

## METHODOLOGICAL ISSUES IN ASSESSING HOSPITAL QUALITY OF CARE:

### PROCESS & OUTCOME MEASURES

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## PROCESS MEASURES

### Advantages

- Improve compliance with recommended guidelines for care advocated by professional societies.
- Help target gaps in quality by taking specific actions that are supported in literature.
- Easy to interpret and to compare to a "gold-standard" – how far from 100%?

### Disadvantages

- Assess care in only a subset of patients.
- Lack information on effectiveness of the process being measured.
- Not surrogates for outcomes.
- Risk-adjustment **hidden**.
- Divert attention away from unmeasured processes.

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## OUTCOME MEASURES

### Advantages

- Patients care most about the results of their care & not about the processes that got them there.
- Basis of clinical trials.
- Integrates overall quality of care in the hospital.
- Risk-adjustment is explicit.
- Unambiguous and clear (e.g., 30-day mortality).

### Disadvantages

- Attribution – who is responsible for the outcomes of care?
- Patient dumping and access to hospital care.
- Risk-adjustment?
- "Gold standard" -- what is the right rate?
- How to target improvement if outcomes are "bad"?

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**LESSON: Need to integrate outcomes with process measures to provide a **COMPREHENSIVE VIEW** of hospital **QUALITY OF CARE**.**

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## RISK-ADJUSTMENT

Idea is to make the hospitals "comparable" in their case-mix in order to make comparative statements about quality of care:

- Everything is the **same except** quality of care.
- Outcome Measures: this process is **explicit**
- Process Measures: this process is **implicit**
- Virtually all public reports are designed to permit a user to compare each hospital to a hypothetical standard population and NOT to each other.

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**LESSON: Need to emphasize to users of current public reports to **NOT DIRECTLY COMPARE** a hospital outcome or even a process measure **BETWEEN** hospitals.**

[this is a technical point]

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## RELATIONSHIP BETWEEN HOSPITAL PROCESS & OUTCOMES

Evidence-base for many process measures weighted towards strategies that improve long-term outcomes

- Bradley & al (JAMA 2006) found "weak" relationships between hospital process measures and 30-day risk-standardized mortality rates [~1000 hospitals].
  - Would we really expect to observe a strong relationship between ASA on hospital dx and 30-day mortality?
- Timbie et al (under review) used quality failures following CABG surgery in MA hospitals & linked to survival to profile hospitals based on QALYs
  - Many of the quality measures were linked to **long-term** outcomes (eg., 30-day survival in patients with deep sternal wound infections was 93% versus 97% in those without infections; by 4 years it was 65% and 89%).

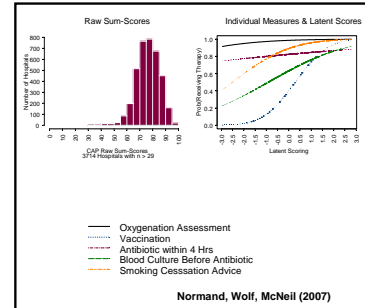
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## RELATIONSHIP BETWEEN HOSPITAL PROCESS & OUTCOMES

Between-hospital variation in process measures is **small** for some measures.

Clinical trials assess **treatments and not treatment targets** (Hayward, Am J Manag Care 2007).



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**LESSON:** More evidence to support the reporting of both outcomes and process measures to provide a **COMPREHENSIVE VIEW** of hospital **QUALITY OF CARE**.

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## MODELING OUTCOMES (PROCESSES OF CARE TOO!)

Hypothesis underpinning hospital profiling is:

$$H_0: p_1 = p_2 = \dots = p_i$$

where  $p_i$  = the risk-adjusted outcome (or process) for the  $i^{\text{th}}$  hospital.

- Identical to determining whether **BETWEEN-HOSPITAL VARIATION** in adjusted rates is 0.
- Identical to assuming a **HIERARCHICAL MODEL**.

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**LESSON:** Use a statistical model that is **COMMENSURATE** with the data and with the underlying **HYPOTHESIS**.

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## CLOSING THOUGHTS

- Integrate outcomes with process measures to provide a **COMPREHENSIVE VIEW** of hospital **QUALITY OF CARE**.
- Educate users of current public reports about **DIRECTLY COMPARING** a hospital outcome or a process measure to **ANOTHER** hospital.
- Utilize statistical models that are **COMMENSURATE** with the data and with the underlying **HYPOTHESIS**.

**For many problems there is a solution that is simple, neat, and wrong.** [Mencken, HL, 20<sup>th</sup> century American Journalist and social critic]

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