AHRQ-Funded Patient Safety Project Highlights

Improving Healthcare Safety by Supporting Measure Development

Overview

Measure development is a critical process for creating and refining metrics and indicators to assess aspects of healthcare quality, safety, effectiveness, and performance. From 2000 through 2024, AHRQ supported 192 patient safety projects related to measure development. This publication summarizes AHRQ's investments in this path toward safer care, including examples of project findings and products, and impacts of this work. Details about each AHRQ-supported project are available in the Appendix.

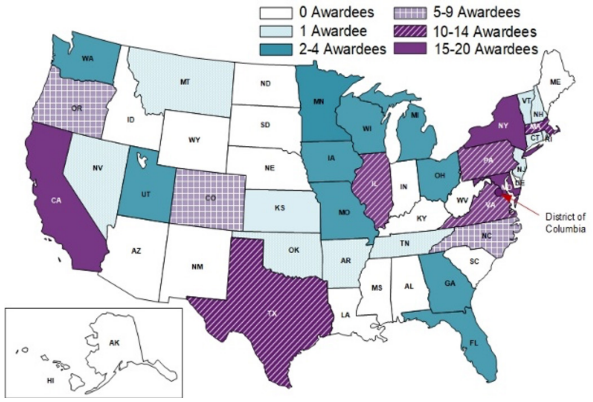
Scope of AHRQ Investments

192 projects

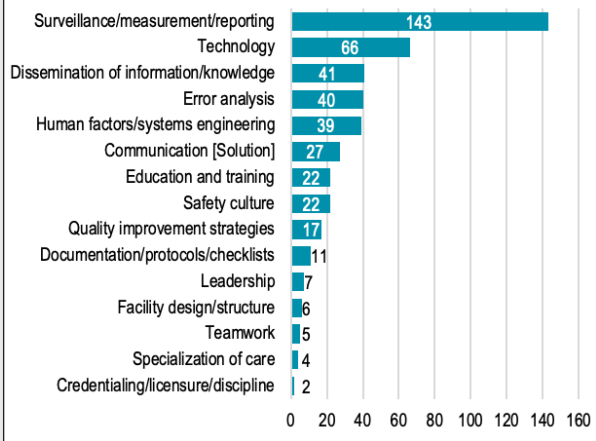
925 publications*

60,451 citations*

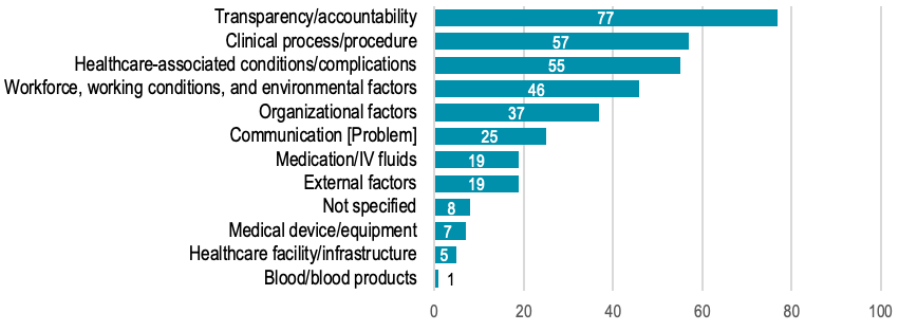
Geographical Distribution of Funding



Approach to Improving Patient Safety (No. of Projects)[i]



Patient Safety Measurement Targets (No. of Projects)[i]



*as of October 23, 2024

[i] The total number of projects is greater than 192 as some projects used more than one approach to improving safety or had more than one safety target.

Agency for Healthcare Research and Quality

PATIENT SAFETY

As of October 2024, AHRQ had funded 192 projects, resulting in 925 publications that have been collectively cited in other studies 60,451 times. Institutions in California and Maryland were awarded the most projects (n=20 each), followed by New York (n=18). Among the 192 projects, the primary approach to improving patient safety was surveillance, measurement, and reporting (n=143, 74%) which involves monitoring, quantifying, and communicating information about safety-related events, risks, or outcomes in healthcare. Next was technology (n=66, 34%) and dissemination of information/knowledge (n=41, 21%). The top three patient safety areas targeted for improvement in these projects were transparency/accountability (n=77, 42%), clinical processes/procedures (n=57, 30%), and healthcare-associated conditions and complications (n=55, 29%).

Examples of Project Findings

Most projects included in this collection of work are related to the development, structure, and format of measures. These projects typically fall into one or more of the following categories:

- Foundational/conceptual research informing new measure development, including the basic epidemiology of patient safety events;
- Measure development (e.g., development of reporting systems that detect medical error, harm, and adverse events);
- Initial measure testing/validation;
- Continuous measure review, evaluation, and re-evaluation to assess the overall quality and effectiveness of a measure;
- Risk assessment; and
- Risk adjustment (as part of measure development).

Some of these projects also focus on Patient Safety Organization (PSO) Common Formats data elements. They may also address error detection, including triggers that are used to identify errors and adverse events, measure the frequency with which such events occur, and track the progress of safety initiatives over time. Examples of these projects and summaries of their results are described below and organized by research themes identified in this collection of work.

Developing New and Improving Existing Patient Safety Measures

AHRQ funded several projects that focused on both the development of new measures and the improvement of existing patient safety measures for use in various healthcare settings, including:

- A project that created and validated health information exchange-enabled versions of two proposed National Quality Forum e-Quality measures for potentially preventable emergency department (ED) visits: (1) returns to the ED within 72 hours and (2) frequent ED users.
- A project that identified and conducted preliminary validation testing of a set of quality measures that can be used to assess the health literacy environment of a healthcare organization and guide quality improvement activities.

- A project that developed and validated empirically weighted composite measures of surgical morbidity that could improve the reliability of benchmarking and give providers a truer sense of where they stand relative to their peers.
- A project that currently engages key national stakeholders to optimize attributes of the missed stroke measure and measure diagnostic performance of U.S. hospital EDs using the refined missed stroke measure.

Conducting Patient Safety Risk Assessments

Some measure development projects focused on assessing patient safety risks and, in some cases, generalizing the use of risk assessment approaches to other clinical areas. For example:

- A project assessed the risks associated with the oral chemotherapy medication use process in adult and pediatric ambulatory oncology clinics and identified opportunities for improvement.
- A project used a proactive risk assessment to identify surgical site infection risk factors resulting from procedures performed at ambulatory surgical centers.
- A project developed a Patient Safety Risk Assessment toolkit and tested it across multiple sites, to enhance healthcare facility design through proactive safety measures.
- A project developed both a probabilistic risk assessment of transplant donor/recipient mismatch and a model for successful probabilistic risk assessment to advance patient safety.

Developing and Testing Tools for Error and Adverse Event Detection

Projects exploring the development and validation of trigger tools to improve patient safety in a variety of healthcare settings include:

- A multicenter project evaluating a refined and automated ED trigger tool for adverse event detection to measure harm incidence, establish quality baselines, and direct improvement efforts.
- A project developing, refining, testing, and applying Safer Dx e-triggers to enable detection, measurement, and learning from diagnostic errors in diverse ED settings.
- A project that developed and implemented a Targeted Injury Detection Systems (TIDS) for adverse drug events in inpatient settings.
- A project that developed a trigger tool for detecting and characterizing ED adverse events to improve routine surveillance reviews for quality improvement.
- A project that identified triggers for preventable adverse events related to diagnosis (loss to followup) and treatment (medication, surgery) in outpatient settings.

Impacts

AHRQ-funded measure development projects have aimed to support measure development related to detection, triggers, and risk; error, harm, and adverse event reporting and disclosure; and surveillance. Collectively, the 192 AHRQ-funded projects resulted in:

- New knowledge for the field of measure development using qualitative and quantitative research methods, data analyses, risk assessments, and modeling techniques.
- Development, implementation, and evaluation of quality measures, reporting systems, trigger and detection systems, tools, toolkits, and other interventions to enhance patient safety.
- Identification of research gaps and areas for continued development in the field of measure development.
- Synthesis and dissemination of research findings via publications and conferences.

The findings and resources produced from this body of AHRQ-funded work have helped to:

- Create new and improved patient safety and quality measures (e.g., surgical morbidity, organizational health literacy, ED readmissions).
- Measure differences in healthcare among racial, ethnic, and low-income populations (e.g., quality of care, access to specialized/technical care).
- Identify and reduce patient risks and adverse events in diverse settings (e.g., falls, infections).
- Improve patient outcomes (e.g., better self-rated overall health, increased life expectancy).

To learn more about each of the projects included in this synthesis, view the companion Appendix that follows.

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Appendix

Measure Development Project Summary

This appendix briefly describes 192 AHRQ-funded projects related to measure development. Projects are organized alphabetically by state, then by original date of funding. Each description includes key findings or results as reported in available final reports or companion publications and in some cases is taken verbatim from the source (e.g., journal abstracts, journal articles). The grants listed below are linked to the NIH RePORTER, an electronic tool that allows users to search a repository of federally funded research projects and access publications resulting from such funding.

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
ARKANSAS		
William Golden **Arkansas Foundation for Medical Care** Little Rock, Arkansas	R13 HS10964 [Grant] **Building Consensus in Patient Safety Reporting** 2002-2003 $50,000 Final Report	**Purpose:** Facilitate the sharing of ideas and information between patient safety coalitions on the topic of patient safety reporting systems at the state level. **Key Findings/Impact:** The conference objectives were accomplished by having plenary speakers address the technical and methodological issues revolving around patient safety reporting. Then state patient safety coalition leaders reported on their current abilities and past experiences with patient safety reporting. In breakout sessions, participants were asked to develop a consensus on how a patient safety reporting system should work and how the data could be used and communicated. The main discussion topics were recreating the culture, reviewing existing initiatives to track medical errors, collecting and analyzing data, and sharing and disseminating data. Open discussions gave participants a chance to share ideas and experiences. The group discussed error reporting systems, kinds of errors that should be reported, and how the information should be used. **Publications:** 0
CALIFORNIA		
Anita Stewart **University of California, San Francisco** San Francisco, California	R01 HS10599 [Grant] **Measuring Interpersonal Processes in Diverse Patients** 2000-2004 $1,032,600	**Purpose:** Finalize the framework and self-report survey of interpersonal processes of care (IPC) to be conceptually and psychometrically adequate for African American, Latino, and White patients to enable examination of interpersonal processes as a way to explain health and technical care **Key Findings/Impact:** A final report was not available, but investigators found that: • All IPC measures were associated with at least one satisfaction outcome for all groups except for unclear communication. Substantial literature supports the link between effective physician–patient interactions and positive patient outcomes. • The IPC survey can be used to describe disparities in interpersonal care, predict patient outcomes, and examine outcomes of quality improvement efforts to reduce healthcare disparities. • Interaction analysis and behavior coding of cognitive interview transcripts can efficiently identify problems with items and their source to increase the likelihood of the revised items being conceptually equivalent across ethnic groups. • Providing quality healthcare to ethnically diverse patients requires cultural flexibility to elicit and respond to cultural factors in medical encounters. • Household contact and individual response rates differed by ethnic-language group, highlighting the importance of tracking losses by stage and subpopulation. **Publications:** 0

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Patrick Romano **University of California, Berkeley** Berkeley, California	R18 HS10985 [Grant] **Information about Quality in a Randomized Evaluation** 2000-2004 $1,157,160 Final Report	**Purpose:** (1) Identify factors associated with consumers' use of information about health plan and medical group performance; (2) determine how and why consumers use such information during open enrollment; (3) design and test two innovative programs for disseminating quality information; and (4) evaluate their impact through randomized controlled trials. **Key Findings/Impact:** In phase 1 of this work, investigators confirmed the importance of concepts from the health belief model (health status, cues to action, perceived susceptibility, perceived benefits/barriers) as determinants of report card usage. In phases 2 and 3, they found non-significantly increased plan switching in both intervention groups. This study shows that individuals who are forced to choose a new health plan, due to the circumstances of their employment or the discontinuation of previous options, are particularly receptive to employer-disseminated information about quality of care. The research also indicates that educational/motivational interventions designed to increase perceived benefits and to decrease perceived barriers, with negative framing, may increase consumers' use of quality information but are unlikely to affect actual choices in the marketplace. Investigators found that consumers perceived a difficult tradeoff between quality and other factors, such as cost or convenience. **Publications:** 1
Randall Stafford **Stanford University** Stanford, California	R01 HS11313 [Grant] **National Trends in Outpatient Quality Indicators** 2002-2006 $885,322 Final Report	**Purpose:** Develop a set of quality indicators for outpatient care in the United States to evaluate overall quality, trends in quality, and disparities by ethnicity. **Key Findings/Impact:** This study examining U.S. outpatient care quality between 1992 and 2004 revealed significant gaps between clinical practice and evidence-based recommendations. Analysis of 23 quality indicators showed modest improvements in some areas (e.g., depression treatment increased from 47% to 83%), but many remained suboptimal, particularly preventive counseling, which occurred in less than 45% of indicated visits. The study found limited evidence of racial/ethnic disparities in most quality measures, suggesting healthcare access, rather than discriminatory treatment, drives health disparities. The research identified critical areas for improvement and recommended integrated prevention services through case management by ancillary healthcare providers as a potential solution. **Publications:** 17

