

**Cohort 2 Grantee Projects**

**Translating Fall Risk Status into Interventions to Prevent Patient Falls**

*Brigham and Women's Hospital*

**Quality of Pediatric Nursing Care from the Children's Perspective**

*Columbus Children's Hospital*

**Nursing-Pharmacy Collaboration on Medication Reconciliation: A Novel Approach to Information Management**

*Johns Hopkins University*

**A Quality & Cost Analysis of Nurse Practice Predictors of Readiness for Hospital Discharge and Post-Discharge Outcomes**

*Marquette University*

**Linking Processes of Nursing Care and Patient Safety Outcomes: An Analysis of the Cause and Effect of Safe Practice Implementation**

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**Examining the Impact of Nursing Structures and Processes on Medication Errors**

*Rutgers University*

**Nursing Care Quality in Acute Care Hospitals: New Linkages to Patient Outcomes**

*University of California*

**Impact of System-Centered Factors, and Processes of Nursing Care on Fall Prevalence and Injuries from Falls**

*University of Iowa*

**Rural Hospital Quality Collaborative on Evidence-Based Nursing**

*University of Maryland*

**Nursing Workforce Impact on Performance Improvement in the CMS/Premier Hospital Quality Incentive Demonstration Project [HQID]**

*University of Minnesota*

**Acuity-adjusted Staffing, Nurse Practice Environments and NICU Outcomes**

*University of Pennsylvania*

**Quality and Cost Outcomes of Hospital Supplemental Nurse Staffing  
Nurse Staffing**

*University of Rochester*

**Full Proposal Executive Summaries**  
**Interdisciplinary Nursing Quality Research Initiative (INQRI) – Year 2**

**Application ID** 98454  
**Applicant Organization** Brigham & Woman's Hospital

**Project Title** Translating Fall Risk Status into Interventions to Prevent Patient Falls

**Funding Requested** \$300000

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**Executive Summary**

Title: Translating Fall Risk Status into Interventions to Prevent Patient Falls Topic Area: Identify linkages between processes of nursing care and the quality of patient outcomes. Brief description: The goal of this project is to prevent patient falls by translating an individual patient's fall risk assessment into a decision support intervention that communicates fall risk status and creates a tailored evidence-based plan of care that is accessible to interdisciplinary team members, paraprofessionals, patients and family members to prevent falls. The incidence of patient falls and related injuries are publicly reported and employed as standard metrics of nursing care quality. Patient falls are serious problems in hospitals. Simply being hospitalized places patients at risk for falls. The most rigorous research to date has been in the area of fall risk assessment and risk factors are well established. This project is significant because it will fill gaps in existing knowledge by establishing links between nursing fall risk assessment, risk communication and tailored interventions to prevent falls. Research methods: Qualitative methods will be used to identify and describe current barriers, facilitators, and methods to fall risk communication between interdisciplinary team members, paraprofessionals, patients and family members. The qualitative data will provide the foundation for construction of a fall prevention toolkit prototype that will be tested on high-risk medical units at four hospitals. One high-risk medical unit at each hospital will be randomly assigned to receive the fall prevention prototype and one will receive usual care as it relates to fall prevention. Measures of key outcomes: This project employs two of the eight National Quality Forum standardized patient sensitive outcome measures and will identify the extent that nursing personnel in acute care hospitals contribute to reducing patient falls and falls with injury. Data analytic strategy: A cluster randomization design will be employed for analysis whereby the intervention is randomized on the unit level within hospitals, and the outcome measured at the patient level. Evaluation methods leverage what is known from earlier studies and overcome challenges and limitations of published fall prevention research.

