Using Nursing Sensitive Data to Improve Patient Outcome

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NDNQI® Account Representative
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Objectives

• Describe nursing-sensitive measurement
• Discuss findings in NDNQI research
• List ways hospitals have used NDNQI to improve patient outcomes
Defining Quality

“The degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge”

Institute of Medicine
IOM report: *To Err is Human, Crossing the Quality Chasm*

- 10 years have passed since IOM identified errors in healthcare
- 90% of errors due to system failure, not active individual failures
  - Understaffing
  - Fatigue
  - Lack of education
  - Training on how to identify a rescue situation
- Dozens of recommendations for change

IOM: Keeping Patients Safe: Transforming the Work Environment of Nurses

- Typical work environment of nurses is characterized by inefficiencies and distractions
- Front line nurses must be involved in the process of creating a safer work environment
- Focus error reduction on
  - Surveillance of patient health status
  - Patient transfers and handoffs
  - Complex care processes
  - Reduce non-value-added RN activities
Policy Responses to IOM Reports

- Define and Collect **Quality Indicators**
- **Public Reporting**
- **Financial Incentives**
  - Pay for performance, e.g., Leapfrog
  - Nonpayment for poor performance, e.g., CMS
- **CMS 2011 IPPS Rule**
  - Proposed participation in **nursing quality registry**
Nursing Quality Initiatives

• ANA’s Quality & Safety Initiative – NCNQ®

• ANCC’s Magnet® program

• Robert Wood Johnson’s Interdisciplinary Nursing Quality Research Initiative (INQRI)

• National Quality Forum (NQF) nursing-sensitive measures

• National Priority Partners (NPP)
NDNQI

- Only national, nursing quality measurement program providing hospitals with unit-level performance reports with national, state and regional comparisons
- Over 1600 hospitals, over 1-out-of-4 in the nation participate
History of NDNQI

• 1994: ANA launched the Patient Safety & Quality Initiative
  – Identify linkages between *nurse staffing* and *patient outcomes*
• The National Center for Nursing Quality was established along with the National Database of Nursing Quality Indicators in 1998
• Owned by ANA
• Housed at the University of Kansas School of Nursing under contract to ANA
NDNQI’s Mission

- To aid the Registered Nurse in patient safety and quality improvement efforts by providing research-based national comparative data on nursing care and the relationship to patient outcomes.
Nursing-Sensitive Quality Measures

• “Measures and indicators that reflect the impact of nursing actions on outcomes”

(ANA, 2004)
NDNQI Measurements

Adapted from Avedis Donabedian’s Quality Framework:

Structure-Process-Outcomes

“Structure and Process Measures can in turn affect Outcome”

Structure

• The *structure* of nursing care indicated by
  – Supply of nursing staff
  – Skill level of the nursing staff
  – Education / certification of nursing staff
  – Nurse turnover
Process

• *Process* indicators measure aspects of nursing care
  – Assessment
  – Intervention
  – RN job satisfaction
Outcomes

- Positive patient outcomes that are determined to be nursing sensitive if there is a greater quantity or quality of nursing care
  - Hospital acquired pressure ulcers
  - Patient falls
  - IV infiltrations
  - Restraint use
  - Healthcare-associated infections
Measure development

- Peer-reviewed literature
- Discussions with topic experts
- Pilot studies
- Develop a web data collection system
- Indicator announcement
- Data analysis, development of quarterly reports
Data is Relevant to Nursing Care

• Identify linkages between staffing and patient outcomes
• Nursing quality evaluation for improvements
• Satisfies regulatory and accreditation requirements such as Joint Commission and CMS
• What’s the other?
Quarterly Measures

- Nursing Staff Skill Mix *
- Nursing Hours per Patient Day *
- Nurse Turnover *
- Assault / Injury Assault Rates
- Catheter Associated Urinary Tract Infections *
- Central Line Associated Blood Stream Infections *
- Fall / Injury Fall Rates *

* Indicators endorsed by National Quality Forum (NQF)
Quarterly Measures Cont.

