

**Report on NDNQI Certification Research Studies**  
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**Phase I Study: A longitudinal analysis of nursing specialty certification by Magnet® status and patient unit type.**

**Publication:**

Boyle, D.K., Gajewski, B.J., Miller, P.A. (2012). A longitudinal analysis of nursing specialty certification by Magnet® status and patient unit type. *Journal of Nursing Administration*, 42, 567-573. doi: 10.1097/NNA.0b013e318274b581.

**Presentations:**

1. Boyle, D.K. (2011). *Certification Data Findings from the NDNQI® Research Project*. Fall American Board of Nursing Specialties Assembly, September 24, Chicago, IL.
2. Boyle, D.K. (2012). *Certification Trends and Patient Outcomes: Findings from NDNQI®*. AACN National Teaching Institute, May 21-24, Orlando, FL.
3. 2012 Symposium on *Longitudinal Analyses by NDNQI*, CANS, September 13-15, Washington, DC:
  - Boyle, D.K., & Gajewski, B.J., & Miller, P.A., A Longitudinal Analysis of Nursing Specialty Certification by Magnet Status and Patient Care Unit Type.
4. Boyle, D.K., Cramer, E., & Stobinski, J.X. (2014). *Think Tank: The Future of Research on the Value of Credentialing in Healthcare*. Pre-conference at the ICE Exchange, Fresh Ideas for the Credentialing Community, November 11, San Antonio, TX.

**Objective:** To examine nursing specialty certification trends by Magnet® status and unit type.

**Take away points:**

5. Across all unit types, those in Magnet hospitals had higher certification rates than those in non-Magnet hospitals.
6. Overall, for the years 2004 - 2010, unit specialty certification rates increased over time.
7. In general, unit types with the lowest average starting rates (rate in 2004) had the best rates of growth. For example, pediatric critical care and pediatric medical-surgical units had the lowest starting certification rates of all unit types (significantly lower than all except adult medical units) and demonstrated the most growth. The reverse pattern held in that psychiatric units started with the highest average certification rates among all unit types, demonstrated the least growth over time. Psychiatric unit certification rates in some Magnet groups declined.
8. In 2010 and regardless of Magnet status, pediatric units of all kinds, adult critical care, and adult rehabilitation had the highest certification rates, of those studied.
9. Medical, surgical, medical-surgical combined, and step-down units lagged behind other unit types in certification rates.

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**Phase II Study: The effect of longitudinal changes in RN specialty certification rates on total patient fall rates in acute care hospitals.**

**Publication:**

**Boyle, D.K.**, Cramer, E., Potter, C., & Staggs, V.S. (2015, June 6). The effect of longitudinal changes in RN specialty certification rates on total patient fall rates in acute care hospitals. *Nursing Research*. [Epub ahead of print].

[http://journals.lww.com/nursingresearchonline/Abstract/publishahead/Longitudinal\\_Association\\_of\\_Registered\\_Nurse.99872.aspx](http://journals.lww.com/nursingresearchonline/Abstract/publishahead/Longitudinal_Association_of_Registered_Nurse.99872.aspx). doi:10.1097/NNR.0000000000000107

**Presentations:**

1. Boyle, D.K., & Cramer, E. (2013). *The Effect of Longitudinal Changes in Percentage of Specialty Certified RNs on Patient Outcomes in Acute Care Hospitals*. Midwest Nursing Research Society 37<sup>th</sup> Annual Research Conference, March 7-10, Chicago.
2. Boyle, D.K. (2012). *NDNQI Nursing Certification Research Phase II Results*. Fall American Board of Nursing Specialties Assembly, October 6, Chicago, IL.
3. Boyle, D.K. (2012). *Certification Trends and Patient Outcomes: Findings from NDNQI®*. AACN National Teaching Institute, May 21-24, Orlando, FL.
4. Boyle, D.K., Cramer, E., & Stobinski, J.X. (2014). *Think Tank: The Future of Research on the Value of Credentialing in Healthcare*. Pre-conference at the ICE Exchange, Fresh Ideas for the Credentialing Community, November 11, San Antonio, TX.

**Objective:** To examine the relationship over time between changes in specialty certification rates and changes in total patient fall rates at the unit and hospital level.

