

Cohort 1 Grantee Projects

Developing and Testing Nursing Quality Measures with Consumers and Patients

Baruch College

Nurse-Sensitive Measurement of Hospital Care Coordination

Emory University

Linking Blood Stream Infection Rates to Intensive Care

Johns Hopkins University

The Nursing Ambulatory to Hospital Transitions (NAHT) Program

Massachusetts General Hospital

Lessons Learned from State Roll-Out of the NQF Nursing Sensitive Measures

Massachusetts Hospital Research and Education Association, Inc.

Improving the NQF Failure to Rescue Metric

Mayo Clinic

Quality Care on Acute Inpatient Units

University of California

Validating NQF Nursing-Sensitive Performance Measures

University of Pennsylvania

Measuring Nursing Care Quality Related to Pain Management

University of Utah

Full Proposal Executive Summaries
The Interdisciplinary Nursing Quality Research Initiative (INQRI)

Project Title	Developing and testing nursing quality measures with consumers and patients
Project Organization	Baruch College
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Executive Summary

The title of the proposed project is "Developing and testing nursing quality measures with consumers and patients." The project is responsive to the CFP, and has three aims: (1) To learn how members of the public respond to the NQF-15 and to a well developed pain management measure; (2) To identify observable actions and processes through which nursing services influence the quality of coordination of patient care, that could be translated into nursing sensitive quality measures; and (3) To learn how recent patients view the role of nursing services in care coordination and respond to the emergent nursing sensitive quality indicators developed under Aim Two. This is a descriptive study, using qualitative methods. Aim One will be pursued through nine focus groups in three metropolitan areas with a diverse pool of people hospitalized in the last three years. The outcome will be an assessment of whether the NQF 15 and a pain management measure would be considered important, relevant to overall hospital quality, and understandable by the public. Aim Two will be use in-depth literature review; consultation with senior hospital nursing leaders; and in-depth interviews with groups of 2-4 nurses from various units, in up to nine hospitals varying in size, ownership, and location (urban, suburban, rural). The outcome will be a preliminary set of elements of care coordination that are observable and therefore potentially measurable. Aim Three will involve a second set of nine focus groups in the same metropolitan areas, with a diverse pool of people hospitalized in the last year. The outcome will be insight into how patients experience the coordination of their care and assessment whether they find the elements of care coordination created for Aim Two as important, relevant to overall hospital quality, and understandable. Rigorous methods supported by the use of NVivo software will be used to content analyze the qualitative data.

Full Proposal Executive Summaries
The Interdisciplinary Nursing Quality Research Initiative (INQRI)

Project Title	Nurse-Sensitive Measurement of Hospital Care Coordination
Project Organization	Emory University
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Executive Summary

Our project, Nurse Sensitive Measurement of Hospital Care Coordination, addresses Topic 1 of the INQRI program. The purpose is to develop, test, and use a new multilevel nurse-sensitive measure of care coordination for the hospital setting. The aims are to: (1) identify key factors of nurse care coordination activities on hospital units; (2) derive measurable indicators from the care coordination factors in Aim 1 and to test their content validity; and (3) test the reliability and construct validity of the measure and the feasibility for hospitals to collect and use this information for quality improvement. The project team is interdisciplinary and led by three directors representing nursing, systems engineering, and sociology with extensive experience studying care coordination, interdisciplinary teams, and health outcomes. A multilevel human factors model guides the conceptualization and design of the project. This model builds on and advances previous research on care coordination from organizational and nursing science. Its multilevel perspective overcomes many of the limitations of past research and supports more sensitive measurement of nurses' vital care coordination activities. The research design uses qualitative methods, including observation, interview, focus groups, and document review, to identify key elements of nurse care coordination activities (Aim 1) and survey methods for instrument testing (Aims 2 and 3). Pilot QI projects at the study hospitals evaluate feasibility and use of the new measure. The sample consists of 37 medical-surgical units in four hospitals. Data analysis includes content analysis and standard tests of reliability and validity with individual and aggregated data. For construct validation, the new measure is correlated with a conceptually derived set of patient outcomes including patient experience of care coordination, medication errors, falls, length of stay, and failure to rescue.