- Hospital / Unit Acquired Pressure Ulcer Prevalence **
- Pain Assessment / Intervention / Reassessment Cycle
- Peripheral IV Infiltrations
- Restraint Prevalence *
- RN Education / Certification
- Ventilator Associated Pneumonia *

* Indicators endorsed by National Quality Forum (NQF)
** Indicator endorsed by National Quality Forum (NQF), but NDNQI collects Stage I and >, NQF defined is Stage II and >
Annual Measure

• RN Satisfaction Survey
  – Practice Environment Scales option *
  – Job Satisfaction Scales option
  – Job Satisfaction Scales-Short Form option
National Comparison Data

Unit Type:
- Critical Care
- Step-Down
- Medical
- Surgical
- Combined Medical-Surgical
- Rehab
- Psychiatric
- Pediatric

Groups:
- Hospital Size by staffed beds:
  - <100
  - 100-199
  - 200-299
  - 300-399
  - 400-499
  - 500+
- Teaching Status defined as:
  1. Academic Teaching Center
  2. Teaching Hospital
  3. Non-Teaching Hospital
Benchmarks

- Bed Size
- Teaching Status
- Census Division
- Metropolitan Status
- Case Mix Index
- Magnet Status
- Hospital Type
- All Hospitals
- Adult Specialty
- State Comparison
NDNQI Team

- Interprofessional team
  - RNs
  - Outcome indicator experts
  - Database and web programmers
  - Nurse researchers
Data Collection Process

• Standardization of the data collection process is critical
• NDNQI supports reliable data collection by:
  – Standardized definitions
  – Standardized data collection protocols
  – Web-based tutorials with competency tests required prior to entering data
• Web based...no special software needed
• Direct data entry or by XML upload
Confidentiality

- All data collected is confidential
- Only disclosed by NDNQI database agreement
- De-identified data
- Access restricted
NDNQI Data are the Starting Point

- Identify problem areas
- Explore possible causes
- Monitor the effects of your improvement plan
Adult Critical Care
ICU Unit

Total Nursing Hours Per Patient Day

- ICU Unit
- Bedsize > 500 - Adult Critical Care
- Between 25th and 75th Percentile

Percent of Total Nursing Hours Supplied by RNs

- ICU Unit
- Bedsize > 500 - Adult Critical Care
- Between 25th and 75th Percentile

Percent of RN Hours Supplied by Agency Staff

Percent of RNs with BSN or Higher Nursing Degree

n.d. = No data
SUP = Suppressed for confidentiality

Comparison data are owned by ANA and may not be published by NDNQI member hospitals.

### Table 2.1
**Adult Medical-Surgical**
**Practice Environment Scale Mean Scores**

<table>
<thead>
<tr>
<th></th>
<th>Nursing Participation in Hospital Affairs</th>
<th>Nursing Foundations for Quality of Care</th>
<th>Nurse Manager Ability, Leadership, and Support of Nurses</th>
<th>Staffing and Resource Adequacy</th>
<th>Collegial Nurse-Physician Relations</th>
<th>Mean PES Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adult Medical-Surgical</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M/S</td>
<td>2.06</td>
<td>2.23</td>
<td>2.14</td>
<td>1.99</td>
<td>2.02</td>
<td>2.09</td>
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<tr>
<td>PCU</td>
<td>2.66</td>
<td>3.02</td>
<td>2.88</td>
<td>2.74</td>
<td>2.92</td>
<td>2.84</td>
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<tr>
<td>Hospital Adult</td>
<td>2.36</td>
<td>2.63</td>
<td>2.51</td>
<td>2.37</td>
<td>2.47</td>
<td>2.47</td>
</tr>
<tr>
<td>Medical-Surgical Median</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Rating of the extent to which characteristic is present: The higher the score, the more positive the rating on a scale of 1-4.

### Practice Environment Scale Mean Scores

|                          | Nursing Participation in Hospital Affairs | Nursing Foundations for Quality of Care | Nurse Manager Ability, Leadership, and Support of Nurses | Staffing and Resource Adequacy | Collegial Nurse-Physician Relations | Mean PES Score |
|--------------------------|------------------------------------------|----------------------------------------|--------------------------------------------------------|                                |                                   |                |
| **National Comparative Information - Non-Magnet Facility** |                                          |                                        |                                                        |                                |                                   |                |
| Mean                     | 2.74                                     | 3.00                                   | 2.85                                                   | 2.48                           | 2.83                             | 2.78           |
| S.D.                     | 0.25                                     | 0.18                                   | 0.32                                                   | 0.34                           | 0.24                             | 0.23           |
| 10th Percentile          | 2.44                                     | 2.76                                   | 2.44                                                   | 2.02                           | 2.54                             | 2.49           |
| 25th Percentile          | 2.58                                     | 2.69                                   | 2.63                                                   | 2.23                           | 2.68                             | 2.62           |
| 50th Percentile (median) | 2.74                                     | 3.00                                   | 2.87                                                   | 2.50                           | 2.82                             | 2.79           |
| 75th Percentile          | 2.90                                     | 3.12                                   | 3.07                                                   | 2.71                           | 2.99                             | 2.92           |
| 90th Percentile          | 3.05                                     | 3.22                                   | 3.28                                                   | 2.90                           | 3.13                             | 3.05           |
| # of Units²              | 289                                      | 289                                    | 289                                                    | 289                            | 289                              | 289            |