**Take Away Points:**

- At the unit level, we found a small, statistically significant inverse relationship: on units where specialty certification rates increased over time, unit total fall rates tended to improve over time (decrease or increase at a slower rate, if fall rates on the respective unit were increasing).
- Our findings may suggest that increases in unit specialty certification rates are associated with improvements in unit total fall rates over time and are supportive of promoting specialty certification as a means of improving patient safety.
- Higher unit RN hours per patient day (RNHPPD), a higher percent of unit RNs with a BSN or higher, and a lower percent of nursing hours supplied by agency nurses were associated significantly with higher unit specialty certification rates at baseline. Only higher RNHPPD was associated with improvements over time in specialty certification rates. Lower baseline total fall rates were significantly associated with higher RNHPPD and lower non-RNHPPD.
- Varying levels of specificity about patient safety and quality improvement methods exist in specialty certification test plans.

**New Questions Raised:**

- Is specialty certification a skill level net of education and experience or as a proxy for education & experience (they are confounded)?
  - Is there a combination of education and certification that effect processes and outcomes?

- Example: BSN + Certification
- Does certification 'wear off' over time?
- Is there a critical prevalence of certified nurses (unit, workgroup, hospital, clinic) needed to make an impact?
- If all inpatient specialty certifications explicitly included patient safety tenets, quality improvement, and data monitoring content in tests plans, would results have been different?
- Is the 'invisible architecture' (factors such as organizational leadership, culture, and climate) a mediating variable between national nursing specialty certified nurses and patient outcomes?

**Notes:**

- We also did the same analyses with pressure ulcer prevalence and found nothing of interest to report or publish.
- There were not enough longitudinal data on health-care acquired infections to conduct a longitudinal analysis.

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**Additional analyses that were exploratory: The relationship between direct care RN specialty certification and patient outcomes in surgical units.**

**Publication:**

**Boyle, D.K.**, Cramer, E., Potter, C., Gatua, M., & Stobinski, J.X. (2014). The relationship between direct care RN specialty certification and patient outcomes in surgical units. *AORN Journal*, 100, 511-528. DOI: 10.1016/j.aorn.2014.04.018.

**Presentations:**

1. Boyle, D.K., Cramer, E., & Potter, C. (2014). *Effect of Peri-Operative Certified RNs on Nursing Sensitive Patient Outcomes in Respective Hospital Surgical Units*. Eighth Annual Nursing Quality Conference, February 5-7, Phoenix, AZ.
2. Boyle, D.K., Cramer, E., & Stobinski, J.X. (2014). *Think Tank: The Future of Research on the Value of Credentialing in Healthcare*. Pre-conference at the ICE Exchange, Fresh Ideas for the Credentialing Community, November 11, San Antonio, TX.

**Objective:** To explore the relationship between direct-care, specialty-certified nurses employed in perioperative units, surgical intensive care units (SICUs), and surgical units and nursing-sensitive patient outcomes in SICUs and surgical units.

**Take Away Points:**

- Lower rates of central-line associated bloodstream infections in SICUs were significantly associated with higher rates of CPAN (certified postanesthesia nurse) CNOR/CRNFA (certified nurse operating room/certified RN first assistant) certifications in perioperative units.
- Unexpectedly, higher rates of CNOR/CRNFA certification in perioperative units were associated with higher rates of hospital-acquired pressure ulcers and unit-acquired pressure ulcers.

**New Questions Raised:**

- Do few differences exist between the autonomy of specialty certified and non-certified nurses?
- Does autonomy mediate the relationship between specialty certification and outcomes?
- What framework and variables would allow better exploration of the relationship between CNOR/CRNFA and hospital-acquired pressure ulcers?

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**Additional reports produced:**

