Demand Management and Test Request Rationalization

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Definition

Encarta

“managing a market by manipulating demand: the management of a market or economy by manipulating demand so that it reaches a stable relationship with supply. “

• Managing tests requested
• Led to increase in healthcare costs

RIGHT test on RIGHT patient at RIGHT time
• **Demand management**: manipulating the use of health resources to maximise their utility

• Focus on ensuring appropriate requesting – has an inbuilt quality aspect

• **Demand control**: control of the volume of requests received by the laboratory
Laboratory tests
Complexity of tests

Teaching of laboratory medicine
History

• **1975 Lundberg**: “laboratory tests should not be ordered without a plan for using the information gained. What will be done if the test is abnormal? High? Low?”

• **1984 Rinsler**: up to 30% tests unnecessary – could achieve a saving of 10%

• **1998 systematic review of 44 studies**: inappropriate testing 10-50%

• **1998 Lundberg**: called for an agenda to determine which laboratory tests should be performed and whether such performance was beneficial or harmful or had no effect
Roadmap

- Know literature and have the data
- Convene – small committee
- Achieve agreement in this group
- Implement changes
- Education – writing and conferences
- Be open to communication, complaints, calls
- Ride out the actions and overreactions
- Success: better, cheaper, faster and new efficient diagnostic services
Why is demand management important?

- 70-80% healthcare decisions involve pathology investigation
- Nearly 40% of tests unwarranted or inappropriate
- Rising expenditure and new tests
- Problems with interpretation
- Ulysses syndrome
Why are tests ordered (1)

- **Diagnostic factors:**
  - Modify pretest probability of disease
  - Rule in or rule out disease
  - Primary care - ? need for referral
  - Secondary care – diagnosis

- **Therapeutic / prognostic:**
  - Appropriate treatment
  - Subsequent course and prognosis
  - Effects of interventions
Why are tests ordered (2)

- **Patient-related:**
  - Patient preference
  - Impact on diagnosis
  - Consequence of inaccurate test result
  - Reassurance
  - Demographics – aging population
Why are tests ordered (3)

• **Doctor-related:**
  • Clinical experience and confidence
  • Knowledge of test properties
  • Cost unawareness
  • Involvement in research
  • Uncertainty / reassurance
  • Defensive testing / habit
  • Response to patient’s request
  • Speciality
  • Full-time vs part-time / turnover
  • Time constraints
  • Demographics
  • Pride
Why are tests ordered (4)

• **Policy / organization related:**
  • Primary care practice size and location
  • Test availability
  • Method of doctor payment
  • Policy and clinical guidelines
  • Structured test ordering form
  • Profiles
  • Referral process
Consequences of overtesting

• Patient discomfort / anxiety

• False positive results

• Laboratories overloaded

• Waste resources

• Undermine healthcare
Interventions

- Educational initiatives
- Dissemination of guidelines
- Computer-based order
- Activity utilization and cost information
- Deleting tests from standard order forms
- Restricting test numbers allowed
- Vetting requests by diagnostic specialist or gatekeeper

76% reduced testing activity
Financial control

• Depends on setting of healthcare system
• Cannot be purely financial – undermine quality
• Doctor has some financial responsibility
• NZ:
  • 40 GP associations signed contract with health authorities to reduce cost – retain savings
  • Cost savings in 1st year (32.9%) which decreased in 2nd year (20.7%)
• Difficult to measure clinical outcomes
• Audit and feedback
Changing request form

• Simplest – remove test from form
• Beware of adverse effects on care
• Unbundle a panel
• Cascade testing e.g. TSH
• Time –determined gating of duplications
• Consultant or unit level restrictions
• Electronic requests and rules
Education and guidelines

• Educational interventions – most successful to change clinician behaviour
• Guidelines need to be sufficiently specific to be of positive rather than negative use
• Peer discussions
• Junior doctors order most non-contributory tests
• Frequency of repeat testing
• Cost awareness
Outreach

- Positive intervention effects (15-68 % improvement)
- One study:
  - Reduction in “inappropriate” tests negated by increased costs of “appropriate” tests
  - BUT savings due to early detection
Possible solutions

• Rationalizing test order forms and removing specialised tests – over-restriction may be counter-productive
• Define useful tests in specific situations and test repeat intervals (MRI)
• Secure computer access to past results – avoid duplication
• Establish agreed guidelines and protocols – continued education
• Gatekeeping
Demand management: an audit of chemical pathology test rejections by an electronic gate-keeping system at an academic hospital in Cape Town

Ida Smit, Annalise E Zemlin and Rajiv T Erasmus
• eGK introduced at TBH 2010 after discussion with clinicians and hospital management

**PURPOSE:**

1. Identify number of tests rejected and restored
2. Cost savings
3. Impact of these rejections in clinical outcomes
Rules

• **Ur, elecs and creat:**
  • Greatest cost generator and one of most abused – whole screen when just one needed
  • OPD not repeated within 30 d unless previous result abnormal
  • Inpatient – 24 h
  • No restriction Na and K
  • Dialysis: may have full profile pre- and post

