

# Do Patients Perceive Safety Culture on Their Hospital Unit?

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# Background

To do the sick no harm; to lessen such suffering in the future from causes that may have been preventable *Nightingale, 1863*

The nation's health care delivery system has fallen far short in its ability to translate knowledge into practice *IOM, Crossing the Quality Chasm, 2001*

Measuring the incidence rate of accidents . . . has serious drawbacks. Positive measures . . . have been identified as a more effective approach to measuring the degree to which an organization has implemented a safety culture *IOM, Keeping Patients Safe, 2004*

*Our healthcare system tends to be data rich and information poor*

# Forces that contribute to the healthcare safety problem in the U.S.

- Complex structure and nature of the healthcare system
- Roles and functions of the regulatory bodies
- Hospital structure; lack of continuity of patient care
- Care provider characteristics, perceptions, and actions
- Patient characteristics, perceptions and actions
- Measurement problems: Errors infrequent, underreported

# Significance of the Problem

What is known:

- The hospital unit is “ground zero” for care quality and safety-- including errors, failures, and untoward events that harm, or have the potential to harm patients (Tucker & Edmondson, 2003)
- Limited knowledge about the relationships between patients and care providers (Burroughs, et al. 2007)
- Patients, doctors, nurses, will align with their respective groups. Teamwork tends to occur within, but not between, groups (McDonald, Waring, Harrison, Walshe, & Boaden, 2005)
- There are significant mismatches between Patient-RN, RN-MD, or Patient-MD perceptions of care, failures, quality, error reporting, and patient needs (Espin, Levinson, Regehr, Baker, & Lingard, 2006)
- Failures result from mismatch of patient acuity and resources, lack of resources, and caregivers acting in the best interests of their own groups (Young, Minnick, & Marcantonio, 1996)

# Significance of the Problem

What is not known:

- No evidence of whether these instruments can tell us anything about the relationships between the unit's patients and the providers who care for them
- We have very little data on how unit safety culture affects patient outcomes
- Although the tools have similar origins and developers, *and* pertain to the same unit the data could not be compared
- Little attention has been paid to the relationships between patients and care providers

# Questions

- Do patients perceive safety culture on the hospital unit?
- What is the relationship between care providers' perceptions of safety culture and patients' perceptions of their experiences of care?
- No standardized tool exists for measuring these two populations as a cohort
  - Cross-sectional, quantitative, correlational design
  - Measured using
    - Hospital Survey on Patient Safety Culture-**SOPS**
    - Consumer Assessment of Healthcare Providers and Systems (Hospital version)-**HCAHPS**

# Sample

## Care Provider Sample-287 SOPS

- All “frontline” care providers
  - Physicians=47
  - Physicians in Training=100
  - Nurses=120
  - Assistive personnel=20

## Patient Sample-216 HCAHPS

- Hospital A=84
- Hospital B=44
- Hospital C=88

# Measurement of Perceptions

- Underlying assumption is that perceptions influence practice and/or experiences which in turn influence outcomes
- Morbidity and mortality are rare outcomes, other errors are grossly underreported (Vincent, Stanhope, & Crowley-Murphy, 1999)
- We have evidence that patient perceptions are correlated with quality (Weingart et al., 2005)
- The surveys and data used in this study are routinely collected by hospitals

# Measurement of Perceptions

- Hospital Survey on Patient Safety Culture measures care provider perceptions of unit safety
  - Independent (predictor) variables-care providers (42 items, 12 subscales)
  - 5-point Likert scale
- Hospital Consumer Assessment Healthcare Providers and Systems measures patient experiences of care (27 Items, 6 subscales)
  - “Composites” used as Dependent (Outcome) variables-patients
  - 4-point Likert scale

# Analysis

- Most difficult do to various data issues
- Needed to find a model that would answer the question using existing data
- Needed to account for patient data's negative skew
- 72 regression analyses using the Generalized Estimating Equations, Negative Binomial Model

# Analysis-Reported Values

- $p$ -values
- Incident Rate Ratios (IRR)
  - Used to interpret the coefficients, similar to logistic regression, a relationship between 2 groups
  - Usually used with count data
  - Difficult to interpret by itself, used to calculate effect size
- Effect Sizes
  - Measures the strength of the relationship between 2 variables, in this case the unit safety culture SOPS and patient HCAHPS scores
  - Reports the size of the relationship
  - On the original scale, such as a Likert scale, effect size is useful for determining if a difference is truly significant

# Results

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## Study: Alligators Dangerous No Matter How Drunk You Are



Alligators exhibit the potential to inflict serious harm, regardless of the blood-alcohol levels of their victims.

Results of 72 Regression Analyses,  $p < .001$ 

Provider Predictor SOPS ↓	Patient Outcome HCAHPS →	Nurse communication	MD Communication	Responsiveness	Physical environment	Pain control	Communication about meds
<b>Overall Perceptions</b>		☰	☰	☰	☰	☰	☰
<b>Frequency of Errors Reported</b>		ns	ns	ns	ns	ns	ns
<b>Supervisor Actions</b>		ns	ns	ns	ns	☰	ns
<b>Organizational Learning- QI</b>		☰	☰	☰	☰	☰	☰
<b>Teamwork Within Units</b>		☰	☰	☰	☰	☰	☰
<b>Communication Openness</b>		☰	ns	ns	ns	ns	ns
<b>Error Feedback &amp; Communication</b>		ns	☰	☰	ns	☰	ns
<b>Nonpunitive Response</b>		☰	ns	ns	☰	ns	☰
<b>Staffing</b>		ns	☰	☰	☰	☰	☰
<b>Management Support</b>		☰	☰	ns	☰	☰	☰
<b>Teamwork Across Units</b>		ns	☰	☰	☰	☰	☰
<b>Hospital Handoffs</b>		ns	☰	☰	ns	☰	☰

