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

**Isis Montalvo, RN, MS, MBA**
American Nurses Association
Manager, Nursing Practice and Policy

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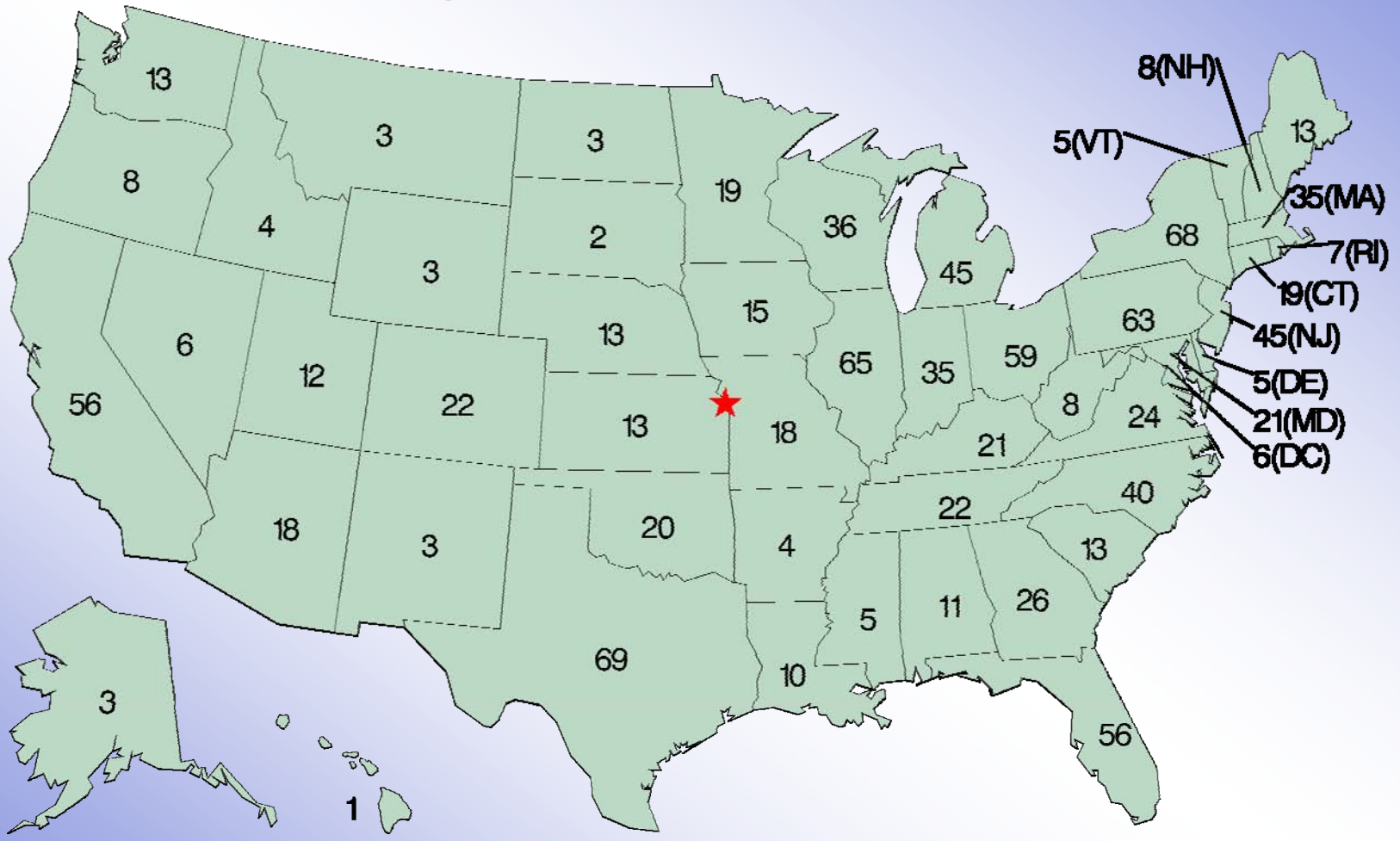
# History of NDNQI®