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
R. Adams Dudley **University of California, San Francisco** San Francisco, California	R01 HS13919 [Grant] **California Intensive Care Outcomes (CALICO) Project** 2003-2008 $1,396,943 Final Report	**Purpose:** Compare the performance of several models of intensive care unit (ICU) mortality and length of stay (LOS). Then examine whether complying with ICU good practices increases the survival rate of ICU patients after adjusting for initial mortality risk using various good practice measures and more than one risk adjustment model. **Key Findings/Impact:** Investigators found a consistent pattern of predictive ability across the APACHE® IV models and the MPM_0 II and III in both mortality and LOS. The SAPS II model does not provide adequate prediction for an LOS model at the patient or hospital level. Both the APACHE III and the MPM_0 II provided useful information about the effect of good practice compliance in some types of patients and again provided very similar results across the four conditions studied. The cost of collecting APACHE III or IV data should be considered when the analyses are going to be at the hospital level. The MPM_0 II and APACHE III appear to predict similar results at the hospital level in both mortality and LOS, as well as patient-level results at the condition level. Regardless of the model used, there was a large variation in standardized mortality ratios among the ICUs studied and varied tradeoffs. With unlimited resources, the APACHE IV model offered the best predictive accuracy. If constrained by cost and manual data collection, the MPM_0 III model offers a viable alternative without a substantial loss in accuracy. **Publications:** 5
Danielle Rose **University of California, Los Angeles** Los Angeles, California	R36 HS15530 [Grant] **Testing for Discrimination in Healthcare** 2005-2006 $32,400	**Purpose:** Empirically test for statistical discrimination as a possible cause of racial and ethnic disparities in healthcare using different conditions and a different dataset (NHANES III, 1988-1994). **Key Findings/Impact:** Investigators were unable to conclude that statistical discrimination theory explains racial/ethnic disparities. Data show that among those diagnosed for hypertension, high blood cholesterol, or diabetes, many receive equivalent care, although not high-quality care. While there is a considerable body of work indicating there are disparities in the awareness of hypertension and diabetes, this study would indicate that once patients are diagnosed with hypertension, high blood cholesterol, or diabetes, generally they obtain equivalent care, although not always high-quality care. Furthermore, there appear to be challenges in the area of physician advice regarding lifestyle or behavioral changes. **Publications:** 0

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Urmimala Sarkar **University of California, San Francisco** San Francisco, California	K08 HS17594 [Grant] **Interactive HIT To Promote Ambulatory Safety Among Vulnerable Diabetes Patients** 2008-2013 $703,312 Final Report	**Purpose:** Characterize adverse events and potential adverse events occurring among type 2 diabetes patients in the course of self-management activities when they are at home between outpatient visits. **Key Findings/Impact:** Investigators found 360 safety triggers overall that occurred among 155 participants, which represented 53% of individuals and 7.6% of all automated calls over the 27-week intervention. The most common triggers were for pain or medication side effects (22%) and not checking blood sugars (13%). In adjusted models, race/ethnicity and language were related to safety triggers; Spanish-speaking participants were significantly (p=.02) more likely than English-speaking participants to experience a safety trigger, and Black participants were marginally more likely (p=.09) than White participants to experience a safety trigger. Systems implementing health information technology strategies to improve self-care and remote monitoring should consider specific program design elements to address these potential safety events. Researchers noted that future work is needed to understand how the safety events themselves may have impacted measures of the overall effectiveness of the trial, such as health behaviors and clinical outcomes. **Publications:** 22
Alex Chen **Children's Hospital of Los Angeles** Los Angeles, California	K02 HS18087 [Grant] **Measuring Quality of Primary Care in Complex Pediatric Patients** 2009-2012 $435,803 Final Report	**Purpose:** Develop a set of rigorously designed quality measures that can be used to assess the quality of primary care for complex pediatric patients. **Key Findings/Impact:** The expert panel rated and accepted 35 of 74 measures as valid and feasible for assessing primary care quality in complex pediatric patients. The final set of quality measures was grouped into the following domains: • General primary care (N=14, 40%) • Patient-/family-centered care (N=8, 23%) • Chronic disease management (N=2, 6%) • Coordination of care (N=11, 31%) Researchers found that quality measures can be used to assess care delivered to patients and to identify deficiencies in care. This project provided a conceptual framework as well as the approach to develop primary care quality measures centered on medical home, patient-centered care. **Publications:** 1

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Lauren Elizabeth Goldman **University of California, San Francisco** San Francisco, California	K08 HS18090 [Grant] **Evaluating and Improving Present-on-Admission for Performance Reporting** 2009-2014 $703,050 Final Report	**Purpose:** Improve the clinical relevance of hospital performance assessments through an assessment of present-on-admission (POA) reporting in administrative data. **Key Findings/Impact:** Investigators found that the hospitals and audit team agreed on POA coding approximately 70% of the time, and the accuracy of POA varied by hospital. This study is the largest to date to evaluate the accuracy of POA reporting for acute medical conditions that could be either comorbidities or complications. The study confirmed that the use of POA indicators in administrative data significantly alters risk-adjusted hospital assessments that do not incorporate a method for distinguishing between comorbidities and complications. Furthermore, it provided reassurance that the adoption of POA indicators in a risk-adjustment model for acute myocardial infarction care is not substantially confounding results due to the inaccuracy in how POA is reported by hospitals. Future studies should attempt to confirm whether these findings apply to other important hospital outcomes and conditions. **Publications:** 15
Kimberly Gregory **Cedars-Sinai Medical Center** Los Angeles, California	R01 HS17713 [Grant] **Potential Maternal Quality Indicators Available From Administrative Data** 2009-2012 $899,919 Final Report	**Purpose:** Develop a comprehensive set of quality indicators to monitor maternal healthcare quality using the rigorous framework and existing sets of quality indicators established by AHRQ, and develop a set of pregnancy and childbirth-related quality indicators. **Key Findings/Impact:** Investigators modified the AHRQ Indicator Sets (Prevention Quality Indicators, Inpatient Quality Indicators, Patient Safety Indicators) and set forth a proposed set of 38 additional indicators specific to pregnancy and childbirth. Using an administrative dataset from the State of California that links mothers and newborns, investigators evaluated the ability of these indicators to represent the quality of care of maternal healthcare services at the community or hospital level. All of the indicators were empirically evaluated relative to criteria of the Public Reporting Evaluation Framework: (a) Importance, (b) Scientific Acceptability, (c) Usability, and (d) Feasibility. Investigators identified 6 "new" indicators from AHRQ's original set of indicators that were pertinent to the childbirth population and 16 additional potential indicators from a list drawn from a theoretical foundation and literature search. The selected indicators demonstrated variation across hospitals suggesting an opportunity for learning from best practices. **Publications:** 4
Grace Lin **University of California, San Francisco** San Francisco, California	K08 HS17723 [Grant] **Measurement of Decision Quality in Coronary Artery Disease** 2010-2015 $720,344 Final Report	**Purpose:** Develop a conceptual framework and instrument to measure decision quality in patients with stable coronary artery disease (CAD). **Key Findings/Impact:** Investigators concluded that decision quality is still an emerging concept in the literature, with various definitions. There are no consistent methods for measuring decision quality, particularly when attempting to measure multiple dimensions of decision quality. Investigators determined that a tool to measure decision quality for patients with CAD making treatment decisions is needed, as Medicare patients undergoing percutaneous coronary intervention demonstrated low knowledge and low participation in the decision-making process. In constructing a conceptual model, investigators found a consensus among its experts that the most important and relevant concepts to decision quality included measuring knowledge, communication, and preferences. Based on the conceptual model, they developed a 23-item decision quality questionnaire that is ready for pilot testing in a cohort of patients with CAD. **Publications:** 13

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
James Marcin **University of California, Berkeley** Berkeley, California	R01 HS19712 [Grant] **Factors Associated With Quality of Care Delivered to Children in U.S. Emergency Departments** 2010-2013 $1,469,284 Final Report	**Purpose:** Validate a structured implicit review instrument that measures the quality of care provided to children presenting to emergency departments (EDs). Identify factors associated with differences in quality of care provided to these children among a diverse cohort of EDs and patients across the United States. **Key Findings/Impact:** In the final report, investigators described the consistency, reliability, and validity results of the implicit review instrument after the instrument was applied by 8 pediatric emergency medicine physicians to 620 medical records. The researchers concluded that the quality of care instrument demonstrated good internal consistency, moderate interrater reliability, high interrater agreement, and evidence supporting validity. The instrument could be useful for systems assessment and research in evaluating the care delivered to children in the ED. Investigators also used the instrument to assess whether the quality of care delivered to the same 620 children was associated with a variety of patient-level factors. They concluded that quality of ED care delivered to children among a cohort of 12 EDs participating in the Pediatric Emergency Care Applied Research Network was high and did not differ by patient age, sex, race/ethnicity, and payment source but did vary by the presenting chief complaint. **Publications:** 8
Anjali Joseph **Center for Health Design** Concord, California	R13 HS21824 [Grant] **Developing and Disseminating a Patient Safety Risk Assessment (PSRA) Toolkit** 2012-2015 $295,546 Final Report	**Purpose:** Develop a Patient Safety Risk Assessment (PSRA) toolkit that includes an evidence-based design strategy framework (Safe Design Roadmap), a proactive PSRA tool, instructions and methods for use, user guides and white papers, and an educational platform with case studies to accelerate the adoption, integration, and institutionalization of the physical environmental design, as a way to help eliminate patient harm. **Key Findings/Impact:** This 3-year project developed and validated an SRA toolkit to identify and eliminate built environment safety hazards in healthcare facilities. The toolkit, covering six safety areas, was developed through expert consultation with more than 100 professionals and pilot tested at 3 hospitals. Testing showed the tool's effectiveness but indicated the need for facilitated implementation and training. The final product, which includes a Safe Design Roadmap and evidence-based design considerations, received strong positive feedback during national dissemination, with 93% of participants rating it favorably. **Publications:** 8

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Kathryn McDonald **Stanford University** Stanford, California	290201200003I-TO3 [Contract] **Network of Patient Safety Databases Analyses of Patient Safety Events** 2013-2016 $4,584,597	**Purpose:** The Network of Patient Safety Databases (NPSD) is an organization mandated by the Patient Safety and Quality Improvement Act that performs analyses of adverse events. Such analyses are critical for enabling patient safety organizations (PSOs) and providers to reduce healthcare error and improve patient safety. The overall goals of this task order were to continue the NPSD and to perform analyses of adverse events. **Key Findings/Impact:** A final report was not available, but a program brief titled "Advancing Patient Safety Through Data-Driven Safety Improvement" was developed to educate and promote the benefits of PSOs and the NPSD. The brief explained that aggregating event-level data for breakthroughs in understanding how best to improve patient safety enabled hospitals and other providers to (1) compare results at the national level, across PSOs, and across a larger group of provider types; (2) discover underlying causes of incidents, near-misses, and unsafe conditions in healthcare delivery; (3) seek additional expertise for decreasing events and improving quality; and (4) identify patterns of rare events, supported by larger report volumes. Steps to participate are provided, as well as where to find information on AHRQ's website. **Publications:** 0
Ellen Taylor **Center for Health Design** Concord, California	R18 HS24143 [Grant] **Disseminating a Web-Enabled Safety Risk Assessment (SRA) Toolkit for Designing Safer Healthcare Facilities** 2015-2017 $350,749 Final Report	**Purpose:** Build on an Excel-based Safety Risk Assessment (SRA) Toolkit developed through a previously completed AHRQ grant (R13 HS21824) to develop a versatile, web/app-based proactive and systematic SRA toolkit that can be easily used by multidisciplinary stakeholders to address safety issues while designing a healthcare facility. **Key Findings/Impact:** The revised Health Care Facility Design Safety Risk Assessment Toolkit significantly improves on its predecessor, offering a user-friendly interface with tools for historic data analysis, organizational alignment, and design considerations for six safety areas. The iterative development process enhanced navigability and accessibility. While some advanced features were beyond the project's scope, they were being considered for future versions. The toolkit's successful launch in September 2017 led to it becoming the third most visited page on the Center for Health Design's website, with more than 4,000 visitors by late October. **Publications:** 0

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Urmimala Sarkar **University of California-Irvine** Irvine, California	R01 HS24426 [Grant] **Investigating Failures of Notification and Monitoring in Outpatient Care: The Safety Promotion Action Research and Knowledge (SPARK) Network** 2015-2018 $1,499,996 Final Report	**Purpose:** Patient safety issues are a significant problem in ambulatory care, including ambulatory safety net settings, which serve predominantly un- and underinsured low-income populations. Patient safety disparities remain understudied in part due to fragmentation of care and lack of implementation of standardized definitions and measurements. The overall purpose of the Safety Promotion Action Research and Knowledge Network (SPARKNet) is to measure the extent of patient safety disparities in ambulatory settings and to understand the underlying reasons for the disparities. **Key Findings/Impact:** Researchers adopted 9 out of 13 proposed measures and collected performance data from 17 safety net public healthcare systems on closing the referral loop in years 1 and 2 of their participation in the California Public Hospital Redesign and Incentives in Medi-Cal (PRIME) Program. The median performance for closing the referral loop (a required measure that assesses whether referring providers receive information from consulting providers) was 83% in year 1 and 76% in year 2. Researchers also identified 12 unique cases and studied the implementation of patient safety measurement strategies. They now have a better understanding of what measurement efforts are needed to yield improved safety measurements in the future. Specifically, they collected 2 years of data from study sites and documented challenges in data collection, including complex measures that require the integration of different types of data and a lack of robust electronic health record infrastructure in low-resource settings. **Publications:** 3
Tina Hernandez-Boussard **Stanford University** Stanford, California	R01 HS24096 [Grant] **Improving Quality of Postoperative Pain Care Through Innovative Use of Electronic Health Records** 2015-2020 $1,112,575 Final Report	**Purpose:** Measure quality of various care processes for postoperative pain, assess proposed evidence-based interventions from randomized controlled trials, lay the groundwork for systematic pain-related research using electronic medical records, and produce population-based evidence for a nationally endorsed postoperative pain management quality metric. **Key Findings/Impact:** Investigators developed a framework to use real-world data to assess pain management and prescribing patterns. This framework allows them to generate evidence quickly and accurately on pain management practices and associated patient outcomes for clinical assertions. **Publications:** 23

