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National Network Study of Operational Failures in Frontline Nursing: *Small Troubles, Adaptive Responses (STAR-2)*

STAR-2

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Highlights

- STAR-2 Study
  - Background
  - Specific Aims
  - Laboratory
  - Results
- Next Steps

LABORATORY

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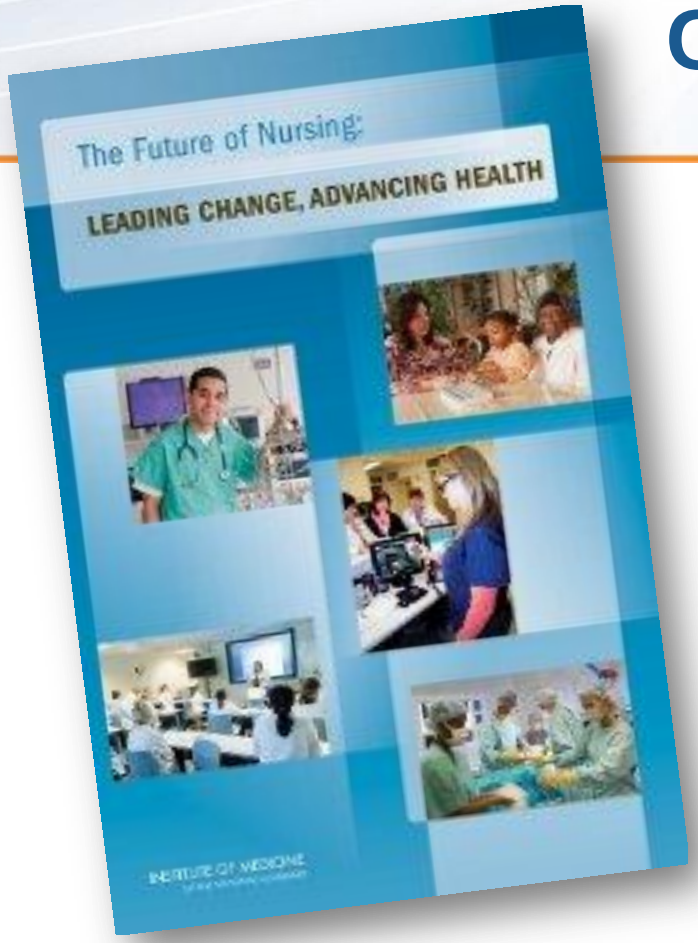
- ISRN Mission: *To advance the scientific foundation for quality improvement, safety and efficiency through transdisciplinary research addressing healthcare systems, patient-centeredness, and integration of evidence into practice.*
- Unique infrastructure for conducting improvement research—a *collaboratory for research*
- NINR/NIH-supported improvement infrastructure for a research network.

Catalysts



- Improving our work *is* our work.
- *Future of Nursing* calls for "*…nurses to lead and manage collaborative efforts with … other members of the health care team to conduct research and to redesign and improve practice environments and health systems.*" *(IOM, 2011)*
- Lead with evidence of 'what works'

Example of Missed Learning Opportunities

"We never told the pharmacy when we got a dose of medicine that was more than we requested. We just squirted out the extra because we figured they were busy, they had not intended to make the mistake, and they wouldn't do anything about it anyway."- Nurse Hosp #8

Tucker, 2008

Example of Missed Learning Opportunities

"…It was sad really because we weren't letting them have the information so they could fix their own problems."

– Nurse Hosp #8

Tucker, 2008

Study Background

- Failures occur about
  - one per hour per nurse on hospital units and
  - 95% of problems are managed through workarounds. (Observational, Tucker)
- Detection of first order operational failures provides opportunities to fix problems and contributes to organizational learning.
- Frontline engagement produces better solutions

Small Troubles, Adaptive Responses (STAR-2): Frontline Nurse Engagement in Quality Improvement

BACKGROUND

- In frontline nursing, workarounds are a response to first order operational failures exposing patients to errors and creating inefficiencies in care. (Hassmiller)
- Endemic shortages of nursing staff and difficult working conditions present substantial barriers on the path to improvement. (Tucker)

Experts

FEATURED RESEARCH

Featured Research: Addressing Systems Problems

Anita Tucker, DBA, associate professor, Harvard Business School, specializes in understanding the natural response of frontline providers to system breakdowns. She has found that nurses spend 7 percent of their day doing work-arounds, forcing them to stay later. "This represents a real loss in patient care activities they had wanted to do but didn't have time for," says Tucker.