- Boyle, D.K., Oberhelman, F., Garrard, L., & Miller, P.A. (2011). *Demographic Characteristics Analysis of Direct Care Registered Nurses Responding to the NDNQI® Survey 2006-2010 by Certification Status*. Technical report to the American Board of Nursing Specialties.
- Boyle, D.K., Oberhelman, F., Garrard, L., & Miller, P.A. (2011). *Demographic Characteristics Analysis of Direct Care Registered Nurses Responding to the NDNQI® Survey 2006-2010 and Reporting Certification Status from the AACN Certification Corporation*. Technical report to the AACN Certification Corporation.
- Boyle, D.K., Oberhelman, F., Garrard, L., & Miller, P.A. (2011). *Demographic Characteristics Analysis of Direct Care Registered Nurses Responding to the NDNQI® Survey 2006-2010 and Reporting Certification Status from the American Board of Certification for Gastroenterology Nurses*. Technical report to the American Board of Certification for Gastroenterology Nurses.
- Boyle, D.K., Oberhelman, F., Garrard, L., & Miller, P.A. (2011). *Demographic Characteristics Analysis of Direct Care Registered Nurses Responding to the NDNQI® Survey 2006-2010 and Reporting Certification Status from the American Board of Neuroscience Nursing*. Technical report to the American Board of Neuroscience Nursing.
- Boyle, D.K., Oberhelman, F., Garrard, L., & Miller, P.A. (2011). *Demographic Characteristics Analysis of Direct Care Registered Nurses Responding to the NDNQI® Survey 2006-2010 and Reporting Certification Status from the American Board of Perianesthesia Nursing Certification*. Technical report to the American Board of Perianesthesia Nursing Certification.
- Boyle, D.K., Oberhelman, F., Garrard, L., & Miller, P.A. (2011). *Demographic Characteristics Analysis of Direct Care Registered Nurses Responding to the NDNQI® Survey 2006-2010 and Reporting Certification Status from the Board of Certification for Emergency Nursing*. Technical report to the Board of Certification for Emergency Nursing.
- Boyle, D.K., Oberhelman, F., Garrard, L., & Miller, P.A. (2011). *Demographic Characteristics Analysis of Direct Care Registered Nurses Responding to the NDNQI® Survey 2006-2010 and Reporting Certification Status from the Competency and Credentialing Institute*. Technical report to the Competency and Credentialing Institute.
- Boyle, D.K., Oberhelman, F., Garrard, L., & Miller, P.A. (2011). *Demographic Characteristics Analysis of Direct Care Registered Nurses Responding to the NDNQI® Survey 2006-2010 and Reporting Certification Status from the National Board on Certification and Recertification of Nurse Anesthetists*. Technical report to the National Board on Certification and Recertification of Nurse Anesthetists.
- Boyle, D.K., Oberhelman, F., Garrard, L., & Miller, P.A. (2011). *Demographic Characteristics Analysis of Direct Care Registered Nurses Responding to the NDNQI® Survey 2006-2010 and Reporting Certification Status from the Infusion Nurses Certification Corporation*. Technical report to the Infusion Nurses Certification Corporation.
- Boyle, D.K., Oberhelman, F., Garrard, L., & Miller, P.A. (2011). *Demographic Characteristics Analysis of Direct Care Registered Nurses Responding to the NDNQI® Survey 2006-2010 and Reporting Certification Status from the Medical-Surgical Nursing Certification Board*. Technical report to the Medical-Surgical Nursing Certification Board.

- Boyle, D.K., Oberhelman, F., Garrard, L., & Miller, P.A. (2011). *Demographic Characteristics Analysis of Direct Care Registered Nurses Responding to the NDNQI® Survey 2006-2010 and Reporting Certification Status from the National Board for Certification of Hospice and Palliative Nurses*. Technical report to the National Board for Certification of Hospice and Palliative Nurses.
- Boyle, D.K., Oberhelman, F., Garrard, L., & Miller, P.A. (2011). *Demographic Characteristics Analysis of Direct Care Registered Nurses Responding to the NDNQI® Survey 2006-2010 and Reporting Certification Status from the Oncology Nursing Certification Board*. Technical report to the Oncology Nursing Certification Board.
- Boyle, D.K., Oberhelman, F., Garrard, L., & Miller, P.A. (2011). *Demographic Characteristics Analysis of Direct Care Registered Nurses Responding to the NDNQI® Survey 2006-2010 and Reporting Certification Status from the Orthopaedic Nurses Certification Board*. Technical report to the Orthopaedic Nurses Certification Board.
- Boyle, D.K., Oberhelman, F., Garrard, L., & Miller, P.A. (2011). *Demographic Characteristics Analysis of Direct Care Registered Nurses Responding to the NDNQI® Survey 2006-2010 and Reporting Certification Status from the Pediatric Nursing Certification Board*. Technical report to the Pediatric Nursing Certification Board.
- Boyle, D.K., Oberhelman, F., Garrard, L., & Miller, P.A. (2011). *Demographic Characteristics Analysis of Direct Care Registered Nurses Responding to the NDNQI® Survey 2006-2010 and Reporting Certification Status from the Rehabilitation Nursing Certification Board*. Technical report to the Rehabilitation Nursing Certification Board.
- Boyle, D.K., Oberhelman, F., Garrard, L., & Miller, P.A. (2011). *Demographic Characteristics Analysis of Direct Care Registered Nurses Responding to the NDNQI® Survey 2006-2010 and Reporting Certification Status from the Wound, Ostomy, Continence Nursing Certification Board*. Technical report to the Wound, Ostomy, Continence Nursing Certification Board.