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Kim Danforth **Kaiser Foundation Research Institute** Oakland, California	R01 HS24437 [Grant] **Electronic Clinical Surveillance To Measure and Improve Safety in Ambulatory Care** 2016-2018 $1,498,453 Final Report	**Purpose:** Determine the frequency and risk factors for three types of outpatient care gaps in outpatient care: 1. Delayed diagnosis of chronic kidney disease (CKD) 2. Treatment 3. Prevention **Key Findings/Impact:** Researchers found that timely followup of an initially abnormal estimated glomerular filtration (eGFR) rate for diagnosis of CKD occurred less than half the time. Followup of an initially abnormal eGFR result is complicated by the need to wait to repeat the laboratory test so that chronic kidney function impairment can be assessed. For patients who had worse initial eGFR results, timely followup was more common than for patients overall. However, 28% of patients still did not have the recommended repeat creatinine laboratory test within the expected timeframe. Quantitative and qualitative results suggested that changes within the electronic health record might be useful for improving timely test followup. Results from this study and from other studies also suggest the importance of secondary systems to help minimize the impact of any missed followup tests. Within KPSC, the SureNet Outpatient Safety Program uses electronic clinical surveillance to scan for missed abnormal eGFR lab test followup and orders a second lab test to minimize the impact of missed or delayed followup testing. Future research should study similar care gaps in other settings, particularly in nonintegrated care settings. In addition, future research could assess the utility of secondary surveillance systems to minimize the impact of any care gaps in nonintegrated delivery settings. Improving efforts around primary prevention of care gaps, as well as secondary prevention of harms by minimizing the impact of care gaps, may both be important for high-quality outpatient care delivery. **Publications:** 3
James Lamb **University of California, Los Angeles** Los Angeles, California	R01 HS26486 [Grant] **Automated Image Analysis for Prevention of Radiotherapy Delivery Errors** 2018-2023 $1,845,429 Final Report	**Purpose:** Develop an automated, online never event prevention system (NEPS) that will interlock a radiotherapy machine to prevent treatment if the patient is not correctly aligned or if the wrong patient plan is loaded, reducing never events by an order of magnitude; and retrospectively measure the never event rate at University of California, Los Angeles and Veterans Health Administration radiotherapy clinics, testing the hypothesis that radiotherapy never events are significantly underreported. **Key Findings/Impact:** This project successfully developed highly accurate algorithms for detecting radiotherapy misalignment errors across various imaging modalities. Applied to retrospective databases, the algorithms identified remarkably low error rates, including two previously unreported errors. A prototype clinical system for cone-beam computed tomography was implemented, providing real-time alignment quality reports. The research yielded the first absolute measurement of radiotherapy misalignment error rates, confirming image-guided radiotherapy as a generally safe modality, with errors occurring in approximately 1 per 1,000 patients. These novel algorithms offer significant potential to enhance patient safety and optimize quality assurance resources in radiotherapy practices. While further commercialization efforts are needed, the project's outcomes provide valuable insights for improving radiotherapy safety and resource allocation. **Publications:** 9

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Andrew Auerbach **University of California, San Francisco** San Francisco, California	R01 HS27369 [Grant] **Utility of Predictive Systems To identify Inpatient Diagnostic Errors: The UPSIDE Study** 2019-2023 $1,491,055 Final Report	**Purpose:** Assess the incidence, causes, and risk factors for diagnostic errors in the inpatient setting. **Key Findings/Impact:** The prevalence of diagnostic errors in severely ill, hospitalized patients is high, with 23.0% experiencing errors and 17.8% suffering harm or death. Problems with assessment and testing were the most significant factors associated with these errors. This study emphasized the need to focus on these areas for intervention development and further research. Suggested interventions included "diagnostic time-outs," peer-consult services, decision support on test probabilities, and alarms for unexpected patient deterioration. This project provided crucial insights into diagnostic errors and offered a roadmap for improving patient safety and care quality. **Publications:** 10
David Chimin Chan **Stanford University** Stanford, California	R01 HS27990 [Grant] **Measuring and Understanding Diagnostic Quality From Large-Scale Data** 2022-2027 $797,869	**Purpose:** To apply and validate a system for measuring diagnostic quality across radiologists in the setting of pneumonia diagnosis among 5.5 million visits with chest x rays in Veterans Health Administration emergency departments. **Key Findings/Impact:** This project is ongoing, and no final report or publications are available yet. However, this project will lay the groundwork for data-driven measurement of diagnostic quality across clinical providers, a necessary first step in understanding and improving the diagnostic performance of our healthcare system. **Publications:** 1
COLORADO		
Stephen Raab **University of Colorado, Denver** Denver, Colorado	R01 HS13321 [Grant] **Improving Patient Safety by Examining Pathology Errors** 2002-2008 $3,271,567 Final Report	**Purpose:** Determine the frequency, impact, and cause of anatomic pathology screening and diagnostic testing errors and develop, implement, and evaluate the quantitative and qualitative effectiveness of error reduction interventions. **Key Findings/Impact:** The body of research indicates that up to 67% of all specimens are "defective," resulting in inefficiencies, high costs, and patient harm. A diagnostic error occurred in 2% to 15% of all specimens, and harm occurred in approximately 50% of diagnostic errors. Using Lean methods, process redesign markedly improved quality in clinical and laboratory processes and specific areas of cancer diagnosis and care (e.g., lung and breast cancer care). Culture plays an enormous role in the ability to implement quality improvement initiatives, and barriers such as disruptive physicians can markedly limit quality improvement. Notably, these findings are at odds with the traditional assessment that pathology error consists of a pathologist making a mistake in diagnostic interpretation or a clinician not properly obtaining a sample. Investigators believe that a lack of work process standardization is the major cause of anatomic pathology error, which has enormous consequences, as it results in variable outcomes, high costs, and inefficiencies. A major outcome of this work is the development of a fully functional, national anatomic pathology error database to voluntarily store, share, and analyze anatomic pathology errors. This work is the first to demonstrate the use and usefulness of systematic root cause analytic methods in anatomic pathology. The database was designed so that any institution could participate and pathology errors detected by other methods could be added. Furthermore, it was structured in such a way that even errors from other disciplines (e.g., radiology, internal medicine, pharmacy) could be added and correlated with linked pathology data. **Publications:** 21

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Wilson Pace **University of Colorado, Denver** Denver, Colorado	P20 HS17142 [Grant] **Multi-Method Proactive Risk Assessment** 2007-2009 $199,923 Final Report	**Purpose:** Evaluate the ability of a multi-method risk assessment—a combination of a safety culture survey, a readiness to change survey, error reports, and an error visualization process—to guide the development of a risk-informed safety improvement action plan. **Key Findings/Impact:** The combination of error reporting data supplemented with even a brief visualization process succeeded in developing a risk-informed action plan for a multispecialty ambulatory group. The visualization process appeared very promising, but it required considerable investment of time in practices that were still early in considering their overall safety activities. The Office Vital Signs Survey identified practices with variability in leadership and readiness to change, but whether this information was useful in a facilitated change process awaited the results of an implementation grant. **Publications:** 0
Susan Moore **Denver Health** Denver, Colorado	290-06-00020-8 [Contract] **Improving the Measurement of Surgical Site Infection (SSI) Risk Stratification and Outcome Detection** 2009-2011 $413,172	**Purpose:** Explore opportunities for enhancing the detection and surveillance of inpatient-acquired surgical site infections (SSIs) for four target procedures—herniorrhaphy, coronary artery bypass graft, and hip and knee arthroplasty (including primary total arthroplasty, primary hemiarthroplasty, and revision procedures). **Key Findings/Impact:** Investigators found that SSI risk factors depend on the type of surgical procedure. Thus, SSI rate comparison needs to be at the surgical procedure level and not the surgical service level (orthopedics, general surgery, thoracic, etc.). SSI rates should also be compared at the facility level against its own baseline rates. The researchers also found that the consensus among surgeon participants was that current models for SSI risk assessment were inadequate for their needs. The surgeons wanted the development of new models based on specific patient factors identified as significant in affecting risk rates. Nursing focus groups showed general acceptance and willingness to use an electronic cognitive-support tool. **Publications:** 1
Donna Hurd **Abt Associates** Denver, Colorado	290-10-00031i-4 [Contract] **Long-term Care Integrated Patient Safety and Risk Management Program** 2013-2018 $600,000	**Purpose:** Develop a comprehensive On-Time readiness assessment tool to conduct a balanced assessment of nursing homes, determining their readiness for the On-Time quality improvement program—one that uses electronic health record data to make staff aware of those residents most at risk of adverse events and provide clinical decision support to generate timely risk reports, use a multidisciplinary approach to systematic change, and offer tools for monitoring progress. **Key Findings/Impact:** A final report was not available, and publications could not be found. **Publications: 0**

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Mark Gritz **University of Colorado, Denver** Denver, Colorado	HHSP233201500025I-HHSP23337002T [Contract] **Making Patient Navigation and Understanding Easier: Developing Quality Improvement Measures** 2015-2017 $297,123	**Purpose:** Identify and conduct preliminary validation testing of a set of quality measures that could be used to assess the health literacy environment of a healthcare organization and monitor progress made through implementation of organizational health literacy (OHL)-related quality improvement activities. **Key Findings/Impact:** Investigators highlighted two key findings. First, most measures focus on the Communication domain, which suggests healthcare organizations are focused primarily on addressing communication-related features of OHL. While improving written, spoken, and cross-cultural communication has great potential to ease the burden placed on the health literacy skills of patients, organizations may be focusing too little attention on addressing other important components of OHL, such as the complexity of navigating the healthcare system, barriers to patient engagement and self-management, and commitment of organizational leadership to addressing OHL. Second, most of the measures identified had few formal specifications and empirical testing. Having measures easily available may encourage healthcare organizations to evaluate the work they do and improve their OHL-related quality improvement efforts. Once fully validated, the measures identified through this project will ultimately guide quality improvement activities. **Publications:** 0
CONNECTICUT		
Christopher Moore **Yale University** New Haven, Connecticut	R01 HS18322 [Grant] **Identifying Unnecessary Irradiation of Patients With Suspected Renal Colic** 2010-2014 $1,972,538 Final Report	**Purpose:** Derive and validate an objective clinical prediction rule for the presence of uncomplicated ureteral stone in patients eligible for computed tomography imaging. **Key Findings/Impact:** In the final report, investigators reported the top five factors found to be most predictive of ureteral stone: male gender, short duration of pain, non-Black race, presence of nausea or vomiting, and microscopic hematuria, yielding a score of 0-13 (the S.T.O.N.E. score). Prospective validation was performed on 491 subjects. In the derivation and validation cohorts, ureteral stone was present in 8.3% and 9.2% of the "low" group (score 0-5), 51.6% and 51.3% of the "moderate" group (score 6-9), and 89.6% and 88.6% of the "high" group (score 10-13), respectively. In the "high" group, acutely important alternative findings were present in 0.3% of the derivation cohort and 1.6% of the validation cohort. Investigators concluded they had derived and validated a clinical prediction score for the presence of symptomatic ureteral stone. Multicenter validation and evaluation of incorporating the S.T.O.N.E. score into imaging algorithms is warranted. In Phase 3, researchers achieved a dose reduction of nearly 90%, while maintaining sensitivity of imaging to detect conditions potentially requiring intervention. Their future directions included a submission to AHRQ for a dissemination grant based on these findings. **Publications:** 11

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
		DISTRICT OF COLUMBIA
Liza Greenberg **URAC** Washington, DC	R13 HS10105 [Grant] **Methods To Improve Data on PPO Performance** 2000-2001 $50,000	**Purpose:** Examine measurement and reporting techniques that allowed preferred provider organizations (PPO) to report more informative quality data to consumers and employers; and assist in developing a national research agenda on PPO quality. **Key Findings/Impact:** A final report was not available, and publications could not be found. The conference was held March 15-16, 2001, in Washington, DC, with 175 registered participants and 40+ speakers. Ultimately, academic health services researchers were commissioned to write five papers, each of which examined an aspect of performance measurement in PPOs. Findings from the conference include: 1. PPOs are increasingly important delivery systems, with more than 100 million individuals enrolled; 2. No common definition exists for PPOs; 3. PPOs often do not have comparable enrollment and claims data; and 4. PPOs have the capability to conduct performance assessment related to users and to process and structural measures. On March 7, 2001, URAC and the Consumer Coalition for Quality Health Care produced a companion workshop to educate consumers on PPO operations and build demand for PPO accountability. **Publications:** 0
Kenneth Kizer **National Quality Forum (NQF)** Washington, DC	R13 HS13811 [Grant] **The National Quality Forum – Annual Meeting 2002** 2002-2003 $50,000	**Purpose:** Foster a sense of common purpose and develop a shared framework for developing, implementing, and reporting consistent measures of the quality of care across consumers, purchasers, and providers of healthcare. Disseminate information and share experiences and concerns about the implementation of quality measures and evidence-based "best practices" to improve quality. Link research to practice with an emphasis on issues that relate to feasibility and the use of measures after development; and identify important areas for future research related to the development, testing, implementation, and reporting of quality measures. **Key Findings/Impact:** A final report was not available, and publications could not be found. **Publications:** 0
Anthony Slonim **Children's National Medical Center** Washington, DC	K08 HS14009 [Grant] **Improve Safety of Blood Product Transfusions in Children** 2003-2007 $374,625	**Purpose:** Develop a comprehensive training and research program focused on patient safety in transfusion medicine that provides skills and experience needed for an independent career in health services research. **Key Findings/Impact:** A final report was not available; however, researchers found that the leading causes of severe outcomes from red blood cell (RBC) transfusion include circulatory overload and bacterial infection. Researchers stated that an intervention to reduce the risk of erroneous administration of blood (through training programs or technology investments) had a higher potential impact in reducing the severe outcome risk from RBC transfusion than additional screening to further reduce the risk of transfusion-transmitted viral infections of HIV 1-2, hepatitis B, and hepatitis C, which the lay public fears most. Furthermore, such an error reduction program would be more cost-effective than the additional screening of donated blood. This study provides guidelines for public policy to improve the safety of RBC transfusion in the United States. **Publications:** 18

