>
<td>12.5</td>
</tr>
<tr>
<td>6</td>
<td>18.2</td>
</tr>
</tbody>
</table>

Fuster et al. JACC 2011;57:e135.
How is this underwritten?

1. Initially, before work up
2. With test results
The Clinical Perspective

- What if
  - Age 50
  - Had symptomatic PAF despite flecainide

1. How would you treat him?
2. If different, why?
How is this underwritten?

1. Would ablation change mortality or morbidity?
2. Does ablation change the underwriting assessment?
Case #4

65 y/o man, no cardiac symptoms

- HTN treated with lisinopril (Prinivil) and amlodipine (Norvasc)
- Hyperlipidemia treated with atorvastatin (Lipitor)
- Mild renal insufficiency, stable
  - BUN 20 mg/dl
  - Cr 1.5 mg/dl
  - No proteinuria
- Echo showed
  - Mild LVH (IVS/PW 1.4/1.2 cm)
  - Normal LV size and contraction
  - Mild LAE (4.4 cm)
  - Mildly dilated aortic root (4.2 cm)
  - Normal valves
  - Grade 1 diastolic dysfunction
The Clinical Perspective

1. How do you assess his prognosis?
2. Would you do any other testing?
3. Would you change his treatment?
How is this underwritten?

1. How is the risk assessed, as is?
2. Would any additional information enable a more favorable rating?
Diastolic Dysfunction

- **What is it?**
  - Relaxation impaired
  - LV can fill adequately only with increased filling pressures

- **What is the Risk?**
  - heart failure
  - arrhythmias

- **What causes it?**
  - Diastolic function decreases with aging
  - Virtually any abnormality of myocardium such as LVH, ischemia, etc

- **Diastolic Dysfunction ≠ Heart Failure**
Summary

- Clinicians and medical directors have different perspectives, responsibilities and constraints
- Doctors may not be able to resolve underwriting conflicts
- Be sure to understand potential impact of additional information before requesting it