**Full Proposal Executive Summaries**  
**Interdisciplinary Nursing Quality Research Initiative (INQRI) – Year 2**

**Application ID** 101701  
**Applicant Organization** Columbus Children's Hospital

**Project Title** Quality of Pediatric Nursing Care from the Children's Perspective

**Funding Requested** \$299779

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**Executive Summary**

Quality of Pediatric Nursing Care from the Children's Perspective Traditionally, parent satisfaction is the metric for measuring quality of pediatric nursing care regardless of the children's age, while children's perceptions of their own hospitalization experience are undervalued. In response to the Robert Wood Johnson Foundation Interdisciplinary Nursing Quality Research Initiative, this interdisciplinary research team of a pediatric nurse (PI, Nancy Ryan-Wenger) and two child psychologists (Co-I, William Gardner, Consultant, James Varni) proposes to identify hospitalized children's perceptions of the linkages between quality of nursing care processes and quality of outcomes. This descriptive, cross-sectional study of 420 randomly selected hospitalized children, ages 6 to 21 years, aims to identify the nursing care processes and outcomes that matter most to children during their hospitalization, and estimate the extent to which demographic disparities exist in the quality of their care and outcomes. A structured interview will be used to elicit the technical, personal, interpersonal and participative nursing care processes that children evaluate as "pretty good" or "needs improvement," followed by questions about how each process makes them feel (outcomes). Children's outcome statements will be sorted into such categories as positive or negative levels of pain, comfort, well-being, trust, safety, and respect. PDAs will be used to collect data on children's current levels of pain, fatigue, emotional distress and state anxiety. Specific process-outcome pairs will be listed in order of frequency to reveal the most common linkages. Chi-square and ANOVA statistics will be used to reveal significant demographic disparities in children's perceptions of the quality of their care and outcomes. The results of this study will have value in themselves, but will also provide valid content for new age-appropriate patient satisfaction scales for hospitalized children.

**Full Proposal Executive Summaries**  
**Interdisciplinary Nursing Quality Research Initiative (INQRI) – Year 2**

**Application ID** 100289  
**Applicant Organization** Johns Hopkins Hospital

**Project Title** Nursing-Pharmacy Collaboration on Medication Reconciliation:  
A Novel Approach to Information Management

**Funding Requested** \$300000

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**Executive Summary**

Nursing-Pharmacy Collaboration on Medication Reconciliation: A Novel Approach to Information Management Communication deficits across the care continuum place patients at serious risk for harm (Kripalani et al., 2007). Medication reconciliation examines medication use at transition points. A reconciliation failure is an unintentional prescribing error uncovered during the reconciliation process. The proposed project addresses the impact of nursing care processes, nursing workforce and environment, and nurse-led innovation on patient care quality in acute care settings. It seeks to answer the question of how to economically support direct care providers in medication reconciliation to ensure safe transition to and from hospital and community. Goals are to evaluate effectiveness of a nurse-pharmacist clinical information coordination team in improving drug information management on admission and discharge, quantify potential harm due to reconciliation failures, and determine cost-benefit related to averted harm. A quasi-experimental design will be used to evaluate team efficacy in preventing potential adverse events. The nine month study has two arms. Patients receive standard of care in the control arm. In the intervention arm, study nurses obtain home medication lists from consenting patients and use triage criteria to involve the pharmacist in list completion; linkages are created with primary providers and local pharmacies; and team-facilitated medication reconciliation occurs within 48 hours of admission and at discharge. Key outcomes include reconciliation failures, estimates of potential harm associated with these errors, profile of patients at risk for harm, and net economic benefit of the intervention. We will use 95% exact binomial confidence intervals to estimate error rate uncertainty, regression analysis to identify patient traits associated with error, and a probabilistic sensitivity analysis to describe certainty of a positive net economic benefit

**Full Proposal Executive Summaries**  
**Interdisciplinary Nursing Quality Research Initiative (INQRI) – Year 2**

**Application ID** 98321  
**Applicant Organization** Marquette University

**Project Title** A Quality And Cost Analysis Of Nurse Practice Predictors Of Readiness For Hospital Discharge And Post-Discharge Outcomes