• **CRP:**
  • 1st time unrestricted < 3 months age – not more than every 24h
- **TFT:**
  - TSH screening and fT4 if abnormal
  - Full screen only for endocrine, nuclear medicine, oncology, neurosurgery

- **LFT:**
  - Full LFT on 1st visit or admission
  - MRI 84h and if repeated before then only Tbil, ALT and ALP unless motivated
  - Cannot be repeated > twice weekly unless severe liver disease

- **TnI:**
  - ACS 6-8h after event as rule-out
  - Restricted to cardiology
• **CMP:**
  • OPD not repeated within 30 d unless previous result abnormal (inpatient 24h)
  • Limited to severe malnutrition, burns, renal failure, hypopara and malignancy

• **HbA1c:**
  • MRI 6 months

• **Lipid profile:**
  • MRI 6 months
Study

- 6 month audit – retrospective
- Number requests subjected to eGK and rejection rate calculated (only those restored)
- Cost saving calculated
- **Clinical impact – 100 random samples:**
  - Delayed further lab investigations
  - Result unavailable for imaging
  - Result unavailable for surgery
  - Delayed discharge
  - Delayed / prolonged Rx
  - No specific impact
Results

- 68,480 tests subjected to eGK – 6.7% rejected

<table>
<thead>
<tr>
<th>Test</th>
<th>Requested</th>
<th>Rejected</th>
<th>%</th>
<th>Restored</th>
<th>%</th>
<th>Saving (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium, magnesium and phosphate</td>
<td>23,268</td>
<td>258</td>
<td>1.1</td>
<td>57</td>
<td>22.1</td>
<td>1358</td>
</tr>
<tr>
<td>CRP</td>
<td>13,588</td>
<td>1477</td>
<td>10.9</td>
<td>283</td>
<td>19.2</td>
<td>4485</td>
</tr>
<tr>
<td>Free triiodothyronine</td>
<td>1328</td>
<td>309</td>
<td>23.3</td>
<td>16</td>
<td>5.2</td>
<td>2225</td>
</tr>
<tr>
<td>Free thyroxine</td>
<td>1644</td>
<td>135</td>
<td>8.2</td>
<td>8</td>
<td>5.9</td>
<td>949</td>
</tr>
<tr>
<td>HbA1c</td>
<td>3223</td>
<td>117</td>
<td>3.6</td>
<td>13</td>
<td>11.1</td>
<td>457</td>
</tr>
<tr>
<td>Liver function panel</td>
<td>7284</td>
<td>745</td>
<td>10.2</td>
<td>186</td>
<td>25.0</td>
<td>6399</td>
</tr>
<tr>
<td>Lipid profile</td>
<td>2735</td>
<td>153</td>
<td>5.6</td>
<td>22</td>
<td>14.4</td>
<td>1149</td>
</tr>
<tr>
<td>Thyroid function panel</td>
<td>1894</td>
<td>882</td>
<td>46.6</td>
<td>18</td>
<td>2.0</td>
<td>6473</td>
</tr>
<tr>
<td>Troponin l</td>
<td>3076</td>
<td>142</td>
<td>4.6</td>
<td>38</td>
<td>26.8</td>
<td>904</td>
</tr>
<tr>
<td>Urea, electrolytes and creatinine</td>
<td>10,440</td>
<td>387</td>
<td>3.7</td>
<td>38</td>
<td>9.8</td>
<td>986</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>68,480</strong></td>
<td><strong>4605</strong></td>
<td><strong>6.7</strong></td>
<td><strong>679</strong></td>
<td><strong>14.7</strong></td>
<td><strong>25,387</strong></td>
</tr>
</tbody>
</table>
### Table 3. Assessment of clinical impact of rejections.

<table>
<thead>
<tr>
<th>Clinical impact</th>
<th>n = 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>No specific impact noted</td>
<td>80 (80%)</td>
</tr>
<tr>
<td>Delayed discharge</td>
<td>4 (4%)</td>
</tr>
<tr>
<td>Result unavailable for imaging study</td>
<td>2 (2%)</td>
</tr>
<tr>
<td>Result unavailable for surgery</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>Delayed further laboratory work-up</td>
<td>4 (4%)</td>
</tr>
<tr>
<td>Insufficient information in case-notes</td>
<td>9 (9%)</td>
</tr>
<tr>
<td>Delayed treatment</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>
Discussion

• eGK effective and sustainable demand management tool

• Most rejected tests not restored – were they necessary?

• Did not appear to have a negative effect on patient care (80%)

• Cost saving: 0.6% of total hospital budget
Conclusion

• Improving efficiency in health care is a universal goal – not only laboratory medicine
• **Trade-off**: save resources and avoid unnecessary tests without missing the diagnosis
• Healthcare under immense pressure to reduce costs AND provide high quality and efficient care
• Demand management must be based on best evidence
• Laboratory staff need to educate clinicians on the correct usage of tests

**DO NO HARM**