American Nurses Association
Nursing Sensitive Measures
National Database of Nursing Quality Indicators (NDNQI®)

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National Committee on Vital Health and Statistics
Quality Workgroup (QWG)
Washington, DC
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History of NDNQI®

- Established in 1998 as part of American Nurses Association’s Safety and Quality Initiative
  - Ongoing investments in the development and implementation of the database and ongoing support through funding of new indicators and methodologies
- Owned by ANA
- Housed at the University of Kansas School of Nursing under the auspices of the KUMC Research Institute (RI), with oversight by ANA

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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.
NDNQI Growth - Participating Hospitals

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NATIONAL DATABASE OF NURSING QUALITY INDICATORS
NDNQI Participants

- Voluntary
  - Interest in Quality
  - Satisfy Magnet requirements
  - Satisfy JCAHO reporting on staffing effectiveness standards

- 48% academic/teaching
- 86% not-for-profit
- 20% Magnet
- 88% Urban
- Bed size
  - <100 16%
  - 100-199 26%
  - 200-299 22%
  - 300-399 15%
  - 400-499 9%
  - >500 12%
NDNQI Program

• Database Participation
  – Indicator Development
  – Web-based data submission
  – Web-based tutorials for site coordinators and others who submit data (required to pass before being able to submit data)
  – High level of accuracy in reporting
  – On time electronic reports
  – Accessibility of many NQF endorsed nursing measures
  – Optional RN Satisfaction Survey for all RNs

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NDNQI Program

• Pilot Testing
  – Voluntary hospital participation in pilot testing of new indicators

• Education & Research
  – Quarterly Conference Calls
  – Annual National Conference
  – Publication
  – NDNQI Studies via NINR, NIOSH & NDNQI
NDNQI’s Measures

NDNQI’s

• Patient Falls
• Patient Falls with Injury
• Nursing Hours per Patient Day
• Staff Mix
• % Nursing Hours Supplied by Agency Staff
• Practice Environment Scale (PES)
• Restraints

Other NDNQI® Measures

• Hospital-acquired Pressure Ulcer Prevalence
• RN Satisfaction
• RN Education/Certification
• Completeness of the Pediatric Pain Assessment, Intervention, Reassessment (AIR) Cycle
• Pediatric Peripheral Intravenous Infiltration Rate
• Psychiatric Physical/Sexual Assault Rate

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Indicators in Development

- Voluntary Turnover* (scheduled implementation Q3 '07)
- Nosocomial Infections* (scheduled implementation Q4 '07)
  - Central Line Associated Blood Stream Infections (CLABSI)
  - Catheter Line Associated Urinary Tract Infections (CLAUTI)
  - Ventilator Associated Pneumonia (VAP)

*NQF Consensus Measure
Data Collection

- Data provided from administrative record systems or special studies
- Some data from medical record review or electronic health records
  - Nursing hours from payroll or staffing systems that collect actual not just budgeted
  - Patient days from census data systems
  - Pressure ulcer data and restraint use from a prevalence study and medical record review
Data Submission

- Web forms
- XML upload

  - Contain standardized information required by NDNQI
  - Have known level of reliability
Standardization

• Specific processes established to collect standardized reliable data
  – Provide hospitals comparative reports
  – Use in analyses of the relationship between aspects of the nursing workforce and nursing sensitive patient outcomes

• Standardized Definitions and Data Collection Guidelines
Standardization

- Web-based tutorial for training data collection and data entry staff on the guidelines.
- Using in-person interviews with hospital site coordinators to correctly classify units into unit types.
- Soliciting input from hospitals about data they would like in the reports they receive from NDNQI.
- Guaranteeing the confidentiality of data, so that hospitals are motivated to provide accurate data.
Resources