**Funding Requested** \$298432

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**Executive Summary**

A QUALITY AND COST ANALYSIS OF NURSE PRACTICE PREDICTORS OF READINESS FOR HOSPITAL DISCHARGE AND POST-DISCHARGE OUTCOMES The study responds to Topic 1 of the INQRI Call for Proposals. This proposed study will break new ground in nursing outcomes research by linking the unit-level nurse practice environment (NPE) with care process at the patient level and patient outcomes at discharge and post-hospitalization. The purposes of the study are to: (1) examine direct and indirect causal relationships between NPE structure, the discharge teaching process, readiness for hospital discharge, and post-discharge readmission and emergency department (ED) utilization; (2) develop a model for estimating and optimizing cost and benefits of modifying the NPE to impact discharge teaching, patient readiness for discharge, and post-discharge utilization; (3) refine nursing-sensitive quality measures of the care process of discharge teaching and the outcome of readiness for hospital discharge. A nested multi-level design will be used to test, in sequence, the relationships between predictor and outcome variables. The sample will consist of 2024 patients randomly selected from 16 adult medical-surgical units in 4 hospitals. Outcome measures include the patient-reported Readiness for Hospital Discharge Scale and the occurrence of patient readmission and ED visits in the first 30 days post-discharge, obtained from hospital databases. Unit-level NPE predictor variables will be extracted from administrative databases. The nurse process predictor will be obtained by patient report on the Quality of Discharge Teaching Scale. Sequential regression equations that include a comprehensive list of control variables will be used to evaluate the unique contribution of nursing structure and process to patient outcomes. Cost-benefit modeling of modifications to the NPE to optimize outcomes will generate practice and policy recommendations for translation of findings to the practice environment.

**Full Proposal Executive Summaries**  
**Interdisciplinary Nursing Quality Research Initiative (INQRI) – Year 2**

**Application ID** 101323  
**Applicant Organization** Medical University of South Carolina

**Project Title** Linking Processes of Nursing Care and Patient Safety Outcomes: An Analysis of the Cause and Effect of Safe Practice Implementation

**Funding Requested** \$299789

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**Executive Summary**

Linking Processes of Nursing Care and Patient Safety Outcomes: An Analysis of the Cause and Effect of Safe Practice Implementation. We propose to examine how adoption of National Quality Forum (NQF) safe practices affects nursing sensitive patient safety outcomes, and examine the barriers to adoption of these practices. The NQF safe practices are designed to increase patient safety by improving clinical processes and the hospital's patient safety culture and environment. We take a step beyond existing literature, which mostly correlates nurse staffing ratios and outcomes, and propose to test whether the implementation of safe practices leads to more effective use of nurses, and whether this leads to better performance on patient safety outcomes. Our methods are designed to yield causal inferences using a dynamic panel data model where we treat implementation of safe practices as endogenous to patient safety outcomes. We will test whether such implementations cause improvements in patient safety. The proposed project covers two topic areas specified in the Round 2 INQRI CFP. First, we identify linkages between processes of nursing care and patient safety outcomes (Topic Area 1). Second, we will study and assess a hospital patient safety reporting initiative (Topic Area 2) implemented by The Leapfrog Group. To our knowledge, no large nationally representative study empirically connects hospitals' activities related to safe practices to patient safety outcomes. Our research will provide valuable information to a wide range of stakeholders, including hospitals, nurses and payers, who are committed to improving patient safety. We have also assembled an advisory board that includes representatives from the American Organization of Nurse Executives; the American Hospital Association; the Leapfrog Group and the South Carolina Hospital Association. These advisory board members are in a unique position to help us disseminate our research.