1. No data: No RN responses or < 5 responses and unit data was suppressed to maintain confidentiality.
2. If # of units is < 5, comparison data are suppressed to maintain confidentiality. If # of units is < 20, comparison data may vary substantially across monthly reports and should be used with caution.
Sample Hospital
Job Enjoyment Scale T-Score
Ambulatory Care

25-75th Percentile: All Hospitals - Ambulatory Care
Median: All Hospitals - Ambulatory Care
Your hospital unit type
median: Ambulatory Care

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Sample Hospital: ICU
Practice Environment Scale Mean Scores
2009

- Mean PES Score
- Collegial Nurse-Physician Relations
- Staffing and Resource Adequacy
- Nurse Manager Ability, Leadership, and Support of Nurses
- Nursing Foundations for Quality of Care
- Nursing Participation in Hospital Affairs

Rating of the extent to which the characteristic is present.
The higher the score, the more positive the rating on a scale of 1 to 4.

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## Table F1
### Adult Critical Care
#### Total Falls Per 1,000 Patient Days

<table>
<thead>
<tr>
<th>Adult Critical Care</th>
<th>2Q06</th>
<th>3Q06</th>
<th>4Q06</th>
<th>1Q07</th>
<th>2Q07</th>
<th>3Q07</th>
<th>4Q07</th>
<th>1Q08</th>
<th>Avg</th>
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<tbody>
<tr>
<td>Adult ICU</td>
<td>3.43</td>
<td>1.62</td>
<td>1.60</td>
<td>1.04</td>
<td>4.36</td>
<td>4.43</td>
<td>1.17</td>
<td>1.37</td>
<td>2.38</td>
</tr>
<tr>
<td>Cardiac ICU</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>2.73</td>
<td>2.24</td>
<td>2.28</td>
<td>0.00</td>
<td>0.00</td>
<td>0.91</td>
</tr>
<tr>
<td>Cardiothoracic ICU</td>
<td>0.00</td>
<td>0.00</td>
<td>1.64</td>
<td>1.84</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.58</td>
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<tr>
<td>Medical ICU</td>
<td>0.92</td>
<td>1.85</td>
<td>0.84</td>
<td>0.81</td>
<td>0.90</td>
<td>0.84</td>
<td>0.86</td>
<td>0.81</td>
<td>0.98</td>
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<tr>
<td>Surgical ICU</td>
<td>0.63</td>
<td>0.00</td>
<td>0.67</td>
<td>0.61</td>
<td>0.62</td>
<td>0.59</td>
<td>1.30</td>
<td>2.76</td>
<td>0.90</td>
</tr>
<tr>
<td>Hospital Adult Critical Care Median</td>
<td>0.77</td>
<td>0.81</td>
<td>0.67</td>
<td>0.81</td>
<td>1.64</td>
<td>1.84</td>
<td>0.86</td>
<td>0.81</td>
<td>1.15</td>
</tr>
</tbody>
</table>