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Kenneth Kizer **National Quality Forum (NQF)** Washington, DC	R13 HS14497 [Grant] **The National Quality Forum – Annual Meeting 2003** 2003-2004 $50,000 Final Report	**Purpose:** Conduct NQF's fourth annual meeting to bring members together, provide a venue for discussion and dialogue concerning healthcare measures and quality, and present information that is both thought provoking and relevant to NQF members. **Key Findings/Impact:** More than 250 people from 151 organizations attended the meeting, held September 29 and 30, 2003, in Washington, DC The meeting, National Healthcare Quality Management: Everyone Has a Role, focused on the role of all stakeholders in bringing to life the vision of NQF's National Framework for Healthcare Quality Measurement and Reporting. The format included three types of sessions: plenary, intercouncil and breakout sessions, and the NQF Board of Directors meeting. Participant evaluation and feedback indicated that the meeting's goals were met. **Publications:** 0
Kenneth Kizer **National Quality Forum (NQF)** Washington, DC	R13 HS15637 [Grant] **The National Quality Forum –Annual Meeting 2004** 2004-2005 $50,000 Final Report	**Purpose:** Conduct NQF's fifth annual meeting to foster dialogue among its members, provide updates on NQF activities, focus on the implementation of national voluntary consensus standards for healthcare quality, learn about federal initiatives to drive healthcare quality improvement, and recognize outstanding contributions to patient safety and quality improvements. **Key Findings/Impact:** More than 250 people from 151 organizations attended the meeting, Improving Healthcare Quality for All Americans: Fulfilling the Healthcare Quality Imperative Through Innovation and Implementation, held October 6 and 7, 2004, in Washington, DC. The sessions dealt with issues that ranged from implementation examples and strategies at local facilities to documenting and examining the movement toward national healthcare quality improvement. The format included three types of sessions: plenary, intercouncil and breakout sessions, and the NQF Board of Directors meeting. The major products of the meeting were a set of implementation recommendations and a document summarizing the state of implementation in the healthcare domain. An overview paper that includes a summary of the results of the breakout sessions was also produced. **Publications:** 0
Robyn Nishimi **National Quality Forum (NQF)** Washington, DC	R13 HS16276 [Grant] **The National Quality Forum – Annual Meeting 2005** 2005-2006 $25,000 Final Report	**Purpose:** Conduct NQF's sixth annual meeting to discuss and share information on the implementation of national voluntary consensus standards endorsed by NQF, providing a venue for multiple organizations to share best practices and discuss barriers and solutions to implementing the voluntary consensus standards. **Key Findings/Impact:** More than 325 people from 220 organizations attended the meeting, The Accountability and Transparency Puzzle: Implementing NQF-EndorsedTM Consensus Standards, held October 6 and 7, 2005, in Washington, DC. The sessions dealt with issues ranging from pay for performance to implementation of measures at both the national and local levels. The sessions involved stakeholders from all areas of healthcare sharing their perspectives on system-level issues as well as specific priority areas. The format included a mix of plenary sessions, intercouncil meetings, and the NQF Board of Directors meeting. Participant evaluation and feedback were positive. Attendees took away practical and constructive ideas and suggestions for implementing endorsed voluntary consensus standards. **Publications:** 0

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Janet Corrigan **National Quality Forum (NQF)** Washington, DC	R13 HS16597 [Grant] **National Quality Forum – National Annual Policy Conference 2006** 2006-2007 $50,000 Final Report	**Purpose:** Conduct NQF's seventh annual meeting for healthcare quality stakeholders involved in implementing NQF-endorsed™ national voluntary consensus standards to share information and discuss the rapidly evolving healthcare quality landscape. **Key Findings/Impact:** More than 350 people representing a variety of healthcare stakeholders attended the conference, focused on the rapidly evolving healthcare quality landscape, October 12 and 13, 2006, in Washington, DC. In addition to plenary sessions and other presentations, the meeting included six panel discussion sessions that focused on issues ranging from the rapidly evolving healthcare quality landscape to current national initiatives. Participant evaluations and feedback were positive. Attendees left the meeting with practical and constructive ideas for implementing NQF-endorsed voluntary consensus standards. **Publications:** 0
Dianne Feeney **National Quality Forum (NQF)** Washington, DC	R13 HS17401 [Grant] **National Quality Forum – National Annual Policy Conference 2007** 2007-2008 $44,509 Final Report	**Purpose:** Conduct NQF's eighth annual meeting for healthcare quality stakeholders involved in implementing NQF-endorsed™ national voluntary consensus standards to share information and discuss the rapidly evolving healthcare quality landscape. **Key Findings/Impact:** More than 350 people representing a variety of healthcare stakeholders attended the conference September 26 and 27, 2007, in Washington, DC. Presentations and discussions focused on measuring quality; developing new payment and incentive systems; building public-private partnerships; and adopting innovations in clinical health system design, medical management, electronic health records, and nursing care. The conference had plenary sessions and speakers as well as three panel discussions. Participant evaluations and feedback were positive. Attendees left the meeting with practical and constructive ideas and strategies for implementing NQF-endorsed voluntary consensus standards. **Publications:** 0
Melinda Murphy **The National Forum for Health Care Quality Measures and Reporting** Washington, DC	290-07-10017-2 [Contract] **NQF Input on Common Formats** 2007-2010 $499,216	**Purpose:** Review the Common Formats AHRQ developed with its federal partners, review comments received through the National Quality Forum's (NQF's) or AHRQ's processes for requesting and receiving comments and make recommendations to AHRQ regarding the Common Formats in the context of those comments. **Key Findings/Impact:** A final report was not available, but a brief description of this contract and others was provided in a packet for an NQF Meeting of the Steering Committee, Endorsing Preferred Practices and Performance Measures for Measuring and Reporting Care Coordination, held January 27 and 28, 2009, in Washington, DC. As of 2009, NQF had collected 400 comments on Common Formats, which were released on August 29, 2008. **Publications:** 0
Department of Veterans Affairs, National Center for Patient Safety Washington, DC	08-612MO-08 [Inter Agency Agreement] **Pilot Test of Common Formats for Patient Safety Event Reporting** 2008	**Purpose:** Provide guidance to refine and revise the Common Formats that include definitions, technical requirements, and reporting formats to give healthcare providers a way to collect and submit standardized information regarding patient safety events. **Key Findings/Impact:** A final report was not available, but one publication reveals a brief overview of the type of feedback received on the Common Formats pilot tests. The results of this work were shared during a presentation at AHRQ's September 7, 2008, annual conference. Feedback included style/formatting, ease of use, length of time to complete, navigation, wording, and clarity of instructions. With the clarity of instructions, feedback was broken down to overall, skip patterns, and consistency. Feedback was sought from private sector organizations, nonfederal public organizations, and individual users of the Common Formats. **Publications:** 1

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Dwight McNeil **National Quality Forum (NQF)** Washington, DC	R13 HS17882 [Grant] **National Quality Forum – Fall Policy Conference 2008** 2008-2009 $25,000 Final Report	**Purpose:** Conduct NQF's ninth annual meeting for healthcare quality stakeholders involved in implementing NQF-endorsed™ national voluntary consensus standards to share information and discuss the rapidly evolving healthcare quality landscape. **Key Findings/Impact:** More than 300 people representing a variety of healthcare stakeholders attended the conference October 15 and 16, 2008, in Crystal City, Virginia. The conference focused on the important crossroads facing efforts to reform healthcare quality, the current state of healthcare policy in the quality landscape, payment policies, delivery system reform, national priorities, health disparities, and communities. The conference included plenary sessions, panel discussions, council meetings, and a meeting of the NQF Board of Directors. The conference addressed the critical political and policy issues facing healthcare quality with the 2008 presidential election approaching. Participant evaluations and feedback were positive. **Publications:** 0
Melinda Murphy **The National Forum for Health Care Quality Measures and Reporting** Washington, DC	290-07-10017-4 [Contract] **NQF and the AHRQ Common Formats: A Process for Private Sector and Expert Panel Feedback** 2010-2011 $370,542	**Purpose:** Solicit feedback from private sector organizations, individuals, and an expert panel on released Common Formats. **Key Findings/Impact:** A final report was not available, and publications could not be found. **Publications:** 0
Melinda Murphy **The National Forum for Health Care Quality Measures and Reporting** Washington, DC	290-07-10017-5 [Contract] **NQF and the AHRQ Common Formats: Hospital 1.2, Skilled Nursing Facility 1.0, Standard Lists, MPSMS** 2011-2013 $600,000	**Purpose:** Improve the safety and quality of healthcare delivery by facilitating standardized data collection through the Common Formats and maintaining and updating the Medicare Patient Safety Monitoring System (MPSMS). **Key Findings/Impact:** A final report was not available, and publications could not be found. **Publications:** 0

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Frances Margolin **Leapfrog Group** Washington, DC	R13 HS22367 [Grant] **Expert Panel on Composite Hospital Safety Scores** 2013 $49,979	**Purpose:** Develop a composite patient safety score that gives patients, healthcare providers, and healthcare purchasers a standardized method to evaluate patient safety in general acute care hospitals in the United States. **Key Findings/Impact:** A final report was not available, but one publication reported project results. The score included 26 measures. The mean composite score for 2,652 general acute care hospitals in the United States was 2.97 (range by hospital, 0.46–3.94). Safety scores were slightly lower for hospitals that were publicly owned, were in rural areas, or had a larger percentage of patients with Medicaid as their primary insurance. The Leapfrog patient safety composite provides a standardized method to evaluate patient safety in general acute care hospitals in the United States. While constrained by available data and publicly reported scores on patient safety measures, the composite score reflects the best available evidence regarding a hospital's efforts and outcomes in patient safety. Additional analyses are needed, but the score did not seem to have a strong bias against hospitals with specific characteristics. **Publications:** 0
Clinovations GovHealth Washington, DC	HHSA290201400008I [Contract] **Feasibility of the Partial Automation of Data Abstraction for Quality and Safety Review System (QSRS)** 2015-2016 $475,000	**Purpose:** Provide an assessment of the automation feasibility of populating Quality and Safety Review System (QSRS) questions from electronic health record data. **Key Findings/Impact:**To improve and standardize the collection of adverse event data, AHRQ developed and tested a patient safety surveillance system called the QSRS. Researchers concluded that 58% of QSRS questions were relatively easy to automate and 77% of QSRS questions were feasible for automation using available capabilities in the market. For the remaining 23% that required natural language processing and were classified as "high complexity," the report suggested that AHRQ consider a review of the questions and determine whether AHRQ could identify areas for introduction and engagement with standards development organizations and other standards and specifications bodies, as well as health information technology certification. Researchers recommended a series of next steps and pilots to support evaluation and testing of partial automation approaches for QSRS. **Publications:** 1

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
FLORIDA		
Robert Wears **University of Florida** Gainesville, Florida	P20 HS17141 [Grant] **Proactive Risk Assessment in the ED: Building the 'Safety Case'** 2007-2009 $197,261 Final Report	**Purpose:** Apply proactive risk assessment (PRA) methods to health information technologies in emergency departments. **Key Findings/Impact:** In the final report, investigators report that safety assessments using PRA methods can be effective in evaluating the risks from information technologies. Results showed: 1. The environment in which PRA was developed typically showed small numbers of deep trees involving multiple interacting failures, but the PRA in this project revealed large numbers of relatively shallow trees, suggesting that in the setting studied, single point failures were more common than had been thought. 2. Tempo of operations is a critical factor in risk in this setting. Under normal conditions, both technologies—manual and computerized status boards—appear to be adequate, in that no high-risk scenarios were identified; however, under high-tempo conditions, both technologies gave rise to high-risk scenarios: 3 manual cases and 9 computerized cases. Investigators concluded that safety evaluations under "normal" conditions can be misleading guides to safety under "real world" conditions. In addition, as a side observation, investigators found that if the electronic system becomes perceived as less reliable by users at the "sharp end" of care, the likelihood of high-risk scenarios will increase and may become a major concern. At the time of the study, no standards existed for the reliability of information technology in healthcare. The approach used here could provide one way to estimate the levels of reliability that should be required of such systems. **Publications:** 3
Lynn Unruh **University of Central Florida** Orlando, Florida	R03 HS20715 [Grant] **Benchmarking Patient Safety and Quality in U.S. Hospitals** 2011-2013 $97,446 Final Report	**Purpose:** Estimate the gaps between the observed and best possible Hospital Compare outcomes scores and explore predictors of those gaps. **Key Findings/Impact:** Investigators found that most hospitals had up to a 10% quality and safety gap between their stochastic frontier analysis (SFA)-predicted scores and actual quality and safety scores; a smaller percentage (0-15%) of hospitals had >50% quality and safety gaps. The results showed that the SFA compared favorably to other quality reporting systems. The SFA appeared to provide a more detailed description of hospital quality, and a better comparison of quality between hospitals. Investigators noted that the SFA found significant gaps between a hospital's best possible and observed quality and safety indicators. This finding indicates that, based on their existing capital, labor, and technology, hospitals have room to improve care quality, especially related to mortality due to surgical procedures and patient complications. **Publications:** 1