**Full Proposal Executive Summaries**  
**Interdisciplinary Nursing Quality Research Initiative (INQRI) – Year 2**

**Application ID** 98343  
**Applicant Organization** Rutgers University

**Project Title** Examining the Impact of Nursing Structures and Processes on Medication Errors

**Funding Requested** \$299989

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**Executive Summary**

Examining the Impact of Nursing Structures and Processes on Medication Errors Medication errors that are not intercepted and, hence, reach the patient are the leading cause of adverse events in hospitals. This nurse-led, interdisciplinary study has been designed to determine linkages between processes of nursing care and the quality of patient outcomes by disentangling the effects of nursing structures and care processes on non-intercepted medication errors in acute care hospitals. Qualitative methods will elucidate nursing processes that prevent and intercept medication errors, and quantitative techniques will determine the effects of (1) nursing care processes, (2) structures such as nurse staffing, skill mix, practice environment traits and (3) medication safety initiatives on the frequency of non-intercepted medication errors. The economic impact of non-intercepted medication errors will also be determined to initiate the business case for evidence-based recommendations. Responses to tested measures of care processes and structures, endorsed by the National Quality Forum, will be collected from 50% of nurses on the 100 medical-surgical units of 17 participating hospitals, as well as through administrative data, pharmacist surveys, and incident reports. Data, aggregated to the unit level, will be subjected to hierarchical linear modeling to determine effects of variables on medication error rates. Matching case-control with propensity scoring and the Oaxaca decomposition method will be used in the cost analysis. Findings will be publicized in Press Conferences attended by legislators and stakeholders. Leaders from participating hospitals will assist to translate findings into a published compendium of best practices for medication error reduction. The compendium will be distributed at a national conference hosted by local stakeholders and attended by representatives from national healthcare organizations, consumer groups, and nursing unions.

**Full Proposal Executive Summaries**  
**Interdisciplinary Nursing Quality Research Initiative (INQRI) – Year 2**

**Application ID** 100462  
**Applicant Organization** The Regents of the University of California

**Project Title** Nursing Care Quality in Acute Care Hospitals: New Linkages to Patient Outcomes

**Funding Requested** \$300000

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**Executive Summary**

Nursing Care Quality in Acute Care Hospitals: New Linkages to Patient Outcomes The recent availability of additional measurement tools and improvements in some pre-existing performance indicators for California hospitals may allow us to understand the link between nursing inputs and patient care quality better than has been possible previously. This may stimulate public reporting (PR) and pay-for-performance (PFP) targeting nursing measures. The purpose of this study is to explore the relationships between nursing inputs and: - Nursing sensitive JCAHO process measures; - Patient satisfaction using the unique, but largely generalizable California HCAHPS +9; - Complications identified from administrative data when these are measured using the condition present at admission (CPAA) variable (including FTR); - The prevalence of hospital-acquired pressure ulcers (HAPU) - Overall nursing performance as measured by composite indicators comprising patient perceptions of care, process measures, and other selected outcomes of care such as complication rates. This descriptive study will use data from over 160 hospitals in California, using structural measures of nursing inputs as independent variables, and process and outcome measures as dependent variables. Data for the complications and FTR measures will include new condition present at admission data. The data for all questions will be analyzed using hierarchical modeling and factor analysis will be used for composite measure development. This work will inform all major stakeholders within the healthcare community (consumers, purchasers, health plans, hospitals and policy makers) and increase focus on measures of nursing care quality and their usefulness in public reporting and P for P initiatives. In addition to the usual academic channels, results of the study will be disseminated through an established public reporting format in California run by the proposed research team, and hence will be implemented immediately.

**Full Proposal Executive Summaries**  
**Interdisciplinary Nursing Quality Research Initiative (INQRI) – Year 2**

**Application ID** 101883  
**Applicant Organization** University of Iowa

**Project Title** Impact of System-Centered Factors, and Processes of Nursing Care on Fall Prevalence and Injuries from Falls

**Funding Requested** \$300000

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**Executive Summary**

Impact of System-Centered Factors, and Processes of Nursing Care on Fall Prevalence and Injuries from Falls The impact of nursing care in hospitals is largely invisible. Measures of nursing care processes are not standardized and thus hinder knowledge development of nursing contributions to quality patient outcomes. The study purpose is to investigate linkages among two NQF patient-centered outcome measures (falls prevalence; injury from falls), NQF system-centered measures (skill mix, nursing care hours per patient day/HPPDs, voluntary turnover, PES-NWI), and processes of care to prevent falls. The study addresses item 1 in the RWJ CFP, "identify the linkages between processes of nursing care and the quality of patient outcomes." A prospective repeated measures design using a participatory partnership research approach is planned to achieve the following aims 1) Examine the relationship of NQF system-centered factors (skill mix, HPPDs, voluntary turnover, PES-NWI), and hospital structural factors (size, RN vacancy rate) on fall prevalence and injury from falls over 18 months; 2) Examine the unique contribution of fall prevention processes of care (e.g. fall risk assessment) and hospital structural factors specific for fall prevention (e.g. use of an interdisciplinary fall prevention team) on fall prevalence and injuries from falls at 3 points in time over 18 months.; and 3) Describe the relationship between level of professional nursing practice and 1) fall prevalence and injury from falls, and 2) adoption of evidence-based practices for fall prevention. Sites for this study are 190 patient care units from 45 hospitals in the U.S. that are members of a National Nursing Practice Network. Data analysis will be conducted using the Statistical Analysis System (SAS/STAT) and Hierarchical Linear and Nonlinear Modeling (HLM 6.1). A national advisory panel will provide recommendations for dissemination of findings to impact public policy formulation.