### National Comparative Information - Non-Teaching Facilities

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>S.D.</th>
<th>10th Percentile</th>
<th>25th Percentile</th>
<th>50th Percentile (median)</th>
<th>75th Percentile</th>
<th>90th Percentile</th>
<th># of Reporting Units¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>3.27</td>
<td>3.41</td>
<td>3.32</td>
<td>3.47</td>
<td>3.09</td>
<td>3.24</td>
<td>3.22</td>
<td>3.44</td>
</tr>
<tr>
<td>S.D.</td>
<td>4.71</td>
<td>2.72</td>
<td>2.65</td>
<td>2.20</td>
<td>2.14</td>
<td>2.07</td>
<td>2.32</td>
<td>2.10</td>
</tr>
<tr>
<td>10th Percentile</td>
<td>0.00</td>
<td>0.00</td>
<td>0.71</td>
<td>1.07</td>
<td>0.00</td>
<td>0.85</td>
<td>0.74</td>
<td>0.91</td>
</tr>
<tr>
<td>25th Percentile</td>
<td>1.58</td>
<td>1.71</td>
<td>1.73</td>
<td>2.00</td>
<td>1.70</td>
<td>1.67</td>
<td>1.65</td>
<td>1.99</td>
</tr>
<tr>
<td>50th Percentile</td>
<td>2.80</td>
<td>3.18</td>
<td>2.78</td>
<td>3.20</td>
<td>2.95</td>
<td>3.04</td>
<td>2.92</td>
<td>3.30</td>
</tr>
<tr>
<td>75th Percentile</td>
<td>4.16</td>
<td>4.51</td>
<td>4.33</td>
<td>4.51</td>
<td>4.37</td>
<td>4.60</td>
<td>4.22</td>
<td>4.83</td>
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<tr>
<td>90th Percentile</td>
<td>5.80</td>
<td>6.10</td>
<td>6.08</td>
<td>6.00</td>
<td>5.54</td>
<td>5.95</td>
<td>5.78</td>
<td>6.15</td>
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<tr>
<td># of Reporting Units¹</td>
<td>263</td>
<td>288</td>
<td>265</td>
<td>279</td>
<td>265</td>
<td>264</td>
<td>269</td>
<td>265</td>
</tr>
</tbody>
</table>

### National Comparative Information - Bed Size ≤ 500

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>S.D.</th>
<th>10th Percentile</th>
<th>25th Percentile</th>
<th>50th Percentile (median)</th>
<th>75th Percentile</th>
<th>90th Percentile</th>
<th># of Reporting Units¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>3.56</td>
<td>3.70</td>
<td>3.32</td>
<td>3.78</td>
<td>3.49</td>
<td>3.45</td>
<td>3.45</td>
<td>3.41</td>
</tr>
<tr>
<td>S.D.</td>
<td>2.41</td>
<td>2.55</td>
<td>1.95</td>
<td>2.18</td>
<td>1.99</td>
<td>1.99</td>
<td>2.38</td>
<td>2.17</td>
</tr>
<tr>
<td>10th Percentile</td>
<td>0.39</td>
<td>0.90</td>
<td>0.96</td>
<td>1.31</td>
<td>0.94</td>
<td>1.05</td>
<td>1.07</td>
<td>0.91</td>
</tr>
<tr>
<td>25th Percentile</td>
<td>2.17</td>
<td>1.94</td>
<td>1.96</td>
<td>2.59</td>
<td>2.03</td>
<td>1.90</td>
<td>1.91</td>
<td>1.79</td>
</tr>
<tr>
<td>50th Percentile</td>
<td>3.49</td>
<td>3.44</td>
<td>3.17</td>
<td>3.50</td>
<td>3.31</td>
<td>3.21</td>
<td>3.20</td>
<td>3.14</td>
</tr>
<tr>
<td>75th Percentile</td>
<td>4.73</td>
<td>4.99</td>
<td>4.36</td>
<td>4.70</td>
<td>4.87</td>
<td>4.90</td>
<td>4.61</td>
<td>4.87</td>
</tr>
<tr>
<td>90th Percentile</td>
<td>6.30</td>
<td>6.21</td>
<td>6.07</td>
<td>6.16</td>
<td>6.10</td>
<td>6.11</td>
<td>6.17</td>
<td>6.28</td>
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<tr>
<td># of Reporting Units¹</td>
<td>185</td>
<td>186</td>
<td>181</td>
<td>196</td>
<td>189</td>
<td>196</td>
<td>201</td>
<td>199</td>
</tr>
</tbody>
</table>

¹ Use caution when making decisions based on comparison data with fewer than 20 reporting units, as they may vary substantially by quarter.
² Suppressed for confidentiality.
Identify Problems

• How does our unit’s data compare to the percentiles?
• What does that say about our unit’s nursing quality?
• Is our unit in the bottom 25% of peers
• Should there be zero tolerance for the outcome
Drill Down

• How can we gain a better understanding of the problem and its causes?
• What additional data do we need to collect?
• Look at multiple sources of information:
  – Other NDNQI data (e.g., staffing & RN Survey)
  – Patient satisfaction surveys
  – Patients’ medical records
  – Staff nurses’ input
Could the Fall Prevention Process Be Improved?

Total Falls

Prior Risk Assessment: 83.9%

At Risk: 79.1%

Protocol in Place: 91.7%

No Protocol in Place: 8.3%
Could Pressure Ulcer Prevention Be Improved?