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Yu-Jung Wei **University of Florida** Gainesville, Florida	R03 HS27230 [Grant] **Prescription Opioid Use Trajectories and Risk Factors Associated With Opioid-Related Hospitalizations in Older Adults** 2019-2021 $48,474 Final Report	**Purpose:** Assess high-risk prescription opioid use patterns in older adults and risk factors associated with opioid-related adverse events (ORAEs), including opioid misuse, opioid use disorder, and opioid overdose among older adults. **Key Findings/Impact:** Researchers conducting this nested case-control study identified four prescribed opioid dose trajectories during 6 months before incident ORAE diagnosis or matched date. The risk of ORAEs increased with increasing prescribed opioid dose, suggesting that many older adults might be susceptible to a prescribed opioid dose as low as 3mg morphine mg equivalents. Alternatively, these patients might have used illicit opioids or other substances to supplement prescribed low-dose opioids to achieve pain control before ORAE events. The receipt of duplicated opioids, chronic opioid use, or concurrent use of opioids with other central nervous system drugs was associated with an increased risk of OREAs. Mental health conditions, cardiovascular diseases, and kidney disease after prescription opioid therapy were significant predisposing factors of ORAEs. Newly diagnosed injury, respiratory infection, and infection due to nonsterile opioid injection after opioid initiation were associated with subsequent increased risk of ORAEs among older adults. The results from this line of research have helped clinicians identify and manage older patients at risk for ORAEs, improving opioid prescribing and safety in geriatric populations. **Publications:** 5
GEORGIA		
Kenneth Thorpe **Georgia Hospital Association Research and Education Foundation; Partnership for Health and Accountability (PHA)** Marietta, Georgia	U18 HS11918 [Grant] **Accountability and Health Safety A Statewide Approach** 2001-2005 $5,228,875 Final Report	**Purpose:** Evaluate (1) the effectiveness of a voluntary error reporting system for hospitals in Georgia; (2) the cost of patient safety initiatives; (3) the culture of patient safety; (4) the extent of information technology; and (5) patient safety communication, including informing patients about harm caused by errors. **Key Findings/Impact:** Preliminary evidence of success was demonstrated through PHA's active awards program, public reporting initiative, and safe medication use program. Supporting research showed a significant reduction in targeted medication errors and improvement in adherence to treatment guidelines. Key findings from these studies indicated that: 1. Medication dose omission was the most common error type addressed by participating hospitals. 2. Comparison of employee views with leadership perception revealed that hospital leaders perceived a more positive patient safety culture than did employee respondents; and 3. There is a wide and occasionally hostile divergence of professional opinion on the nature and amount of information that should be disclosed to an individual harmed by error. **Publications:** 4

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Swaminathan Kandaswamy **Emory University** Atlanta, Georgia	R03 HS29417 [Grant] **Human Factors and Implementation Evaluation of Pediatric AI Sepsis Model in the Pediatric Emergency Department** 2023-2025 $51,729	**Purpose:** Measure implementation outcomes and establish the feasibility of measuring the mechanism of impact via human performance aspects such as trust, situational awareness, and workload. **Key Findings/Impact:** A final report is not yet available. **Publications:** 0
ILLINOIS		
Lynn Olson **American Academy of Pediatrics** Itasca, Illinois	R13 HS12078 [Grant] **Pediatric Health Status and Outcomes Measurement Conference** 2002-2003 $49,630	**Purpose:** Accurately measure the health of the increasingly diverse population of U.S. children, which requires instruments that are comparable and valid across cultures, economic background, and language. This project sought to determine whether the field of pediatric health status measures had reached this level of comprehensiveness. **Key Findings/Impact:** A final report was not available, but in one resulting publication the investigators reported that most measures included minority groups, usually African American or Hispanic children, although with little information by Hispanic subgroup. Investigators concluded that much had been accomplished in advancing health status measures for children. Next-generation issues included the influence of race, ethnicity, and income on health and health report. **Publications:** 7
Richard Cook **University of Chicago** Chicago, Illinois	UC1 HS14261 [Grant] **Probabilistic Risk Assessment Chicago Transplant Insight Study (PRACTIS)** 2003-2005 $139,400 Final Report	**Purpose:** (1) Produce a probabilistic risk assessment (PRA) of transplant donor/recipient mismatch, (2) evaluate the sensitivity of PRA to individual event probability estimates and model changes, (3) characterize the risk of transplant donor/recipient mismatch, (4) predict the conditions and processes where improvements would have significant value, (5) evaluate the risk assessment results and possible process and condition changes, and (6) provide a model for successful PRA to advance patient safety. **Key Findings/Impact:** In the final report, investigators reported that the predicted rate of ABO-incompatible thoracic organ implantation in the U.S. transplantation system prior to March 2003 was 260 x 10-7 per transplanted organ. Changes in the transplantation process mandated by the United Network for Organ Sharing in March 2003 and October 2004 further reduced the predicted rate to 31 x 10-7 and 2.2 x 10-7 per transplanted organ. Investigators concluded that the underlying tensions that create the opportunity for this form of failure remain at the center of the transplantation process, and it is likely that these tensions will give rise to other forms of failure. **Publications:** 2

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Milton Eder **Access Community Health Network** Chicago, Illinois	P20 HS17131 [Grant] **Risk Assessment of the Testing Processes of Access Community Health Network** 2007-2009 $199,856 Final Report	**Purpose:** Understand areas of risk within the testing process and improve the safety of the testing process within Access Community Health Network's (ACCESS's) primary care centers through a comprehensive risk assessment of the management of laboratory testing, imaging studies, and special tests; and raise staff awareness about improving quality and safety while contributing to the limited published research on office testing systems. **Key Findings/Impact:** In the final report, investigators stated: 1. The management of testing in ACCESS had significant variation both within and between health centers. Variation in the health center testing processes was one source of uncertainty and error. 2. Patients did not consistently receive notification of test results, nor did they consistently follow up on abnormal results. 3. Testing processes could not be improved without careful coordination with other office systems. Investigators noted that lack of standardization in testing processes resulted in inefficiencies and errors. Because of this risk assessment, leadership and employees of the health centers were beginning to make the connection between other quality issues and patient safety. Standardization of the testing process, diligent test tracking, staff training, and dedicated time for staff to manage the testing process were among the recommendations for practice improvements to reduce errors within the testing process. In addition, assessing a practice's testing process could identify areas of risk and potential for causing harm to patients. **Publications:** 0

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Jane Holl **Northwestern University, Chicago Campus** Chicago, Illinois	P20 HS17125 [Grant] **Risk Assessment of Pediatric Emergency Transfers** 2007-2009 $196,886 Final Report	**Purpose:** Proactively assess the risks during transfers of pediatric patients from referring emergency departments (EDs) to the six Chicago-area hospitals with inpatient pediatric services that make up the Pediatric Patient Safety Consortium (receiving hospitals); and condense the results into a single set of risks and, based on the identified risks, design a standardized process and toolkit to be used by all of the EDs and hospitals involved in these transfers. **Key Findings/Impact:** In the final report's principal findings, investigators describe: 1. Lack of standardization of information deemed necessary to be communicated for a pediatric emergency transfer across the participating hospitals. 2. Lack of a standard process for the emergency transfer of a pediatric patient across the participating hospitals. 3. General lack of feedback or inadequate feedback by the receiving hospitals about the outcome of the transferred patient and about the management of the patient at the referring hospital. 4. Significant lack of internal knowledge about existing resources, protocols, roles, and responsibilities within each hospital regarding the emergency transfer process. In the final report's conclusion, investigators stated that this project resulted in the highly generalizable Chicago Metropolitan Area Pediatric Transport Form, a standardized form that includes all of the demographic, administrative, and clinical elements identified as critical to the safe transfer of pediatric emergency patients by clinicians from 18 Chicago-area hospitals that emergently transfer pediatric patients. Researchers also noted that participation and enthusiasm for the Failure Mode Effects and Criticality Analysis (FMECA) sessions were extremely high, which suggests that clinicians supported healthcare process improvements when the process was systematically and fully explored through the FMECA process. **Publications:** 0

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Donna Woods **Northwestern University, Chicago Campus** Chicago, Illinois	P20 HS17114 [Grant] **LEARN (Leveraging Existing Assessments of Risk Now) for Pediatric Patient Safety** 2008-2009 $199,313 Final Report	**Purpose:** Prospectively identify generic mechanisms of healthcare risks among institutions across the country to target patient safety improvement in children's emergency medical care using the LEARN method, which consists of a meta-analysis of existing risk assessment. **Key Findings/Impact:** In the final report, investigators reported more than 400 fail-points across the risk assessments. Of these, 296 had a risk priority number designating them as medium to high risk. The LEARN team reviewed several failure mode effects analyses related to institutional transfers. Based on the initial analysis, common high-risk aspects of institutional transfers included the following: 1. Lack of standards and inconsistent formats for clinical communication of necessary clinical information 2. Problems with assessment 3. Clarity of what is needed for the patient 4. Frequent information loss communicating across a complex set of procedures due to: ○ Informality of verbal communication. ○ Staff workload issues. ○ Frequent interruptions. ○ Number of handoffs. ○ Information lost or left behind. ○ Fax failures. Investigators concluded that the LEARN method of conducting a meta-analysis of risk results had potential uses and could be applied in multiple and varied contexts as an informative tool for assessing generic risks and risk contributors in medical care. This method can be applied directly, as is suggested here, to research the generic risks and risk contributors for a particular population of patients or for a particular type of medical care, such as emergency medical care or cancer treatment. **Publications:** 1

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Nancy Kupka **Joint Commission** Oakbrook Terrace, Illinois	P20 HS17113 [Grant] **Risks of Inaccurate or Incomplete Preoperative Assessments in Freestanding ASCs** 2007-2009 $198,040 Final Report	**Purpose:** Model risks and weaknesses in preoperative nursing assessments in the freestanding ambulatory surgery center (ASC) setting. **Key Findings/Impact:** In the final report, investigators reported that the most frequent and significant risks (failures) in the preoperative nursing assessment process involved (1) medication ordering and administration, (2) medication reconciliation, and (3) application of the Universal Protocol and surgical site marking. Researchers identified the necessity of developing and testing tools and processes ASCs may use to enhance their preoperative assessment process to facilitate continuity and safety in patient care in the following: • Medication ordering and administration • Medication reconciliation • Application of the Universal Protocol (with emphasis on surgical site marking) • Patient identification • Clinical handovers Investigators concluded that poorly articulated assessments and incomplete or unread documentation are process flaws well discussed in the literature, but additional work should focus on work processes related to temporarily affixed visual cues and their use in workflows. **Publications:** 0
Karen Kmetik **American Medical Association** Chicago, Illinois	R18 HS17160 [Grant] **Cardio-Health Information Technology Phase II** 2007-2009 $889,874 Final Report	**Purpose:** Assess the prevalence of exception reporting, document specific reasons for exceptions, evaluate the relative accuracy of reported exceptions, and identify the location of exception data in electronic health records (EHRs). **Key Findings/Impact:** Cardio-HIT Phase II was a nonexperimental, observational study designed to investigate the prevalence and patterns of rates of exceptions and apparent quality failures, as well as measuring met performance reported electronically for the coronary artery disease and heart failure measures. Investigators noted that the significance of this work might have been to increase the ability to collect and analyze exception data and to bring understanding to variations in care. If physician performance measures reported from EHRs were widely available, payers and policymakers could reliably use them for quality reporting and pay for performance, as well as identifying outlier rates in larger, population-based measurement programs to target reasons and variations among patient populations. These findings could enable the development and dissemination of health IT evidence and evidence-based tools to improve healthcare decision making using integrated data and knowledge management. **Publications:** 1

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Donna Woods **Northwestern University, Chicago Campus** Chicago, Illinois	R18 HS17912 [Grant] **Risk Informed Clinical Information Network for Safe Pediatric Emergency Transfers** 2008-2012 $889,903 Final Report	**Purpose:** Develop and implement a risk-informed communication standard for pediatric emergency transfers that could be developed into a web-based tool to improve clinical communication and decision making during pediatric emergency transfers. This Clinical Information Network (CIN) was an intervention designed to support standardized, safe, and reliable clinical communication for pediatric transfers. **Key Findings/Impact:** In the final report, investigators determined that the CIN appropriately captured all pertinent clinical information for pediatric emergency transfers. They concluded the development of the web-based CIN by the contracted software developers enabled a deeper understanding of the processes, workflow analysis and methods, website configuration, and security criteria and methods that are part of the critical design of an effective communication tool. The team planned to continue developing the work of the CIN by partnering with a new entrepreneurial, technologically advanced information startup company that was just starting out and looking to develop strong business relationships by showcasing their novel approach to clinical decision support tools and interfaces. **Publications:** 0
David Mayer **University of Illinois** Urbana-Champaign, Illinois	R13 HS19082 [Grant] **A Workshop To Transform Mindsets** 2010-2011 $49,997	**Purpose:** Build a comprehensive curriculum as an important first step in ensuring a more widespread adoption of policies for open and honest communication with patients and families after a patient safety incident. **Key Findings/Impact:** A final report was not available. This workshop sought to bring together stakeholders from medicine, nursing, public health and health administration, allied health professions, government, law, insurance companies (personal health insurers and medical malpractice insurance carriers), and patient advocates with faculty and students/trainees to discuss, explore, and develop an innovative, immersive curriculum focused on open and honest communication with patients and families after a patient safety incident (medical error). **Publications:**
Lance Peterson **Northshore University Health System** Chicago, Illinois	R18 HS19968 [Grant] **Detection, Education, Research and Decolonization Without Isolation in Long-term Care** 2010-2013 $1,496,467 Final Report	**Purpose:** Create a model of hospital long-term care facility (LTCF) infection control collaboration by developing LTCF-tailored interventions that reduce infection risk in older adults; and use the prevention of methicillin-resistant Staphylococcus aureus (MRSA) disease as the program proof-of-concept model. **Key Findings/Impact:** This project tested MRSA reduction interventions in LTCFs, showing significant increases in colonization reduction (30.2% year 1, 36.6% year 2) and infection (47.7% year 1, 72.7% year 2). Active surveillance and targeted decolonization effectively reduced MRSA infections without limiting residents' activities. The study highlighted the adequacy of nasal screening and the need for followup decolonization attempts. A key outcome was developing a collaborative model between acute care hospitals and LTCFs for infection prevention, resulting in long-term management contracts for two participating LTCFs. **Publications:** *7*

