HTE & Performance Management

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Disclosures

Rod Hayward, MD

No Financial Conflicts of Interests
Important, often competing, things that we care about

- Quality
- Costs
- Patient Autonomy
- Disparities
Conventional Performance Measures

- A1c < 7%
- BP < 135/90
- LDL <100mg/dL
- Eye exam w/I past year
Relationship Between A1c & Microvascular Complications (Vijan Ann Intern Med 1997)

Diagram by J. Meddings

Lifetime Risk of Blindness, with respect to A1c and DM2 age-of-onset

- DM2 onset age 45
- DM2 onset age 55
- DM2 onset age 65
- DM2 onset age 75

Hemoglobin A1c

Lifetime Risk of Blindness (%)
Total/Net benefit of treating DM Pts to BP <130/80
(Timbie JW et al. Arch Intern Med 2010)

**Grey** Bars = Low Risk (< .5 QALYs/10yr) (~10% of Pts)
**Black** Bars = High Risk (>3 QALYs/10yrs (~10% of Pts)
Total/Net benefit of treating DM Pts to LDL < 100
(Timbie JW et al. Arch Intern Med 2010)

Grey Bars = Low Risk (< .5 QALYs/10yr) (~10% of Pts)
Black Bars = High Risk (>3 QALYs/10yrs (~10% of Pts)
Dilated Eye Examinations
(Vijan et al. JAMA 2000 & Hayward et al JGIM 2005)

Suboptimal timing of photocoagulation = common
(40%-50% of those with hemorrhage or macular edema).

~ 2/3 of the problem due to inadequate F/U of known retinopathy

~ 1/3 due to very poor screening (>3yrs)

< 1% preventable by annual screening
Conventional Performance Measures

- A1c < 7%
- BP < 135/90
- LDL <100mg/dL
- Eye exam w/I past year
What determines an individual’s net benefit from treatment?

Remember the 3 elements that form net treatment benefit

Factors that determine net treatment benefit:

- \( \text{Risk}_{\text{NoRx}} \) → Absolute risk of bad outcome if notreatment (Obs Studies)
- \( \text{RRR}_{\text{Rx}} \) → Relative risk reduction in bad outcome from treatment (RCTs)
- \( \text{ARI}_{\text{Rx}} \) → Absolute risk increase due to treatment (Shared decision-making)

Net Benefit from Rx = \( (\text{Risk}_{\text{NoRx}} \times \text{RRR}_{\text{Rx}}) - \text{ARI}_{\text{Rx}} \)
Healthcare quality cannot be dichotomized

Net Value = Benefits/Gains – Costs/Losses

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<thead>
<tr>
<th>Questionable</th>
<th>Low</th>
<th>Moderate</th>
<th>High</th>
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<td></td>
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<td>(Net Value)</td>
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Cost Containment - Patient Autonomy - Basic Right
Simplistic Strict Dichotomous PMs

- Don’t target patients most likely to benefit
  - Ignore the heterogeneity of patient risk factors

- Don’t help providers do the “right” thing
  - Blunt instruments with little or no clinical nuance

- Don’t take into account patient preferences
  - Often mandate care not wanted well-informed patients

- Could result in unintended consequences
  - De-selection, polypharmacy, net Rx harm, wasteful spending
The “Advantages” of De-selecting Patients
(Hofer et al, JAMA 1999)

Outlier Physicians (1991)

These physicians eliminate from their 1992 panels the patients who in 1991 had HgbA1c levels in the top 5%.

Non-outlier Physicians (1991)

These physicians have the same patient panels in 1992 as in 1991.
Lenient Dichotomous PMs

• Help target patients most likely to benefit

• Don’t promote doing the “right” thing
  – Do not consider optimal care or overuse

• Don’t take into account patient preferences
  – Ignores low-moderate net value that may be wanted by patients

• Could result in unintended consequences
  – Clinicians/patients may only focus on bad care
Alternatives?
(Sussman, Kerr, Hofer, Vijan)

- Weight quality measures by QALYs at risk
- Consider individual attributes that modify ARR/I
- Consider effective/safe Rxs not yet employed
- Consider partial credit
Healthcare quality cannot be dichotomized

Net Value = Benefits/Gains – Costs/Losses

Questionable      Low      Moderate      High
(Net Value)

Cost Containment      Patient Autonomy      Basic Right
Shared decision-making for Substantive, High-Volume (SHIV) decisions

- Decision tools that help identify the 3 groups

- Recommend when red or green, but strength can vary AND respect patient veto

- Shared-decision-making starts with influential factors (full tool = in request)

- Consider effective/safe Rx not yet employed
Finding The Preference Sensitive Zone (Sussman et al Circulation CQO 2011)
Finding The Preference Sensitive Zone
(Caverly et al. Annals Internal Med 3 days ago)
Tailor lung cancer screening to patient benefit and patient preferences

What are the factors that determine when screening is preference-sensitive?

**Influential Factors**
- Lung cancer risk
- Life expectancy

**Not Highly Influential**
- Rate of false-positive findings
  Varying rates of false-positive findings from 10%–60% had little effect on net benefit

Higher lung cancer risk (annual risk >0.3%) & Reasonable life expectancy (>10 yrs)

Net benefit even when degree of dislike for screening & its downsides is large

52.9% of sample

Lower lung cancer risk (annual risk <0.3%) or Limited life expectancy (<10 yrs)

Net benefit depends on patient’s degree of dislike

47.0% of sample


#VisualAbstract created by Natalya Wawrin
Performance management

- Performance measure runs parallel with decision support
- Performance overlords are responsible for making it easy to optimize performance
- Many important aspects of medical care cannot easily be made into PM’s
“`Smarter’ blood pressure guidelines could prevent up to 180,000 additional heart attacks and strokes each year.”

Need to *simultaneously* consider:

- Overall CVD risk
- Person’s BP level
- How many BP medications already on
- CV benefit of dose change or new medication
What determines an individual’s net benefit from treatment?

Factors that determine net treatment benefit:

\[ \text{Net Benefit from Rx} = (\text{Risk}_{\text{NoRx}} \times \text{RRR}_{\text{Rx}}) - \text{ARI}_{\text{Rx}} \]

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- ARI\text{Rx} → Absoulte risk increase due to treatment (Shared decision-making)
“Everything should be made as simple as possible – but not one bit simpler”

Albert Einstein