Full Proposal Executive Summaries
The Interdisciplinary Nursing Quality Research Initiative (INQRI)

Project Title	The Nursing Ambulatory to Hospital Transitions Program [NAHT]
Project Organization	Massachusetts General Hospital
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Executive Summary

Title: The Nursing Ambulatory to Hospital Transitions (NHAT) Program The CFP topic area under study is testing the effects of implementing the patient-centered, nursing-sensitive outcomes endorsed by National Quality Forum. Purposes: To develop, validate and test the impact of identifying and communicating a pre-hospital preventive patient risk profile on nurse-sensitive outcomes for hospitalized older adults. The program of communicating the risk profile between the ambulatory and hospital nurses is called NHAT. Research Method: The research methods are descriptive and experimental. The study is divided into three phases of development, validation, and testing of a preventive nurse communication intervention. A risk profile is developed by retrospective review of ambulatory medical records. It will be validated prospectively by tracking the hospital trajectory of those at risk. Validation will examine, by record review and nurse interview, the daily intersection of nurse judgment and patient outcomes. Proactive and reactive nursing interventions over the course of the hospitalization will be identified. Patient acuity will be measured by analysis of an administrative patient classification system used to quantify 24 hour nursing needs. Testing of the NHAT intervention by randomization will occur by comparison with usual care. Measures of key outcomes: Key outcomes to be measures in older adults admitted to a hospital for >24 hours are cognition, mobility, falls, nutrition, incontinence, length of stay, acuity and in-hospital mortality. Data Analytic Strategies: Descriptive statistics for the pre-hospital risk index will be computed. The outcomes, which are measured over time, will be analyzed as a function of the pre-hospital risk index predictors, using linear regression for continuous outcome variables, logistic regression for binary outcomes variables, and survival analysis for time-to-event outcome variables.

**Full Proposal Executive Summaries
The Interdisciplinary Nursing Quality Research Initiative (INQRI)**

Project Title	Lessons from State Roll-outs of the NQF Nursing Sensitive Measures
Project Organization	Massachusetts Hospital Research and Education Association, Inc.
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Executive Summary

Lessons from State Roll-Outs of the NQF Nursing-Sensitive Measures Key to improving quality of care is the measurement of patient outcomes and taking action based on those measures. With the growing evidence of the role of nursing in quality care, efforts to improve nursing practice will require the effective use of clear measures of nurse-sensitive outcomes. Increased demands for public reporting of quality measures, coupled with concerns about the impact of the nursing shortage, are yet another impetus for the use of such measures. Our proposal is designed to test the effects of implementing the nursing sensitive performance measures endorsed by the National Quality Forum (NQF). We propose to evaluate two novel statewide implementations of the NQF Nursing-Sensitive Measures created to provide hospitals and the public with comparative measures of nursing quality. Our study will utilize key stakeholder interviews, case studies, and statewide surveys as the primary research method to identify the barriers and facilitators to the systematic implementation of these measures in a voluntary provider driven pilot of all Massachusetts acute care hospitals and in a government mandated effort in the state of Maine. Other measures of key outcomes include perceptions of the impact of implementation on quality improvement activities and the nursing work environment. Our data analytic strategy will include standard qualitative methods for interviews and case studies and standard survey analysis. The lessons learned will help focus improvement efforts and inform the development and implementation of public policy on quality measurement of nursing care. The project team will disseminate the findings through newsletters, presentations, and educational forums at the state and national level to a broad range of nurses, physicians, hospital leaders, researchers, and policy-makers.

Full Proposal Executive Summaries
The Interdisciplinary Nursing Quality Research Initiative (INQRI)

Project Title	Improving the NQF Failure to Rescue Metric
Project Organization	Mayo Clinic
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Executive Summary