**Full Proposal Executive Summaries**  
**Interdisciplinary Nursing Quality Research Initiative (INQRI) – Year 2**

**Application ID** 97922  
**Applicant Organization** Johns Hopkins University

**Project Title** Rural Hospital Quality Collaborative on Evidence-Based Nursing

**Funding Requested** \$299827

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**Executive Summary**

Rural Hospital Quality Collaborative on Evidence-Based Nursing This study addresses the linkages between processes of nursing care and quality of patient outcomes, and identifies facilitators and barriers to successful adoption of research findings for improving nursing care in rural hospitals. The purpose is to: 1) conduct a phased randomized controlled trial to evaluate the effect of a rural hospital collaborative on heart failure (HF) patient care at 6 and 12 months; 2) identify hospital and nursing characteristics that are associated with improvements in HF patient care at 6 and 12 months; and 3) evaluate the cost effectiveness of a collaborative approach to improve HF patient care for rural hospitals. Using a phased randomized controlled trial design, 30 rural hospitals will be assigned to an experimental or control group (with delayed intervention) to participate in a quality collaborative implementing an evidence-based HF toolkit. Data to be collected includes: 1) secondary data quarterly (compliance with HF patient care core measures, nursing skill mix, nursing care hours per patient day, voluntary nursing turnover and readmission of HF patients within 30 days); and 2) survey data [from site coordinators (monthly during intervention-Team Check-up Tool), nurses (baseline, 6, and 12 months after intervention-Practice Environment Scale, Smoking Cessation Counseling Scale), the multidisciplinary implementation team (once after intervention-Team Effectiveness Survey) and from patients (for 12 months after intervention-HF patient intent to quit smoking)]. Analysis of outcomes include changes from pre to post-intervention period, comparison of changes between the control group and intervention group, as well as within hospital changes over time using t-tests, regression models, and longitudinal data analysis. A focus group will capture major barriers encountered and suggestions for future collaborative initiatives.

**Full Proposal Executive Summaries**  
**Interdisciplinary Nursing Quality Research Initiative (INQRI) – Year 2**

**Application ID** 101217  
**Applicant Organization** Regents of the University of Minnesota

**Project Title** Nursing Workforce Impact on Performance Improvement in the CMS/Premier Hospital Quality Incentive Demonstration Project [HQID]

**Funding Requested** \$299986

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**Executive Summary**

Nursing Workforce Impact on Performance Improvement in the CMS/Premier Hospital Quality Incentive Demonstration Project (HQID) The purpose of this project is to examine the impact of nurse staffing and nurse work environment on hospital performance improvement in the CMS/Premier Inc. Hospital Quality Incentive Demonstration (HQID) project. The project specifically addresses CFP Topic Area 2A which has a focus on identifying nurse contributions to hospital performance that is rewarded by pay-for-performance initiatives. HQID is the first CMS demonstration on the impact of hospital pay-for-performance. Our collaboration with Premier Inc. will allow us to collect detailed information on nurse staffing and the nurse work environment from hospitals participating in HQID. This information will be collected using an appropriate subset of items from the NQF-endorsed consensus standards for nursing sensitive care. We will use hospital performance measures generated for CMS from the HQID project with the main quality metrics being medical condition-specific composite quality scores. Our modeling and data analytic approach uses non-linear multivariate regression techniques to address a series of research questions on the impact of the nursing workforce on hospital performance improvement in HQID. The project is very timely for affecting policy development/implementation since the Deficit Reduction Act of 2005 directs the Secretary of Health and Human Services to implement a nationwide value-based purchasing program for all PPS hospitals beginning in fiscal year 2009.