- 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

NDNQI®

# Hospital Sites - June 2007

## 1099 Hospitals in 50 States and District of Columbia




Updated 06/04/2007



NATIONAL DATABASE OF NURSING QUALITY INDICATORS

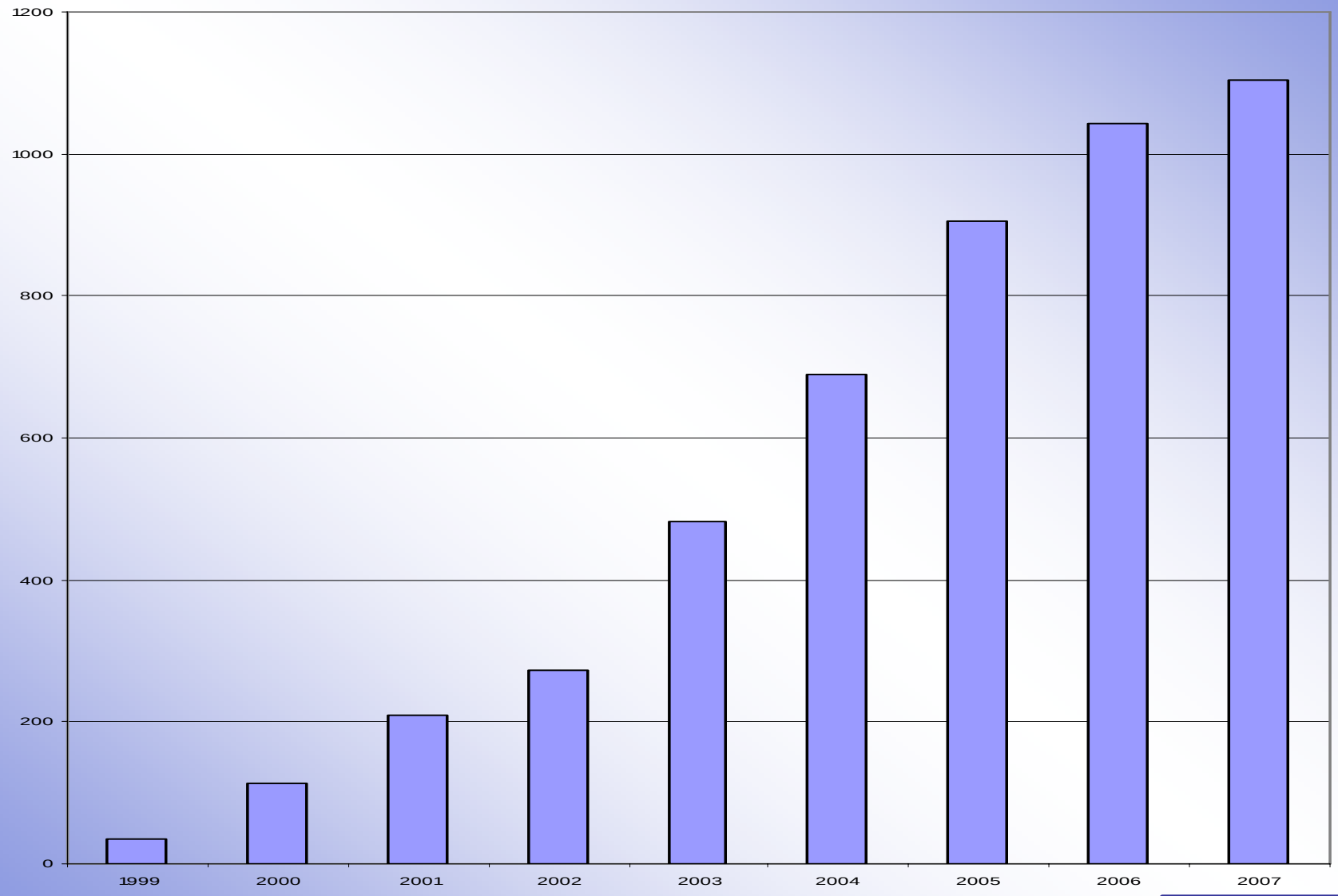
ANA AMERICAN NURSES ASSOCIATION

# Mission

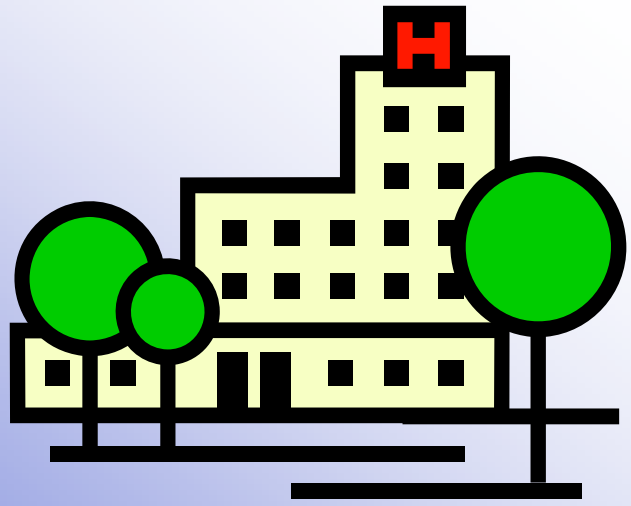
To aid the Registered Nurse in patient safety and quality improvement efforts by providing research-based national comparative data on nursing care and the relationship to patient outcomes.

NDNQI®

## NDNQI Growth - Participating Hospitals



# 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

# 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 NQF

- 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

# 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

# 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

[1] Hart, S., Bergquist, S., Gajewski, B. & Dunton, N. (2006) Reliability Testing of the National Database of Nursing Quality Indicators Pressure Ulcer Indicator. *Journal of Nursing Care Quality 21*(3), 256-265.