"Go to the unit that wants to work on the problem and give them resources and time."

ANITA L. TUCKER, DBA, ASSOCIATE PROFESSOR, HARVARD BUSINESS SCHOOL

Manager attitudes may keep problems in place, says Tucker. "When the manager's message is 'Don't bring me problems. Bring me solutions,' managers won't hear about problems that employees can't solve themselves." For example, if nurses are not getting medications in the form they need, that's a problem that the pharmacy needs to address. But no one will know about it if the nurses just work around the problem.

On the other hand, Tucker says that in some ways, frontline providers can derive satisfaction and a sense of competence from their ability to work around problems that come up in a day's work, again leaving systemic problems in place.

Tucker offers insights into system improvement. Currently, to the detriment of system performance, she says, there is a tendency for each department to be measured and monitored as if it is its own system. Although this is easier than focusing on the whole system, it doesn't really work when you have system interdependencies.

Tucker argues that expanding improvement capabilities is crucial. "Go to the unit that wants to work on the problem and give them resources and time. Have people practice improvement, create a culture and mind-set that says, 'We know how to make change as part of the daily work rather than something done on top of all the other work.'"

In an institution committed to improvement, the pocket card network study could be especially useful in addressing system problems, Tucker says, because it can alert frontline employees to how their workdays are shaped by many small problems that keep them away from patients (see "Landmark Study," p. 1, for more). Tucker will present at the February 16 web event described in column 3.

Research Resources: Systems Change

To learn more about Anita Tucker's research, consult the following references:

Tucker, Anita L., and Amy C. Edmondson. 2003. Why hospitals don't learn from failures: Organizational and psychological dynamics that inhibit system change. *California Management Review* 45 (2): 1–18.

Tucker, Anita L. 2004. The impact of operational failures on hospital nurses and their patients. *Journal of Operations Management* 22 (2): 151–69.

Tucker, Anita L., Sara J. Singer, Jennifer E. Hayes, and Alyson Falwell. 2008. Front-line staff perspectives on opportunities for improving the safety and efficiency of hospital work systems. *Health Services Research* 43 (5): 1807–29.

RESOURCES

Winter 2011 • www.isrn.net

Web Events Update

Uniting Frontline and Leadership Capacities to Improve Patient Care
Wednesday, February 16, 2011 at 2:00 p.m. EST

Presenters will discuss how frontline clinicians and organizational leaders can

If you missed our ear… events, you can access them online as audio files or transcripts. Visit the ISRN web site for links.

For details, registration, and past events, visit the ISRN web site: www.isrn.net.

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"Go to the unit that wants to work on the problem and give them resources and time."

ANITA L. TUCKER, DBA, ASSOCIATE PROFESSOR, HARVARD BUSINESS SCHOOL

Network Study of Operational Failures

1. Detect

2. Eliminate

Aims of STAR-2

- Describe first-order operational failures (defects)
- Investigate relationships among
  - Detection of first-order operational failures
  - Organizational context, and
  - Outcomes related to quality improvement

Results will guide redesign to decrease defects

Specific Aims of STAR-2

1. Describe the type and frequency of first-order operational failures detected by frontline nurses on their clinical units.
2. Examine the association between first-order operational failures that are self-detected by nurses and those that are detected by non-participant-observers.
3. Explore the relations among frontline engagement (detection of operational defects and team vitality), work environment (culture of patient safety and excellence in work environment), and quality improvement outcomes (quality improvement activities, quality of care, and job satisfaction).

Research Approach

- Conduct in the ISRN “research laboratory”
- Multisite, cross-sectional, multivariate research
- 14 sites, 41 med/surg units, ~840 RNs
  - 4 Pediatric Hospitals
- Analyze data using descriptive, multivariate, and path analysis methods

Quantification of Variables

Study Variable	Measurement Approach-Research Instruments
Frequency and type of operational failures	STAR Pocket Card (Ferrer & Stevens, 2010)
Team collaboration	Team Vitality Instrument (Upieneks, et al, 2009)
Hospital staff opinions about patient safety issues, medical error, and event reporting	AHRQ Hospital Survey on Patient Safety Culture (HSOPS) (Sorra & Nieva, 2004)
Work environment	Practice Environment Scale of the Nursing Work Index (PES-NWI) (Lake, 2002)
Volume of QI activities	QI Action Scale (Adapted from Upieneks, et al, 2009)
Quality of care	Nurse Assessment of Quality (Aiken, Clarke, Sloane, 2002)
Overall job satisfaction	Visual Analog Scale (Schmalenberg & Kramer, 2008)

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- The Improvement Science Research Network (ISRN) is a national, virtual laboratory for healthcare QI research.