Title: Improving the NQF Failure to Rescue Metric CFP topic: Rescuing Brief description: The failure to rescue measure developed by Needleman and Buerhaus was adopted as one of 15 NQF nursing performance measures, and the JCAHO recently published an implementation guide. However two issues have emerged as hospitals collect this measure. First, despite a conservative approach to the exclusion rules that define patients with hospital acquired complications (the denominator of failure to rescue rates) the definitions may still include false positives (i.e. noise). Second, the risk adjustment method is too complex for hospitals to apply. We address these issues using discharge data from Mayo Clinic that span over 250,000 discharges. Professional coders assign both ICD-9-CM codes and flags that indicate whether the diagnosis was present on admission, hospital acquired or whether the coder is uncertain of timing. This provides the very data needed, in sufficient quantity, to refine definitions of hospital acquired complications for Aim 1. Then in Aim 2 we construct and test less complex risk-adjustments. Finally, applying refined measures from Aim 1 and simplified risk models from Aim 2 we test associations of failure to rescue with nurse staffing, establishing a scientific basis for adopting a revised failure to rescue measure and risk adjuster (Aim 3). Dissemination emphasizes freely available software plug-ins, web based guides. publications and presentations. Research method: Observational design to establish risk cohorts and risk adjustments in Aims 1 and 2 and in Aim 3 a cross-sectional design to test a revised failure to rescue measure with nurse staffing. Measures of key outcome: Failure to rescue Data analytic strategy: Sensitivity, specificity, and positive predictive value to test the revised failure to rescue measure; logistic regression and simulations to test risk models, and two stage regression models to test associations with nurse staffing.

Full Proposal Executive Summaries
The Interdisciplinary Nursing Quality Research Initiative (INQRI)

Project Title	Linking Blood Stream Infection Rates to Intensive Care Nursing Context of Care and Process
Project Organization	Johns Hopkins University
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Executive Summary

Linking Blood Stream Infections to Intensive Care Nursing Context of Care and Process The proposed study addresses the following goals of the INQRI CFP: 1) Identifies the structural and process measures that show causal effects of a structured, nursing-driven intervention on patient outcomes in critical care; 2) Uses a validated feasible method to assess incidence of blood stream infections; 3) Applies evidence-based best practice measures with proven methods to produce accurate measurement in Blood Stream Infection rates; and 4) Identifies facilitators and barriers to adopting the intervention and participants' ability to sustain clinical compliance with the protocol. The context of care from the nurse perspective clearly affects the quality of care from the patient perspective. We propose the current study to expand and solidify our understanding of the relationship between nursing context and the safety and quality of care delivered. Our overarching research question is: To what extent do context of care variables explain the relationships between nursing processes and patient outcomes? To address this question, we will refine, implement, and evaluate a randomized controlled trial of a nursing-driven intervention to decrease Central Line Associated Blood Stream Infections (CLABSI) developed by the Johns Hopkins University Quality and Safety Research Group. The experiment will be implemented in a cohort of 42 Ascension Health ICUs with a control group of 42 other Ascension ICUs that will adopt the intervention in phase II. The primary outcome measures will be CLABSI rates and nurse turnover. Acknowledging the nested nature of nurses within ICUs within hospitals, we propose to use a generalized linear latent and mixed model (GLLAMM) with a Poisson distribution for the quarterly number of CLABSIs and nurse turnovers.

Full Proposal Executive Summaries
The Interdisciplinary Nursing Quality Research Initiative (INQRI)

Project Title	Quality Care on Acute Inpatient Units
Project Organization	The Regents of the University of California
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Executive Summary

Quality Care on Acute Inpatient Units The Interdisciplinary Nursing Quality Research Initiative (INQRI) Research linking nurse staffing to the quality of patient care has increased markedly in recent years. However, the results of these research projects do not yet provide a thorough and consistent foundation for policy and administrative decision-making. Conducting the research needed to bring clarity to the state of the science requires a national effort to produce standardized data for patient outcomes and nurse staffing at the patient care unit level. This study will use a standardized multi-hospital dataset to examine the causal relationships between the quality of nursing care and patient outcomes. We will describe the availability, variation, and usefulness of patient quality indicators in these data, including those recommended by the National Quality Forum (NQF), and then determine the impact of direct care nurse staffing hours at the patient care unit level on patient outcomes. The project addresses INQRI topic 1, in that it tests the measures recommended by NQF to advance quality nursing research, and also tests other measures of patient outcomes as potential indicators of nursing quality. The project breaks new ground by using the best data sets currently available to examine these issues across hospital units and in specific types of units (intensive care, obstetrics, pediatric). The University HealthSystems Consortium (UHC) data sets include 1.1 million patient discharges from 1000 patient care units in 50 hospitals. Analyses will use statistical approaches that deal with the nested structure of the data and instrumental variable analyses to enhance the strength of the causal inferences. The results of this study will be disseminated widely in university hospitals in collaboration with UHC, by the chief nursing officers on the research team to their colleagues in other university and non-university hospitals, and through the fields of nursing, healthcare management and healthcare economics through research presentations and publications.