# 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

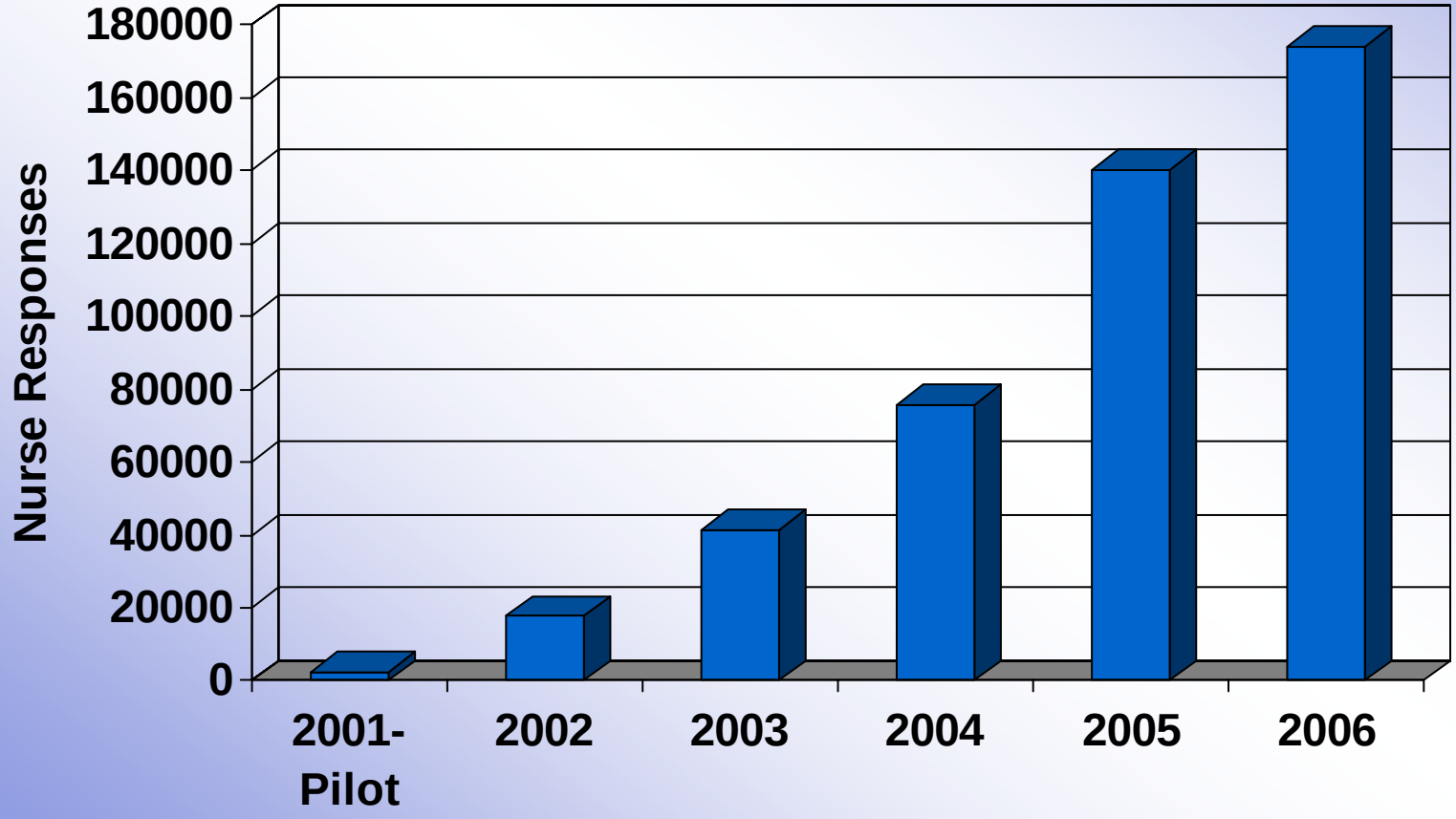
# National Comparison Data

***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 |
|---|---|---|---|---|---|




| Response Rates: | 55% | 62% | 63% | 64% | 64% |
|---|---|---|---|---|---|

# Number of Units Reporting

| | | | |
|---|---|---|---|
| • Adult Critical Care | 1606 | • Pediatric Critical Care | 272 |
| • Adult Step Down | 1036 | • Pediatric Step Down | 20 |
| • Adult Medical | 1279 | • Pediatric Medical | 76 |
| • Adult Surgical | 976 | • Pediatric Surgical | 21 |
| • Adult Medical/Surgical | 1676 | • Pediatric Med/Surg | 284 |
| • Adult Rehab | 515 | • Neonatal Critical Care | 272 |
| • Adult Psych | 306 | • Child/Adolescent Psych | 81 |
| • Geri Psych | 64 | • Other Psych | 48 |
| **ALL ADULT UNITS** | **7458** | **ALL PEDIATRIC UNITS** | **1074** |

# 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%*

# 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
    - http://www.nursingworld.org/quality/conference/
- 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

# 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.

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- Boyle, D.K., Miller, P.A., Gajewski, B.J., Hart, S.E., & Dunton, N. (2006) Unit Type Differences in RN Workgroup Job Satisfaction. *Western Journal of Nursing Research, 28*(6):622-640.
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# Contact Information

- Isis Montalvo
  - Manager, Nursing Practice & Policy
  - Isis.Montalvo@ana.org
  - 301-628-5047

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