- The ISRN creates a robust research environment that brings together a network of academic-practice partners to collaborate on IS studies.

- This unique platform is designed to accelerate the development and dissemination of IS in a systems context across multiple hospitals.

- Using the ISRN Collaboratory, STAR-2 was designed to capture a national sample in order to obtain a larger database of operational failures and interacting systems-level variables.

- Fidelity of the protocol is assured through the ISRN's Coordinating Center.

- Using ISRN's unique infrastructure, STAR-2 is able to capture a large, national sample through multiple study sites that are associates in this virtual research network.

Protocol Implementation Kit

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Survey Packet

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Field Guide for Collaboration

Data Collection-Plan

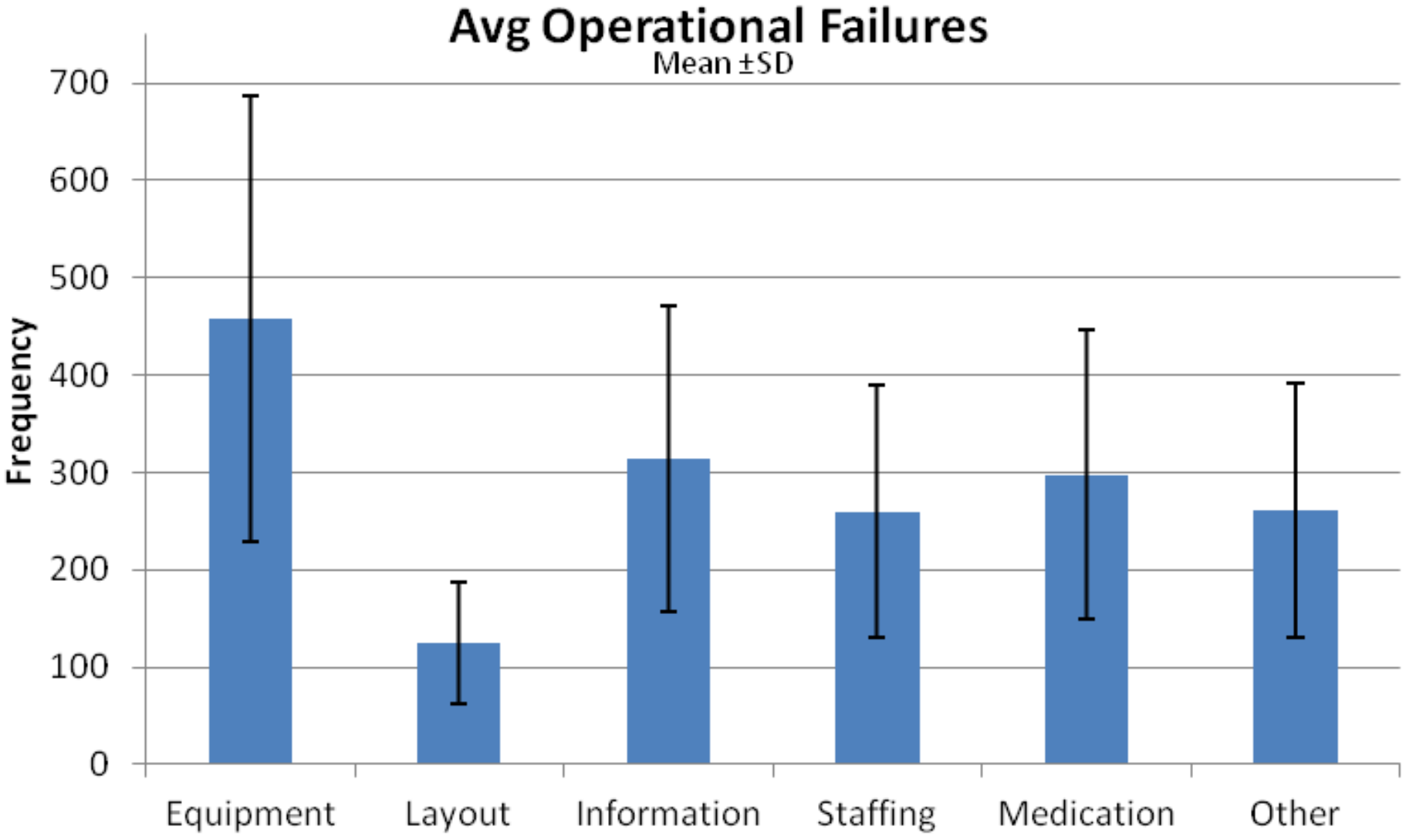
- Identical across all sites
- Supported though Coordinating Center
- Data aggregated via electronic database
- Collected 10 shifts over 20 days
- Analysis
  - Aggregate
  - Site-Specific report