Full Proposal Executive Summaries
The Interdisciplinary Nursing Quality Research Initiative (INQRI)

Project Title	Validating NQF Nursing-Sensitive Performance Measures
Project Organization	University of Pennsylvania
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Executive Summary

Validating NQF Nursing-Sensitive Performance Measures This project will analyze and validate measures from the National Quality Forum (NQF) nursing-sensitive measure set using new data from approximately 600 acute care hospitals in 3 major states (CA, PA, and NJ) in 2005-2006 in a cross-sectional correlational design. It will combine measures of 12 NQF nursing-sensitive indicators for hospitals assembled in ongoing studies funded by the NIH and the Robert Wood Johnson Foundation with newly-available data from the Centers for Medicare and Medicaid Services (CMS) for 20 performance/process measures in acute care. The project draws from the nurse co-project director's experiences in early studies and will be instrumental in building his own emerging program of research. The team of coinvestigators assembled includes leading sociologists specializing in sociological methodology (the sociologist co-project director's background) and health services research. Variables studied include the Nursing Work Index-Practice Environment Scales and failure to rescue, both NQF measures which originated at the University of Pennsylvania. Associations of nurse staffing, practice environments, nurse education and safety culture with the CMS performance indicators will be examined using weighted least squares and logistic regression modeling. Subsequently, whether associations between nursing context factors and processes of care can explain any observed associations between context and outcomes measures, including risk-adjusted mortality, will be assessed. The study will be the first major analysis of staffing and work environments on process of care issues and as such will represent a major new direction in nursing outcomes research. It will also provide important predictive validation for the NQF measures, offer researchers directions for future study and equip administrators with key information to inform practice changes. This study will further be one of the first to connect nursing factors to the emerging pay-for-performance (P4P) movement and to indicate the degree to which investments in the context of nursing care (particularly richer staffing and better practice environments) can improve multiple dimensions of the quality of health care.

Full Proposal Executive Summaries
The Interdisciplinary Nursing Quality Research Initiative (INQRI)

Project Title	Measuring Nursing Care Quality Related to Pain Management
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Executive Summary

Measuring Nursing Care Quality Related to Pain Management INRQI Focus: Identifying, developing and testing new measures to advance quality nursing research-Pain Management The overall aim of this study is to develop and test a robust and parsimonious measure of the quality of nursing care related to pain management that effectively predicts pain outcomes in individuals with cancer in the acute-care setting. Our interdisciplinary team has developed a pool of over 100 items to measure the key concepts identified by patients as being important to the quality of their pain management. In Phase 1 we will reduce the items to those that are most consistently and accurately understood by patients using 3 waves of cognitive interviewing (Aim 1). In Phase 2 we will establish the internal consistency reliability and construct validity of the Pain and Nursing Care Quality (PaNCQ) survey in a multi-site sample of 400 inpatients (Aim 2). A subset of 45 patients will be recruited to examine the feasibility and variability associated with repeated administration of the PaNCQ at the end of each shift over 2 to 3 days (Aim 3). Following confirmation of the reliability and factor structure, we will examine the predictive value of each of the scale's factors on pain outcomes measured by the Brief Pain Inventory (Aim 4). Clinical settings include the Huntsman Cancer Hospital in Utah, St. Vincent Healthcare in Montana, and Dartmouth Hitchcock Medical Center in New Hampshire. The analytic strategies include item revision, reliability analysis, exploratory factor analysis, confirmatory factor analysis, Repeated Measures Analysis of Variance and path analysis. Plans to disseminate the findings are outlined and will include dissemination of the tool and the findings via a website.