- Investment capital
- Volunteer advisory panel
- Expert literature review to identify nursing sensitive indicators
- Secure web site
- Nurse liaisons with hospital experience
- Interdisciplinary team:
  - Nurse researchers
  - Outcome indicator experts
  - Statisticians
  - Database and web programmers
  - Statistical analysts, and survey researchers
  - Experts in database development and maintenance
- 3rd party database management, for hospitals to feel that their data are secure and confidential

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Ascertaining Data Reliability

- Used initial ANA indicators then NQF indicators
- Annual reliability studies on indicators that include
  - Survey on data collection practices
  - Rater-to-standard reliability assessments or audits of reported data against original records.
  - Pressure Ulcer Reliability Study demonstrated moderate to near perfect reliability.\(^1\)
    - Demonstrated that certified wound ostomy continence nurses had better reliability in wound assessment.
    - NDNQI pressure ulcer tutorial developed and disseminated to all NDNQI hospitals and posted on web-site [www.nursingquality.org](http://www.nursingquality.org)

Data Use

• Quarterly Reports on Indicators
  – Trends: 8 rolling quarters with an average for those quarters
  – 50-200 pages depending on hospital size
  – 26 Tables altogether
  – Statistical significance, mean, quartiles and national comparisons at the unit level
  – Details on structure and process measures

• Annual Report
  – RN Survey Results

• Aids in decision making, measure sustained changes and improve quality
• Specialty and system reports
• Statewide reports for public reporting
National Comparison Data

At the Unit Level – Where Care Occurs

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

- Grouped by
  - Hospital Size or
  - Teaching Status
Database Growth: RN Satisfaction Participation

Hospitals: 64 131 204 382 494

Nurse Responses

Response Rates: 55% 62% 63% 64% 64%
# Number of Units Reporting

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Outcomes

• Research done on NDNQI demonstrated significance at the unit level
• Studies done related to falls and pressure ulcers demonstrated which staffing or workforce element was statistically significant at the unit for the patient outcome, e.g.
  – Higher nursing hours on step-down, medical and med-surg associated with less falls
  – Higher % RN hours on step-down, medical units associated with fewer falls
  – Higher reliability with certified nurses assessing wounds
  – For every percentage point increase in %RN hours, the pressure ulcer rate declines by 0.3%

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Outcomes

• National Data Use Conference
  – 1st: January ’07
    • Transforming Nursing Data into Quality Care
    • 900 attendees
  – 2nd: January 30-February 1, 2008
    • Workforce Engagement in Using Data to Improve Outcomes
    • Call for Abstracts Open for Submission

• Published best practice exemplars
Future Plans

• Methodology Development
  – Unit based acuity or risk adjustment
  – Needed to include mixed acuity units
    • Universal beds
    • Critical Access Hospitals
    • Hospital roll-up

• Indicator Expansion
  – Expand to other hospital units not currently eligible, e.g. assault in the ED

• Report Enhancement

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Lessons Learned

- Underestimation of level of staffing required to operate a national database
- Accurate data collection requires a high level of technical assistance
- Ongoing quality monitoring checks are essential
- Indicator development and implementation requires time and resources to ensure data validity and reliability
Lessons Learned

• Significance and importance of implementing and evaluating indicators at the unit level ~ where care occurs, can not be underestimated

• NDNQI is in state of continuous quality improvement

• Web systems require continuous monitoring and testing
Lessons Learned

- Database design, statistical programs, web data entry screens, and some indicators have a life span of about 3 years before needing review and revision.

- Hospital environments and operations change and we need to adapt to maintain the relevance of the data definitions and report design.

- New information technologies emerge and must be incorporated for efficiency and to maintain interoperability with participating hospitals.
Lessons Learned

- Collecting structure, process and outcome indicators provides a comprehensive means for evaluating the quality of nursing care and patient outcomes.
- There is good distribution and representation of all bed sizes in the database to provide meaningful comparisons at the unit level.
- It is very important to have a definition of a hospital to maintain data comparability and validity.
References


Contact Information

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– Visit the NDNQI Web-site at
  www.nursingquality.org