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Prachi Sanghavi **University of Chicago** Chicago, Illinois	R01 HS26957 [Grant] **Assessing and Improving Patient Safety Measurement in Nursing Homes** 2019-2024 $1,424,646	**Purpose:** Use Medicare and Medicaid claims of nursing home patients to identify health events that led to hospital visits. The focus will be on four patient safety sections of the Minimum Data Set 3.0 (MDS): falls, pressure ulcers, urinary tract infections, and pneumonia. All of these are generally preventable but without proper care can lead to serious physical and psychological morbidity and mortality. **Key Findings/Impact:** This project was completed on May 31, 2024, but a final report is not available yet. However, researchers did report the results of an assessment of nursing home self-report of major injury falls on the MDS. They identified 150,828 major injury falls in claims that occurred during nursing home residency. For the MDS item used by NHC, only 57.5% were reported. Reporting was higher for long-stay (62.9%) than short-stay (47.2%), and for White (59.0%) than nonwhite residents (46.4%). Adjusting for facility-level racial differences, reporting was lower for nonwhite people than White people; holding constant patient race, having larger proportions of nonwhite people in a nursing home was associated with lower reporting. The correlation between fall rates based on claims vs. the MDS was 0.22. **Publications:** 4
INDIANA		
J. Marc Overhage **Indiana University - Purdue University, Indianapolis (IUPUI)** Indianapolis, Indiana	U18 HS11889 [Grant] **Improved Patient Safety With Information Technology** 2001-2005 $1,518,420 Final Report	**Purpose:** Identify indicators of errors in ambulatory patient care in 18 practices that are part of a practice-based research network (ResNet). **Key Findings/Impact:** This study aimed to reduce errors in ambulatory care using the Regenstrief Medical Record System. Key achievements included implementing organizational changes across 18 primary care practices, expanding pharmacy data access, and demonstrating significant care improvements (e.g., asthma controller prescriptions increased from 58% to 68%, and LDL control improved from 60% to 85%). However, technical issues with computer reminders affecting 10% of patients required temporary suspension of the system, highlighting both opportunities and challenges in using technology to improve patient safety. **Publications:** 1
IOWA		
Iowa Foundation for Medical Care (IFMC) West Des Moines, Iowa	290-07-10032 [Contract] **Patient Safety Organization Privacy Protection Center** 2007-2012 $12,296,697	**Purpose:** Establish and operate a technical assistance center that will support Patient Safety Organizations through education, training, culture improvement, implementation strategies, and collaborative relationships to enhance patient safety outcomes using data-driven approaches. **Key Findings/Impact:** A final report was not available, and publications could not be found. **Publications:** 0

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
William Doucette **University of Iowa** Iowa City, Iowa	R18 HS18353 [Grant] **Demonstration of Quality Improvement of Medication Therapy Management Services** 2009-2013 $1,839,565 Final Report	**Purpose:** Conduct and evaluate a multifaceted quality improvement program for medication therapy management (MTM) services provided through an MTM service coordinator, Outcomes Pharmaceutical Health Care. **Key Findings/Impact:** The project evaluated three interventions to enhance an MTM program, yielding mixed results. The patient targeting intervention increased messaging to pharmacies, the pharmacist training saw limited uptake, and the patient engagement intervention increased Comprehensive Medication Reviews. While overall medication use improved across all groups, including the control, this universal improvement made it difficult to detect significant differences between intervention and control groups. The study provided valuable insights for improving MTM efficiency and patient engagement, despite not showing significant differences in medication use outcomes compared with the control group. **Publications:** 6
Thomas Geb **University of Iowa** Iowa City, Iowa	R18 HS25353 [Grant] **Simulation to Support Competency-Based Training in Orthopedic Trauma** 2017-2023 $1,986,640 Final Report	**Purpose:** Provide the orthopedic training community with scientifically defendable criteria for critical orthopedic surgical skills at three key developmental points in surgical residency: ready to operate, ready to lead a surgery supervised by faculty, and ready for independent practice. **Key Findings/Impact:** This study developed and validated surgical simulation tools for assessing orthopedic trauma surgery competency. Key findings showed that simulator training improved wire navigation skills in both simulated and actual operating rooms, with improvements matching those gained through real surgical experience. The research established competency benchmarks and demonstrated that skills learned on specific simulator tasks successfully transferred to other wire navigation procedures. The project also developed new methods for objectively measuring surgical performance through fluoroscopic image analysis, offering a more reliable alternative to subjective expert evaluation. **Publications:** 10
KANSAS		
Paul Sharek **Child Health Corporation of America** Shawnee Mission, Kansas	U18 HS13698 [Grant] **Implementing Pediatric Patient Safety Practices** 2002-2006 $1,144,950	**Purpose:** Design, evaluate, and implement national measures of quality and health outcomes for children. **Key Findings/Impact:** This project's key findings pertained to pain management, medication safety, narcotic-related adverse drug events (ADEs), and patient safety. In pain management, it was found that numeric assessments by physicians or neonatal nurse practitioners may be more effective than those by RNs. For medication safety, the Child Health Corporation of America (CHCA) adverse event detection pediatric trigger tool identified 22 times more adverse drug events than traditional reporting mechanisms (i.e., incident reports). A collaborative of 14 CHCA hospitals also reduced median narcotic-related ADE rates by 67% between the baseline and postimplementation timeframes. Regarding patient safety, a multihospital study implementing collaborative central venous catheter-associated bloodstream infection protocols resulted in a decreased infection rate, preventing 267 infections and avoiding an estimated $2.9 million in costs. CHCA planned to sustain and disseminate project results through ongoing performance improvement activities, funded by its regular revenues, and by sharing tools and resources via its website and conferences. **Publications:** 5

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
	MARYLAND	
Haya Rubin **Johns Hopkins University** Baltimore, Maryland	R13 HS10970 [Grant] **Buenos Aires Indicators Summit** 2001-2002 $50,000	**Purpose:** Convene an international think tank to exchange information about indicators of healthcare quality, emphasizing medication safety, at the 2001 annual 2-day International Society for Quality in Health Care (ISQua) conference in Buenos Aires, Argentina. **Key Findings/Impact:** The October 2001 summit included lectures, panels, and question-and-answer sessions. Final attendance included 60 participants from 22 countries. Day 1 focused on policy and accountability issues, and Day 2 focused specifically on using indicators to improve medication safety. Conference evaluation comments received were very positive. Participants particularly enjoyed the second day of proceedings focused on medication safety and felt that all the presentations were highly educational and advanced their understanding of and familiarity with the uses of the available methods for measuring error and harm from medications. A supplement of the meeting presentations was subsequently published in December 2003 in the *International Journal for Quality in Health Care*. **Publications:** 2
The Kevric Company Silver Spring, Maryland	290-02-0015 [Contract] **Patient Safety Database** 2002-2003 $1,328,662	**Purpose:** Unknown **Key Findings/Impact:** A final report is not available, and publications could not be found. **Publications:** 0
Thomas La Veist **Johns Hopkins University** Baltimore, Maryland	R03 HS13274 [Grant] **Measuring Trust in Healthcare** 2002-2003 $99,781 Final Report	**Purpose:** Determine the reliability and validity of a new measure of patient's trust of medical care. The measure is a 17-item scale with 3 subscales. **Key Findings/Impact:** Investigators concluded that the Medical Mistrust Index is a reliable measure of an individual's trust of medical care. La Veist has gone on to publish extensively on topics related to medical trust in the healthcare system using the Medical Mistrust Index, including highly cited literature that addresses racial differences in trust of the healthcare system. One publication associated with this grant examined racial differences in knowledge of the Tuskegee study and the relationship between knowledge of the Tuskegee study and medical system mistrust among Black and White adults. **Publications:** 2

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Diane Cousins **U.S. Pharmacopeia** Rockville, Maryland	R13 HS16515 [Grant] **Medication Error Reporting Systems: Challenges, Lessons, Future Direction** 2006–2007 $49,000 Final Report	**Purpose:** Explore how hospitals experienced in medication error reporting have used medication error reports to improve patient safety, which in turn encourages patient safety interventions at the health facility level. **Key Findings/Impact:** This 2-day conference (held March 15-16, 2007, in Gaithersburg, Maryland) convened participants from 20 facilities that had participated in the U.S. Pharmacopeia (USP) MEDMARX® medication error reporting program for at least 5 years. Attendees also included individuals from national and state organizations, academic medical centers, and rural (critical access) hospitals, all of whom were familiar with various patient safety reporting programs. The conference included panel and breakout sessions on data collection and analysis and challenges regarding interventions, impact, and evaluation. A panel discussion on implications for practice at the facility level, research, and policy concluded the conference. This conference resulted in important information regarding how to enhance the value obtained from patient safety reporting systems. New information resulting from presentations and discussions during this conference helped clinicians, researchers, and policymakers seeking to improve the value obtained from patient safety reporting systems and ultimately reduce preventable harm to patients. **Publications:** 0
Peter Goldschmidt **World Development Group** Bethesda, Maryland	290-06-0034 [Contract] **Technical Support for Network of Patient Safety Databases and Common Formats** 2006-2010 $4,053,852	**Purpose:** Provide technical assistance to AHRQ for the development of Common Formats for patient safety event reporting and the delivery of technical assistance to support AHRQ's administration of the Patient Safety Organization (PSO) program. The technical assistance contract encompassed activities associated with the AHRQ Common Formats and AHRQ's administration of the PSO program pursuant to the Patient Safety and Quality Improvement Act of 2005. **Key Findings/Impact:** A final report was not available, and publications could not be found. **Publications:** 0
National Institutes of Health, National Cancer Institute Bethesda, Maryland	07-302R-02 [Inter Agency Agreement] **NQF Meeting – Towards a Comprehensive Cancer Measure Set: Value-Based Episodes of Care** 2007 $85,000	**Purpose:** Provide the government with recommendations for a path forward for cancer quality measurement, as well as a defined research agenda. **Key Findings/Impact:** A workshop, Towards a Comprehensive Cancer Measure Set: Value-Based Episodes of Care, convened May 20, 2008, in Washington, DC. The workshop addressed the current state of cancer care quality measurement; presented an approach for measuring quality care through the episode of care approach; described the planning committee's conceptualization of episodes of care for breast and colorectal cancers; highlighted recognized gaps in measures of cancer care quality; and summarized recommendations offered by experts at the workshop for a path forward. The workshop committee comprised two National Quality Forum staff members and nine experts from across the country. The workshop produced six recommendations regarding the future direction of cancer quality measurement. The episode of care framework is a potentially valuable tool for cancer quality assessment and cost containment; however, barriers to implementing this framework exist. **Publications:** 2

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Westat Rockville, Maryland	290-07-10033 [Contract] **Patient Safety Organization Network of Patient Safety Databases** 2007-2012 $21,000,000	**Purpose:** Establish and manage an operations center for AHRQ's Network of Patient Safety Databases to collect anonymous patient safety data, develop standardized reporting formats, analyze safety reports, and maintain quality control across the database network. **Key Findings/Impact:** A final report was not available, and publications could not be found. **Publications:** 0
Melissa McCarthy **Johns Hopkins University** Baltimore, Maryland	R13 HS17577 [Grant] **Developing Metrics for Measuring Hospital Response Capability for Mass Casualty Incidents** 2008-2009 $50,000 Final Report	**Purpose:** Convene a group of experts to reach consensus on a framework of hospital operational readiness for all-hazards emergencies and disasters. **Key Findings/Impact:** About 50 participants attended the conference at the Johns Hopkins University Applied Physics Laboratory (APL) in Laurel, MD, on June 24 and 25, 2008. The experts reached consensus on a readiness framework that consisted of six dimensions: (1) emergency management program; (2) incident command system; (3) occupant safety and security; (4) continuity of operations; (5) medical surge; and (6) support to external organizations. Within each dimension, the panel members identified many capability elements. The next step was to define the capability elements in objective, measurable terms so that hospitals could use the framework to self-assess their operational readiness for emergencies and disasters. **Publications:** 0
Daniel Morgan **University of Maryland** College Park, Maryland	K08 HS18111 [Grant] **Improving Patient Safety and Disease Management While on Contact Isolation** 2009-2014 $660,874 Final Report	**Purpose:** Acquire specific expertise in methods to study adverse events and psychiatric outcomes. **Key Findings/Impact:** Investigators found no increase in adverse events related to patient isolation. Likewise, depression and anxiety, which were associated with isolation, appeared to be primarily due to the confounding effect of patients who were more chronically ill having more depression or anxiety. Patients who were isolated did tend to have lower satisfaction. Together, these results imply that isolation may not be as dangerous as previously thought. During the time of this award, the researchers, via another AHRQ grant, found that universal isolation decreased Methicillin-resistant *Staphylococcus aureus*. **Publications:** 31
Lita Manuel **Social and Scientific Systems** Silver Spring, Maryland	290-09000-10C [Contract] **PSO Operational and Common Formats Support** 2009-2014 $2,300,000	**Purpose:** Support the Patient Safety Organization program. **Key Findings/Impact:** A final report was not available, and publications could not be found. **Publications:** 0
Peter Goldschmidt **World Development Group** Bethesda, Maryland	290-10-00011C [Contract] **Technical Assistance for PSO Operations and Common Formats** 2010-2013 $2,369,171	**Purpose:** Continue technical assistance support for the AHRQ PSO program and Common Formats. **Key Findings/Impact:** A final report was not available, and publications could not be found. **Publications:** 0