Regulatory-IRB

- 14 Sites
  - UTHSCSA IRB
  - 13 Sites – Independent Review
  - 1 site deferred to UTHSCSA IRB
- Approvals
  - 12 Expedited (Category 7)
  - 2 Full Board
- Consent
  - 11 sites required documented consent
  - 3 documented consent not required

Results

- 14 hospitals completed
- 716 RNs engaged
  - 85% of enrollment for 14 sites
- 3,902pocket cards submitted
  - 5.53 cards per RN
- 24,014 operational failures reported
- 6,420 Equipment/Supplies –Most reported operational failure
- 4,396 Information/Communication- Second most operational reported failure
- 3,648 Other- Third most reported operational failure
- 6.25 failures per 12 hour shift


Avg Operational Failures
Mean ±SD
Frequency
700
600
500
400
300
200
100
0
Equipment
Layout
Information
Staffing
Medication
Other

Discussion

- Frequency of operational failures occurring in med-surg units
- Frontline engagement, context, and quality improvement
- Satisfaction Rating: ISRN infrastructure is effective for conducting multisite improvement research:
  - Enthusiasm for engagement in rigorous research
  - Broad national representation
  - Clinical relevance
  - Rapid deployment
  - Rapid completion
  - Scale up and spread

Acknowledgements

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- NIH/NINR Award Number RC2NR011946.
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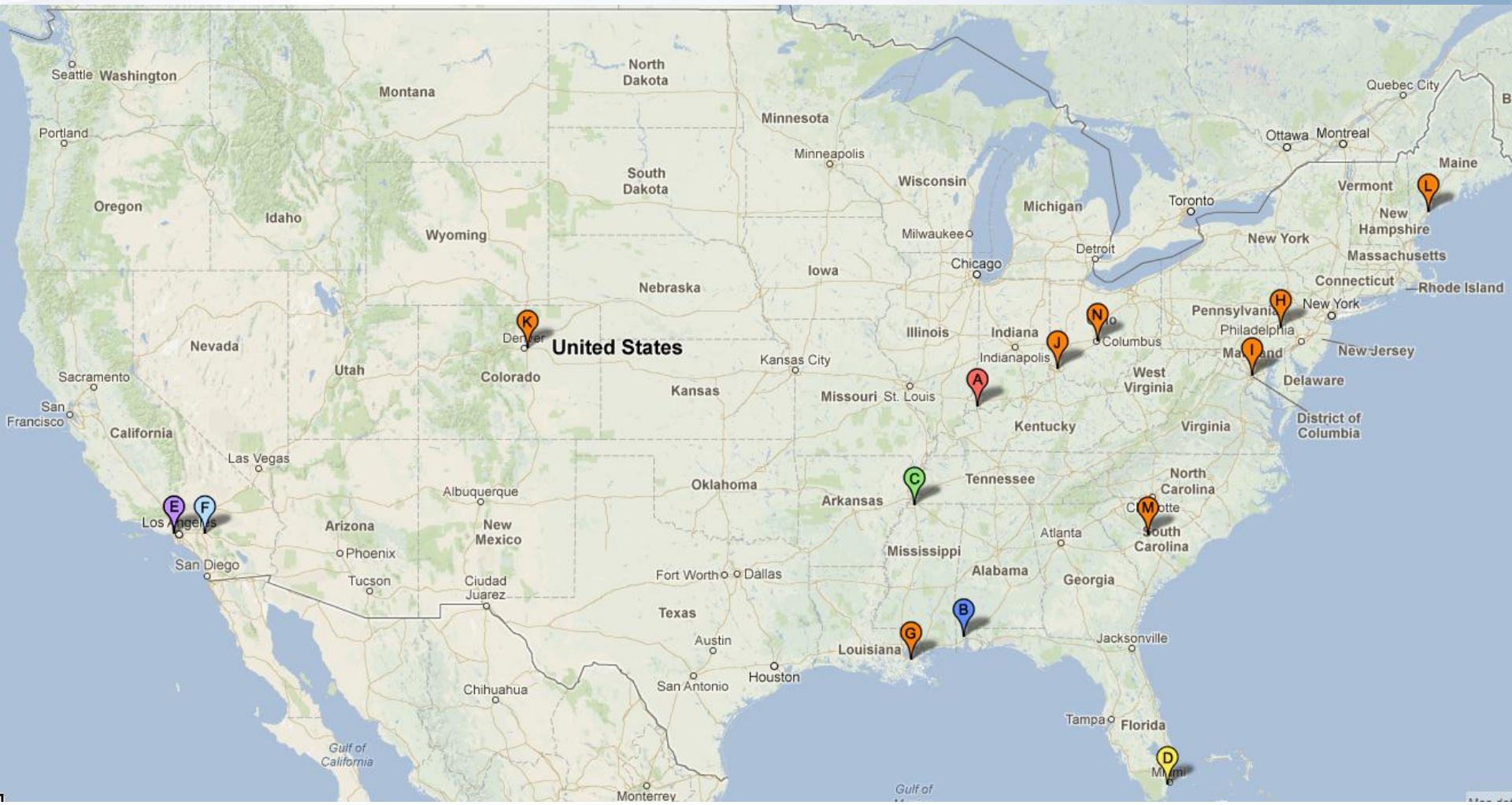
Map of STAR-2 Research Collaborative