**Full Proposal Executive Summaries**  
**Interdisciplinary Nursing Quality Research Initiative (INQRI) – Year 2**

**Application ID** 100276  
**Applicant Organization** University of Pennsylvania

**Project Title** Acuity-adjusted Staffing, Nurse Practice Environments and NICU Outcomes

**Funding Requested** \$299685

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**Executive Summary**

Acuity-adjusted Staffing, Nurse Practice Environments and NICU Outcomes This investigator-initiated proposal aims to measure acuity-adjusted nurse staffing levels and nursing practice environments in the NICU and to study their effects on very low birth weight infant mortality, morbidity, failure-to-rescue and length of stay. VLBW infants are among the highest-risk patient populations. These infants are treated in NICUs where they are closely monitored and receive life support measures and intensive interventions. While they account for only 1% of births, VLBW infants account for half of infant deaths each year. VLBW infants suffer from common morbidities: nosocomial infection, chronic lung disease and intraventricular hemorrhage (IVH). These morbidities increase the risks for death, long term disability, and increase the duration and cost of hospitalization. Large variations in outcomes exist across NICUs that cannot be explained by patient or NICU differences. Since NICU cases are among the most nurse-intensive hospitalizations, nursing holds promise for explaining the variations and for improving the outcomes of these high-risk infants. This observational study will be conducted in 50 NICUs that are members of the Vermont Oxford Network, a voluntary, collaborative network that contains over half of the NICUs in the U.S. We propose to collect nurse survey data and to match those data to abstracted infant medical record data. Nurse staffing and infant acuity data will be used to estimate acuity weights in regression models. Measures of the nursing practice environment will be aggregated to the nursing unit level from nurse survey responses. Six outcomes will be measured at the infant level: death within 28 days, nosocomial infection, chronic lung disease, IVH, failure-to-rescue and length of stay. We will use random effects logit models and OLS robust regression models to estimate the effects of nursing factors on infant outcomes.

**Full Proposal Executive Summaries**  
**Interdisciplinary Nursing Quality Research Initiative (INQRI) – Year 2**

**Application ID** 98520  
**Applicant Organization** University of Rochester

**Project Title** Quality and Cost Outcomes of Hospital Supplemental Nurse Staffing

**Funding Requested** \$299998

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**Executive Summary**

Quality and Cost Outcomes of Hospital Supplemental Nurse Staffing The purpose of this project is to understand the use of supplemental registered nurses (SRNs) by hospitals and its impact on the quality of care and cost. This is an investigator-initiated topic, which will ultimately address Goal I of the INQRI program. Specific Aims are to: (1) describe why and how the hospital uses SRNs; (2) examine the relationship between use of SRNs and patient outcomes (patient overall satisfaction, patient satisfaction with nursing care, inpatient mortality, medication errors, falls, and pressure ulcers); (3) examine the relationship between use of SRNs and voluntary nurse turnover; and (4) examine the economic consequences of using SRNs. The research design integrates qualitative methods (focus groups, interview, and document review) and quantitative methods (a retrospective analysis of longitudinal hospital administrative data collected from 19 adult medical, surgical, and ICU units between 2001 and 2006) in a large urban teaching hospital. Patient overall satisfaction and satisfaction with nursing care are measured by an inpatient satisfaction survey. Inpatient mortality will be calculated as the number of inpatient deaths divided by number of admissions. Medication error rate will be calculated as the number of medication errors times 1000 divided by number of inpatient days. We will use the NQF endorsed core measures for falls, pressure ulcers, and voluntary nurse turnover. Data analysis includes content analysis of qualitative data and multilevel regression analysis of the effect of SRNs on patient and nurse outcomes. If analysis for Aims 2 and 3 demonstrate a health benefit of using SRNs on a specific outcome, a cost-effective analysis will be conducted to evaluate the cost per unit of improvement in that health effect; if analyses demonstrate no association between the use of SRNs and patient and nurse outcomes, a cost minimization analysis will be performed.