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Edaptive Systems Owings Mills, Maryland	HHSA290201200009C [Contract] **QSRS -Transformation of MPSMS to QSRS (Safer Care)** 2012-2017 $6,477,995	**Purpose:** Build, maintain, and adapt the AHRQ Quality & Safety Review System (QSRS) software platform. **Key Findings/Impact:** A final report was not available, and publications could not be found. However, the requirements of the contract as set forth in the Statement of Work were to build and maintain the AHRQ QSRS, a patient safety surveillance system to replace the Medicare Patient Safety Monitoring System. Subsequent versions of QSRS were to expand on the basic functions to include surveillance of a wider range of quality issues. The sole source modification was to add a new capability to the current QSRS software to facilitate implementation of QSRS at the local (hospital or hospital-system) level. **Publications:** 0
Social and Scientific Systems Silver Spring, Maryland	290-14-00005C [Contract] **PSO Operations and Common Formats Support** 2014-2019 $700,000	**Purpose:** Information was not available. **Key Findings/Impact:** A final report was not available, and publications could not be found. **Publications:** 0
Raj Ratwani **MedStar Research Institute** Hyattsville, Maryland	R03 HS23874 [Grant] **Connecting the Dots: Advanced Visualization Tools for Patient Safety Report Analysis** 2015-2017 $98,337	**Purpose:** Facilitate the identification of patient safety hazards by developing advanced visualization tools with automated trend identification algorithms to support the analysis of large patient safety incident databases. **Key Findings/Impact:** A final report was not available, but in one publication from this grant investigators concluded that major gaps in their analysis of patient safety report data were identified. Despite software to support reporting, many reports came from other sources. Transforming data was burdensome because of recategorization of events and integration with other data sources, processes that can be automated. Surprisingly, trend identification was mostly based on the memory of patient safety analysts, highlighting a need for new tools that better support analysts. **Publications:** 1
Johns Hopkins University Baltimore, Maryland	HHSP233201500020I_ HHSP23337002T [Contract] **Quality & Safety Review System (QSRS) Pilot Test in non-Federal Hospitals** 2015-2016 $677,800	**Purpose:** Assess the accuracy, efficiency and usability of the AHRQ Quality & Safety Review System (QSRS) during a pilot test in hospitals. **Key Findings/Impact:** A final report was not available for this project, but it is one of five projects making up the HHSP233201500020I multiaward vehicle since FY2007. The QSRS was developed by AHRQ to replace the legacy Medicare Patient Safety Monitoring System (MPSMS). The new system relies on clinical information recorded in medical records and is designed to use structured data where they are or may become available. Overall, the QSRS generates adverse event rates, trend performance over time, and unlike MPSMS, was designed to serve as a local hospital and health system tool to identify and measure adverse events. This research facilitated the validation and optimization of the system so that its data can be used to understand adverse events in hospitalized patients and subsequently to prevent future occurrences. This pilot test was a critical step toward achieving a standard surveillance system that could be implemented in any hospital. **Publications:** 1

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Centers for Medicare & Medicaid Services Baltimore, Maryland	15-703F-13 [Inter Agency Agreement] **National Quality Forum** 2015-2016 $414,000	**Purpose:** A description of this project's purpose was not available. **Key Findings/Impact:** A final report was not available, and publications could not be found. **Publications:** 0
Kathryn Kellogg **MedStar Health Research Institute** Hyattsville, Maryland	**Quality & Safety Review System (QSRS) Pilot Test in Hospitals** 2016-2020 $1,471,484	**Purpose:** Assess the clinical accuracy, efficiency, comprehensiveness, and usability of the Quality & Safety Review System (QSRS) in identifying adverse events documented in hospital medical records across diverse health systems and to identify possible changes to improve system performance. **Key Findings/Impact:** A final report for this contract was not available, but the objectives of the project were to review 4,700 randomly selected patient records from across four MedStar Health hospitals and: • Test the standardized definitions, algorithms, and ability to generate reports. • Assess the sensitivity and comprehensiveness of QSRS in identifying all adverse events in medical records, through a peer review process. • Evaluate the usability of the QSRS and reports through documentation of unclear questions, availability of help text, comparison of abstraction time, and ability to support peer review and quality/safety improvement within hospitals. **Publications:** 0
Bradford Winters **Johns Hopkins University** Baltimore, Maryland	**Quality & Safety Review System Pilot Test in Hospitals** 2016-2018 $1,348,441	**Purpose:** Assess the clinical accuracy, efficiency, comprehensiveness, and usability of the Quality & Safety Review System (QSRS) in identifying adverse events documented in hospital medical records across diverse health systems and identify possible changes to improve system performance. **Key Findings/Impact:** A final report for this contract was not available, but the objectives of the project were to review a random sample of at least 2,400 medical records from four to six participating hospitals and: • Test the standardized definitions, algorithms, and ability to generate reports. • Assess the sensitivity and comprehensiveness of QSRS in identifying all adverse events in medical records, through a peer review process. • Evaluate the usability of the QSRS and reports through documentation of unclear questions, availability of help text, comparison of abstraction time, and ability to support peer review and quality/safety improvement within hospitals. **Publications:** 0

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Sydney Morss Dy **Johns Hopkins University** Baltimore, Maryland	R01 HS24859 [Grant] **What Is Patient Safety in the Medical Home?** 2016-2019 $1,497,742 Final Report	**Purpose:** Improve ambulatory safety by evaluating the meaning and implementation of safety in the patient-centered medical home, a key model for improving primary care designed to address core attributes of comprehensive, patient-centered, coordinated, and accessible care and quality and safety. **Key Findings/Impact:** The top strategies to improve ambulatory patient safety for the same domain were: (1) use EHR systems to track test results/flag abnormal and overdue tests; (2) use protocols to systematically gather new patient information, particularly after transitions of care; (3) use a team-based approach during the diagnostic process; (4) schedule enough time for physicians to explore patients' underlying conditions; and (5) coordinate next steps after a visit. Five work functions were also identified on how frontline clinicians, administrators, staff, and patients conceptualize the meaning of patient safety in primary care. When discussing patient safety and medical errors, primary care workers expressed significantly more concerns for potential safety issues than for actual errors. Patients' perceptions of safety focused on clear and timely communication with and between clinicians and on patients' trust in the care team, including being heard, respected, and treated as a whole person across the four ambulatory safety domains. This project informs how patient safety is conceptualized and enacted in the ambulatory care setting. The findings from this work inform public and private sector efforts to advance ambulatory safety, provide critical information on the viability of various methods for evaluating ambulatory safety outcomes, and highlight the importance of defining key patient safety outcomes for primary care. The findings improve knowledge about ambulatory safety and provide strategies for how best to design future interventions to improve patient outcomes. **Publications:** *7*
David Newman-Toker **Johns Hopkins University** Baltimore, Maryland	R01 HS27614 [Grant] **Towards a National Diagnostic Excellence Dashboard - Partnering With Stakeholders to Construct Evidence-Based Operational Measures of Misdiagnosis-Related Harms** 2020-2025 $1,529,685	**Purpose:** Use a novel approach to constructing evidence-based diagnostic outcome measures with readily available administrative and claims datasets. **Key Findings/Impact:** This project is ongoing until May 31, 2025, and aims to engage key national stakeholders to optimize attributes of the missed stroke measure and measure diagnostic performance of U.S. hospital emergency departments using the refined missed stroke measure. One publication from this work described the results of an exploratory analysis. A statistically significant relationship was not found between a hospital-level diagnostic overuse index and the quality measures evaluated. **Publications:** 6

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Raj Ratwani **MedStar Health Research Institute** Hyattsville, Maryland	R01 HS26481 [Grant] **Transforming Patient Safety Event Data Into Actionable Insights Through Advanced Analytics** 2020-2025 $1,564,232	**Purpose:** Develop innovative algorithms and a software tool to reduce the burden of medication safety event report classification and analysis so that report data can be transformed into actionable insights. **Key Findings/Impact:** This project is ongoing until June 30, 2025, but several publications from this work have been produced thus far. Key findings include: • Major gaps in the analysis of patient safety report data from 11 hospitals across 3 healthcare systems were identified. Despite software to support reporting, many reports come from other sources. Transforming data is burdensome because of recategorization of events and integration with other data sources, processes that can be automated. Trend identification was mostly based on the memory of patient safety analysts, highlighting a need for new analyst tools. • Integrating an ensemble model to classify "miscellaneous" event reports with an interactive visualization was helpful to patient safety analysts reviewing miscellaneous reports. However, patient safety analysts have different thresholds for model reclassification depending on their role and experience with miscellaneous event reports. • Patient safety databases should be improved to support patient safety analyst use by, at a minimum, allowing data to be sorted/compared/filtered, providing data visualization, and enabling free-text search. Databases should also enable data scientist use by, at a minimum, providing an application programing interface, batch downloading, and a data dictionary. **Publications:** *7*
MASSACHUSETTS		
Peter Neumann **Harvard University, School of Public Health** Boston, Massachusetts	R03 HS10709 [Grant] **Is Quality Care Cost-Effective?: HEDIS 2000 Evidence** 2000-2002 $80,858	**Purpose:** Examine the cost-effectiveness evidence for the clinical practices underlying Health Plan Employer Data and Information Set (HEDIS) 2000 measures and develop a list of practices not reflected in HEDIS that have evidence of cost-effectiveness. **Key Findings/Impact:** A final report was not available, but one publication reported that HEDIS measures generally reflect cost-effective practices; however, in several cases, practices may not be cost-effective for certain subgroups. Data quality and availability as well as study perspective remained key challenges in judging cost effectiveness. Investigators reported that opportunities existed to refine existing measures and to develop additional measures, which could promote a more efficient use of societal resources, although more research was needed on whether these measures would also satisfy other desirable attributes of HEDIS. **Publications:** 1

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Harry Selker **Tufts Medical Center** Boston, Massachusetts	U18 HS11200 [Grant] **TIPI Systems To Reduce Errors in Emergency Cardiac Care** 2000-2004 $1,907,087 Final Report	**Purpose:** Reduce medical errors in emergency department triage and treatment for acute cardiac ischemia based on a time-insensitive predictive instrument information system (TIPI-IS), designed to be attractive to all members of the healthcare system, by providing real-time, concurrent, and retrospective decision support. **Key Findings/Impact:** This project successfully implemented the TIPI-IS—an information technology (IT)-based patient safety system for emergency cardiac care—resulting in significant improvements across multiple areas. Key findings include a reduction in errors when discharging acute coronary syndrome patients, changes in hospitalization patterns favoring more cautious admissions, improved triage for both high-risk and low-risk patients, and better biomarker testing practices. The system, which incorporated real-time decision support, concurrent alerts, and retrospective feedback, proved effective across various hospital settings. The project's success demonstrated the potential for condition-specific IT-based patient safety systems as a targeted, cost-effective approach to enhancing healthcare quality. These results suggested promising opportunities for commercialization and wider adoption of such technology in diverse healthcare environments. **Publications:** 1
Nancy Ridley **Massachusetts State Department of Public Health** Boston, Massachusetts	U18 HS11928 [Grant] **Evaluate the Effects of Massachusetts Reporting System** 2001-2006 $4,574,380 Final Report	**Purpose:** Evaluate the Massachusetts Department of Public Health's Massachusetts Mandatory Reporting System (MARS). **Key Findings/Impact:** The overall conclusion from this analysis is that if Massachusetts had adopted the strictly defined National Quality Forum standard and accompanying list of reportable events during the project research period of 1999-2004, a large portion of incidents (up to 83%) would not have been reported. More important, those events that would have been excluded from mandatory incident reporting were often serious, life-threatening, or fatal and possibly a suggestion of ongoing system problems that would have continued to remain undetected within the hospital. The results also show that a systematic evaluation of reported incidents can be an important hypothesis-generating tool for additional research and targeting of quality improvement initiatives. **Publications:** 9
David Blumenthal **Massachusetts General Hospital** Boston, Massachusetts	R01 HS13099 [Grant] **Validation of an Innovative Approach to Error Reduction** 2003-2006 $2,171,163 Final Report	**Purpose:** Improve and validate an instrument used by healthcare personnel to determine if reports by emergency department (ED) personnel about safety processes were significantly correlated with the actual occurrence of errors in EDs. **Key Findings/Impact:** At the time of submission of this summary, data collection for the project had ended, databases were being cleaned, analytic variables were constructed, and exploratory analyses were underway. The principal results of the study were not yet available. However, the study successfully collected a large and comprehensive database that included surveys from 3,684 emergency clinicians across 70 sites; chart review data for 10,205 cases covering acute myocardial infarction, asthma, and dislocations requiring procedural sedation; dual physician review data for 1,564 charts screening positive for a potential adverse event; and key informant surveys from 69 sites. The investigators were optimistic that their data would provide a landmark contribution to understanding the safety of EDs, approaches to measuring safety in EDs and elsewhere, and the extent of guideline compliance in EDs. **Publications:** 20