Patients with HAPU

Admission Risk Assessment 83.8%

- At Risk 90.9%
- Not at Risk 9.1%

Prevention Protocol in Place 95.9%

No Admission Risk Assessment 16.2%
Follow-up Questions From Drill Down

1. What is preventing risk assessments?
2. Is risk assessment tool effective?
3. Does prevention program work?
Moving Research to the Bedside

• Assessment
• Diagnosis
• Plan
• Implementation
• Evaluation
Next Step: Review Literature

- What is known that can help you improve your outcome?
  - Staffing situations
  - Nursing processes
  - Nursing work environment
Nursing Structure

Staffing Situations

- Nursing Hours per Patient Day
- Skill Mix
- % Agency Staff
- RN Education
- RN Certification
- Years of Experience

Outcome

- Falls - medical unit
Improving the Nursing Work Environment

RN Work Environment
- Practice Environment
- Job Satisfaction
- Work Context

RN Job Enjoyment

RN Outcomes
- Job Plans
- Turnover

Patient Outcomes
- Patient Safety
- Quality of Care

Adapted from IOM’s Keeping Patients Safe: Transforming the Work Environment of Nurses
Are you ready?

All Aboard the Quality Improvement Local
Celebrating Success

• Publications
  – *Transforming Nursing Data into Quality Care: Profiles of Quality Improvement in U.S. Healthcare Facilities*
  – *Sustained Improvement in Nursing Quality: Hospital Performance on NDNQI Indicators, 2007-2008*
  – To order: http://www.nursesbooks.org/Main-Menu/quality
Using NDNQI to improve outcomes

• Baptist Medical Center Jacksonville FL
  – Non-teaching, tertiary care hospital
  – Private, 399-bed
  – Participating in NDNQI since 2005
  – Magnet designated in 2007

• Indicator used
  – Hospital acquired pressure ulcers, on 3 critical care units

• Sustained HAPU prevalence below the NDNQI national benchmark
Establishing Goals

- NDNQI pressure ulcer point prevalence survey
- High rate of HAPUs in critical care units
- Lack of documentation admission skin assessment
- Goals
  - 2007 reduce the rate of HAPUs in critical care units by 25%
  - 2008 reduce the rate of HAPUs in the critical care units below the best performing critical care units by 25%
How they did it

- Leadership support
- Restructuring of APRN and educator roles
- Increased awareness for documentation
- Wound care team reassigned
- Monthly point prevalence study (not quarterly)
- Reports distributed to leadership and direct care staff
- Lunch and learn
How they did it

• Pressure ulcer prevention protocol
• Screening tool for specialty mattresses
• Assessment criteria
• Interventions tailored to assessment
• Education on pressure ulcers (including leadership team)
• Celebrated their success
Other positive outcomes

• Pressure ulcer prevention implemented throughout the hospital—more patients with better outcomes
• Reduced costs and improved revenue
• Improved RN satisfaction scores
Nursing Educational Level Advancement

• Scottsdale Healthcare
  – Not for profit, teaching, 420 bed facility
  – 3 Hospital health care system (2 campuses are Magnet)
  – 980 nurses

• Evidence-based practice

• Goal to increase the number of BSN-prepared nurses to improve outcomes, patient satisfaction and decrease turnover
Results

- Oncology/Hematology 46% to 55%
- Orthopedics 52% to 64%
- NICU 50% to 67%

*2003-2007
How did they do it?

• Increased tuition reimbursement
• Established a process for loan repayment
• Collaborative relationships with local nursing schools
How did they do it?

- Leadership support
- Board of directors support (allocated additional funding)
- Culture of change (Magnet journey)
  - Human resource support
  - Nursing leadership support
Ultimate Outcomes

- Significant decrease in turnover
- Improvement in clinical indicators including patient falls
- Improvement in patient satisfaction scores
Persistence

“There is no quick fix or easy overall remedy. Instead, it seems clear that quality improvement in health care, as in other sectors, requires a coordinated, deliberate, consistent, and sustained approach” (AHRQ, 2008)

http://www.ahrq.gov/qual/nhqr08/Key.htm
Questions?

• American Nurses Association
  • 301-628-5500
  • www.nursingworld.org
• National Database of Nursing Quality Indicators
  • 913-588-1691
  • www.nursingquality.org
• ANA’s National Center for Nursing Quality
  – Pam Hinshaw
  • 301-628-5042
  • Pamela.hinshaw@ana.org
References