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STAR-2 Research Collaborative

14 sites

Deaconess Hospital, Evansville, Indiana
Site PI: Ellen Wathen, PhD, RN-BC
Research Coordinator: Claire Bennett, RN

University South Alabama Medical Center, Mobile, Alabama
Site PI: Lisa Mestas, MSN, RN
Site PI: Linda Roussel, DSN, RN, NEA-BC
Research Coordinator: Ellen Buckner, DSN, RN, CEA
Research Coordinator: Valorie Dearmon, DNP, RN, NEA-BC

Baptist Memorial Hospital – DeSoto, Southaven, Mississippi
Site PI: Mary Townsend-Gervis, BSN, MSN
Research Coordinator: Lauren Yates, RN
Research Coordinator: Diana Baker, Ed.D., APRN-BC, NEA-BC

Huntington Memorial Hospital, Pasadena, California
Site PI: Linda Searle Leach, RN, PhD
Research Coordinator: LuLu Rosales, RN, MSN

Loma Linda University Medical Center, Loma Linda, California
Site PI: Ellen D'Errico, PhD, RN NEA-BC
Research Coordinator: Patricia Radovich, MS

Ochsner Medical Center, New Orleans, Louisiana
Site PI: Karen Rice, DNS, APRN, ACNS-BC, ANP
Research Coordinator: Rachael Ballas
Research Coordinator: Shelley Thibeau

The Reading Hospital and Medical Center, West Reading, Pennsylvania
Site PI: Vicki Smith, MS, RN
Research Coordinator: Debra Stavarski, MSN, RN

Palmetto Health Richland, Columbia, South Carolina
Site PI: Janice Withycombe, PhD, RN
Janice.Withycombe@PalmettoHealth.org)
Research Coordinator: Marie Frick
Research Coordinator: Heather Homolek

Colorado Children's Hospital, Aurora, Colorado
Site PI: Anne Marie Kotzer, PhD, RN, CPN
Research Coordinator: June Bothwell

Children's National Medical Center, Washington, D.C.
Site PI: Eileen Engh, MSN, RN-BC, CPN
Research Coordinator: Raven Wiggins
Research Coordinator: Debbie Freiburg
Research Coordinator: Amy Burke

Nationwide Children's Hospital, Columbus, Ohio
Site PI: Nancy Ryan Wegner
Research Coordinator: Carol Risch

Maine Medical Center, Portland, Maine
Site PI: Marthe Riehle, RN, MSN, MBA, NEA-BC
Research Coordinator: Denise Dende

Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio
Site PI: Heather Tubbs-Cooley, PhD, RN
Research Coordinator: Carolyn Smith, MSN, RN

Doctor's Hospital - Baptist Health South Florida, Miami, Florida
Site PI: Carolyn Lindgren, PhD, RN
Research Coordinator: Ignacio Danta

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GOAL: to turn research into action, improving health care and patient outcomes through evidence-based practice, research, and education.

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