# 72 Regression Analyses- 45 Significant Relationships

RESULTS

Provider Predictor ↓	Patient Outcome →	Nurse communication	MD Communication	Staff Responsiveness	Physical environment	Pain control	Communication about meds
<b>Overall Perceptions</b>		<b>.64</b>	<b>.25</b>	<b>.85</b>	<b>.88</b>	<b>.55</b>	<b>.93</b>
Frequency of Errors Reported		ns	ns	ns	ns	ns	ns
Supervisor Actions		ns	ns	ns	ns	<b>-1.09</b>	ns
<b>Organizational Learning- QI</b>		<b>1.08</b>	<b>.69</b>	<b>1.4</b>	<b>1.28</b>	<b>1.08</b>	<b>1.26</b>
<b>Teamwork Within Units</b>		<b>.58</b>	<b>.19</b>	<b>.67</b>	<b>.75</b>	<b>.43</b>	<b>.82</b>
Communication Openness		<b>.69</b>	ns	ns	ns	ns	ns
Error Feedback & Communication		ns	<b>.24</b>	<b>.85</b>	ns	<b>.52</b>	ns
Nonpunitive Response		<b>.91</b>	ns	ns	<b>1.08</b>	ns	<b>1.10</b>
<b>Staffing</b>		ns	<b>.21</b>	<b>.74</b>	<b>.74</b>	<b>.46</b>	<b>.79</b>
<b>Management Support</b>		<b>.48</b>	<b>.14</b>	ns	<b>.63</b>	<b>.31</b>	<b>.69</b>
<b>Teamwork Across Units</b>		ns	<b>.19</b>	<b>.70</b>	<b>.71</b>	<b>.44</b>	<b>.77</b>
Hospital Handoffs		ns	<b>.21</b>	<b>.75</b>	ns	<b>.46</b>	<b>.74</b>

# Interpretation Examples

## **Organizational learning (SOPS) + Nurse communication (HCAHPS)**

- for every 1 point increase in the SOPS subscale **organizational learning/QI** there is a predicted 1.08 point, or 97% increase in the HCAHPS subscale **nurse communication**

## **Staffing (SOPS) + Communication about medications (HCAHPS)**

- for every 1 point increase in the SOPS subscale **staffing**, there is a predicted .79 point, or 61% increase in the HCAHPS outcome **communication about medications**

# Results

Looking for a pattern of results for significant relationships between SOPS and HCAHPS  $p < .001$

- Organizational learning 6/6
- Overall perceptions of safety 6/6
- Teamwork within the unit 6/6
- Teamwork across units 5/6
- Staffing 5/6
- Supervisor and management support for safety 5/6

# Results

Looking at effect sizes of 0.5 pts or >

- Organizational learning/QI 6/6
- Teamwork within units 4/6
- Staffing 3/6
- Teamwork across units 3/6
- Non-punitive response to error 3/6

# Discussion

Found relationships consistent with the literature that support positive patient safety activities on the unit

- Provides validation for management and organizational commitment to safety and quality outcomes (Khatri, Baveja, Boren, Mammo, 2006)
- Supports the learning organization. Although a good deal has been written on reliability theory in hospitals, very little empirical data exists that supports HRT principals (Tamuz & Harrison, 2006)
- There was no relationship between error reporting (SOPS) and ANY of the HCAHPS composites—consistent with recent OIG report on adverse events
- Informs the current health profession education reform movement: that teaching the knowledge, skills, and attitudes that promote patient safety in the health professions' curricula is appreciated by the patient.
- Care that is truly patient-centered results in the best outcomes for the organization

# What is Organizational Learning?

- From high reliability theory
  - Focus is on monitoring inputs, maintaining alertness
  - No strict boundaries on where learning comes from
    - Weick and Sutcliffe, 2001
- Active improvements that promote patient safety
- Active review of errors on the unit that lead to positive changes
- Reviewing changes to evaluate effectiveness



Patient room information board with posted patient daily goal

# Meaning of the Findings

*So What? Implications for policy*

- Literature is full of unproven ways to improve safety culture, patient safety, patient experiences
  - Often derived from other industries
- Although interactions occur at the unit level, results provide support for specific conditions that make up a safety milieu that supports positive patient outcomes
  - Identifies areas to be targeted for change

# Meaning of the Findings

- Uses existing hospital data
  - HCAHPS part of CMS Conditions of Participation
  - HCOPSC in wide use nationwide, over 400 hospitals benchmark externally with AHRQ
- Hospitals can leverage the most out of their data
  - Provides useful patient data independent of infrequent error and failure rates
  - Can tell your staff how they are doing
- Hospitals can use evidence to invest scarce resources in care provider programs **known to impact** patient outcomes
  - Such as programs and other structures that support positive patient outcomes

# Limitations of the Study

- Unlinked observations within the units
- Social desirability bias
- Ongoing interventions during the data collection periods

# Questions for Future Research

- Could a simpler design be developed to compare these two instruments
- Would these findings replicate in other settings and hospitals?
- What are some of the best practices in place in hospitals that promote “Organizational Learning”?
- How might these findings differ with different groups?