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Meghan Dierks **Beth Israel Deaconess Medical Center** Boston, Massachusetts	P20 HS17118 [Grant] **Making Ambulatory Procedural Care Safer: STAMP-Based Risk Assessment and Redesign** 2007-2009 $200,000 Final Report	**Purpose:** Demonstrate the value of the systems-theoretic accident model and processes (STAMP) approach to assess risk in complex sociotechnical environments—in this case, invasive procedural care in the ambulatory setting; and generalize the use of this approach to all clinical areas where human and organizational factors play a significant role in safety and performance. **Key Findings/Impact:** The experimental results indicated that specific interventions (e.g., reducing patient volume) directed at reducing time pressures and delays could significantly shift the percentage of time the unit functioned in a higher risk state. In reviewing the models and simulation results, domain experts felt that interventions designed to improve access to anesthesiology support and improvement in the reliability of the scheduling and booking would significantly reduce the magnitude of time pressures facing the system. These results informed the series of interventions (i.e., staffing, instrumentation, protocols, procedures, information, communication, and scheduling cycles) in the local environment. Investigators also noted that the types of models this approach generates also enable measurement of the relative magnitude and effect of various policies and exploration of system structure changes for the achievement of system goals. **Publications:** 1
Saul Weingart **Dana-Farber Cancer Institute** Boston, Massachusetts	P20 HS17123 [Grant] **Oral Chemotherapy Safety in Ambulatory Oncology: A Proactive Risk Assessment** 2007-2009 $199,846 Final Report	**Purpose:** Assess the risks associated with the oral chemotherapy medication use process in adult and pediatric ambulatory oncology and develop improvement strategies. **Key Findings/Impact:** Researchers identified 99 adverse drug events, 322 near-misses, and 87 medical errors with low risk of harm. The most common medication errors involved wrong dose (38.8%), wrong drug (13.6%), wrong number of days supplied (11.0%), and missed dose (10.0%). Participants were largely satisfied with oral chemotherapy. This study allowed researchers to characterize the types of risk associated with oral chemotherapies in ambulatory care across a variety of organizations, vulnerabilities in the medication use process for these drugs in their own cancer center, and promising opportunities for improvement. This work has led to safe prescribing interventions in the electronic order entry system and improvements in the approach to obtaining written informed consent. Importantly, the project has helped to establish oral chemotherapy as an area of priority for leadership and governance, in turn helping to advance the development and implementation of practice innovations. **Publications:** 3

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Hillary Mull **Trustees of Boston University** Boston, Massachusetts	290-06-00012-3 [Contract] **Development and Use of Ambulatory Adverse Event Trigger Tools** 2007-2010 $399,933	**Purpose:** Work on developing triggers to identify preventable adverse events related to diagnosis (loss to followup) and treatment (medication, surgery) in outpatient settings. **Key Findings/Impact:** A final report was not available; however, a conference summary of an expert panel meeting June 30, 2008, on "Triggers and Targeted Injury Detection Systems (TIDS)" provided literature about this project. A Delphi panel determined the following drug classes to be highest priority for trigger development in an ambulatory setting: analgesics, cardiovascular drugs, hematologic and oncologic agents, antibiotics, neuropsychological drugs, and glucose controllers. Investigators determined the type of trigger system that is most appropriate depends on its intended use by using focus groups composed of physicians, nurses, pharmacists, quality managers, and informaticists to evaluate specific triggers for clinical relevance, utility, and ease of implementation. Focus group participants agreed that triggers systems should (1) target adverse events that are both prevalent and preventable; (2) fill a need and add value; (3) be actionable; (4) have a good "signal-to-noise" ratio and cost-benefit ratio; and (5) be easy to implement. **Publications:** 1
Thomas Concannon **Tufts Medical Center** Boston, Massachusetts	K01 HS17726 [Grant] **Triage and Allocation Model for Primary Percutaneous Coronary Intervention (PCI) After ST-Elevation Myocardial Infarction (STEMI)** 2008-2013 $556,921 Final Report	**Purpose:** Fill major knowledge gaps in emergency triage and care of patients with STEMI and to develop adaptive and efficient planning tools for regionalization of STEMI care. **Key Findings/Impact:** Investigators reported that EMS transfer within a county was estimated to be twice as effective and up to 20% less costly than adding new PCI capability. The number of hospitals that introduced a new PCI program between 2004 and 2008 grew substantially (n=251, 16.5%). Hospitals were more likely to adopt PCI if they were newly opened, were larger, and had other expensive medical technology, and if PCI was already offered in the neighborhood. Hospitals were less likely to adopt PCI if they had a higher volume of outpatient services; if they operated in a more competitive market, in a neighborhood with a higher percentage of foreign born and older residents; and if they were in a state that maintained laws requiring automatic review of new catheterization labs. **Publications:** 25
Julie Schmittdiel **Kaiser Foundation Research Institute** Sacramento, California	290-10-00022i-1 [Contract] **The AHRQ Harm Scale: Validation With Adverse Events** 2011-2013 $527,559	**Purpose:** Expand evaluation of the Harm Scale for use in assessment of harms represented in the Common Formats. **Key Findings/Impact:** A final report was not available. However, the results of this work were presented at the 2013 American Public Health Association Annual Conference. The investigators conducted a reliability assessment in which nine clinicians representing three clinical specialties (physicians, nurses, and pharmacists) with three levels of adverse event evaluation experience (expert, moderate, and novice) rated the same 400 cases after a standardized training session on the application of the Harm Scale. Overall, the interrater reliability (IRR) across all case types and raters was moderate (Kfmm=0.51) but differed by case type and rater specialty. Raters agreed most with each other when harm severity was death and least when harm severity was mild harm. On average, projected reliability for the Harm Scale reached 0.85 when the number of raters exceeded two. The investigators concluded that the IRR for the AHRQ Harm Scale was moderate and most of the variance was due to case type and, to a much lesser extent, rater stringency, specialty, or level of experience. **Publications:** 1

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Richard Platt **Harvard Pilgrim Health Care** Canton, Massachusetts	R18 HS21424 [Grant] **National Claims-Based Quality Measures for Surgical Site Infections** 2012-2017 $2,366,653 Final Report	**Purpose:** Develop the evidence base and tools for a standardized, comprehensive detection and reporting system that uses administrative data to focus on the surgical procedures of greatest interest, the most serious infections, and procedures relevant to the large number of hospitals with low procedure volumes. **Key Findings/Impact:** Researchers demonstrated that operative hospital surveillance alone would have missed 7.2% of colon surgery and 13.4% of abdominal hysterectomy SSIs, further supporting the argument for use of large administrative datasets and applying validated diagnosis codes for SSI. Their work analyzing CMS hospital rankings for colon procedure SSIs showed that laparoscopic and open procedures were sufficiently different to require stratifying for fair interfacility SSI comparisons. Researchers noted that their research was an innovative, comprehensive, and rigorous approach to SSI detection and ranking of U.S. hospitals. These methods have the potential to be broadly used by states, as well as public and private payers, as a method for measuring the quality and outcomes of medical care. **Publications:** 10
Timothy Mader **Baystate Medical Center** Springfield, Massachusetts	R03 HS24815 [Grant] **Valuation of a Simple Tool for Chest Pain Patient Risk Stratification in North America** 2016-2018 $99,994 Final Report	**Purpose:** Determine the feasibility and practicality of conducting a large R01-funded clinical trial to determine the value of the HEART (History, Electrocardiogram findings, Age, Risk factors, and Troponin value) score in discriminating low- from moderate-risk chest pain (CP) among emergency department (ED) patients in the United States. **Key Findings/Impact:** Researchers concluded that it was feasible and practical to conduct a large R01-funded clinical trial to determine the value of the HEART score in discriminating low- from moderate-risk CP among ED patients. **Publications:** 2
Shoshana Herzig **Beth Israel Deaconess Medical Center** Boston, Massachusetts	R01 HS26215 [Grant] **Characterizing Opioid-related Adverse Events in Older Adults After Hospital Discharge** 2018-2024 $1,977,682	**Purpose:** Better understand the specific nature of opioid-related patient harm after hospital discharge in older adults, identify factors that place them at highest risk for such harm, and inform the development of improvements in healthcare systems to reduce the incidence and consequences of these potentially devastating events. **Key Findings/Impact:** This project was completed on June 30, 2024, but a final report is not available yet. However, several publications have been identified, and most emphasize the risks of opioid-related adverse events, especially among older adults prescribed opioids after hospitalization. Key factors such as prior opioid use, comorbidities, and high opioid doses increase the likelihood of complications, with long-acting opioids contributing to prolonged use. The publications also highlight racial and ethnic disparities in opioid prescribing, which may affect patient outcomes. Guidelines suggest better management of opioid use, particularly in patients with opioid use disorder, and caution against co-prescribing opioids with other high-risk medications such as benzodiazepines, especially in the context of the COVID-19 pandemic. **Publications:** 19

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Patricia Dykes **Brigham and Women's Hospital** Boston, Massachusetts	R01 HS30221 [Grant] **Complexity, Incidence, and Costs Related to Delayed Diagnosis of Venous Thromboembolism in Urban and Rural Primary and Urgent Care Settings** 2024-2028 $500,000	**Purpose:** Leverage electronic health record data and stakeholder expertise to gain an understanding of VTE risk factors, disparities, and outcomes. **Key Findings/Impact:** This project is ongoing until June 30, 2028, and no reports or publications are available yet. **Publications:** 0
MICHIGAN		
Vanessa Dalton **University of Michigan, Ann Arbor** Ann Arbor, Michigan	K08 HS15491 [Grant] **Evaluating Treatment Options and Patterns of Care in Early Pregnancy Failure** 2007-2012 $661,500 Final Report	**Purpose:** Understand how early pregnancy failure (EPF) is currently managed and examine the effect of using patient preferences to determine treatment on cost. **Key Findings/Impact:** Researchers found that less than 1% of patients underwent treatment with misoprostol or office-based surgery under the statewide health plan. Use of misoprostol or office uterine evacuations are very uncommon, despite evidence supporting their safety and effectiveness. Because providers are likely to influence this care pattern, a better understanding of provider attitudes toward these "newer" treatment options is needed to encourage the adoption of models of care that have proven safety, efficacy, and patient acceptance. The significance of this work is that few studies have compared different treatment options about patient and provider preference and resource use. Patient preferences should play a dominant role in EPF treatment decisions in the absence of medical risk factors. These findings could be used to inform providers and health systems in efforts to improve care while considering costs. **Publications:** 11
Chuck Penoza **Data Consulting Group (DCS)** Detroit, Michigan	290-08-10005 [Contract] **United States Health Information Knowledgebase: A Metadata Registry** 2008-2011 $3,080,928	**Purpose:** Develop and disseminate health information technology evidence and evidence-based tools to improve healthcare decision making with integrated data and knowledge management. **Key Findings/Impact:** A final report was not available, but a project summary announced the official release of the United States Health Information Knowledgebase (USHIK) portal, a metadata registry of healthcare-related data standards, in April 2010. This portal allowed the USHIK community, including researchers, systems developers, policymakers, clinicians, and the public, access to the Common Formats metadata in USHIK. The release of this portal included supporting functionality comprising a custom interactive informational model that allowed users to navigate the Common Formats data. This portal was continuously improved over the course of the year based on the requirements of the AHRQ Center for Quality Improvement and Patient Safety. Multiple demonstrations were conducted during 2010 to communicate the availability and functionality of this portal. Specific functionality implemented in support of the Common Formats portal in USHIK during 2010 included tools to load and update Common Formats data in USHIK, capability to export Common Formats metadata from USHIK in a variety of convenient formats, and support of online functionality including help pages and a glossary customized for the Common Formats metadata. **Publications:** 0

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Justin Dimick **University of Michigan,** **Ann Arbor** Ann Arbor, Michigan	K08 HS17765 [Grant] **Composite Measures of Surgical Performance** 2008-2013 $621,216 Final Report	**Purpose:** Develop and validate empirically weighted composite measures of surgical morbidity. **Key Findings/Impact:** Composite measures have value for public reporting and could also be useful for quality improvement activities such as in the context of the American College of Surgeons - National Surgery Quality Improvement Program (ACS-NSQIP) and other reporting platforms. Standard approaches to surgical outcomes measurement are plagued by statistical "noise" and imprecision, which translates into inaccurate assessments of relative hospital (or physician) performance. Such inaccurate assessments of performance can lead to both false positives (i.e., hospitals perceive a problem where none exists) and false negatives (i.e., hospitals miss a problem when it really does exist). The composite measures described in this research could improve the reliability of benchmarking and give providers a truer sense of where they stand relative to their peers. **Publications:** 35
Mathew Reeves **Michigan State University** Lansing, Michigan	R03 HS17740 [Grant] **Developing a Rational Clinical Approach to the Disposition of TIA Cases in the ED** 2009-2011 $99,771 Final Report	**Purpose:** Develop a cost-effectiveness analysis model to compare hospitalization vs. outpatient care of transient ischemic attack (TIA) cases presenting to the emergency department (ED), and assess the acceptability, feasibility, and barriers to using clinical decision rules for risk stratification to guide the disposition of TIA patients in the ED. **Key Findings/Impact:** Only about half of physicians were aware of the ABCD2 rule, and the rule was rarely used in practice. Among physicians, the decision to hospitalize was relatively insensitive to cost of care, and the risk of stroke influenced the decision only when reduced to virtual certainty (<1%). The decision to use outpatient care by physicians was more sensitive to cost of care, increases in stroke risk, and compliance in the outpatient setting. Preference for hospital-based care vs. outpatient care was split evenly among the participants in the two patient focus groups. Investigators noted that patients who chose hospital-based care reported lower quality of life compared with outpatient care. These findings suggested future studies should focus on acceptable outpatient risks and costs to increase adoption of clinical prediction rules and appropriate decision making for TIA cases. **Publications:** 2

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
	MINNESOTA	
Michael Callahan **Healthfront** Minneapolis, Minnesota	U18 HS13718 [Grant] **A National Center for Value Purchasing Methods** 2002-2006 $1,281,576	**Purpose:** Develop methods to support the national purchaser-supported Excellence in Quality Award proposed by Reward Health Care, and plan for and develop the analytical capacity needed to support purchaser decisions through the National Center for Value Purchasing Methods. **Key Findings/Impact:** The community assessments in Minnesota and Colorado did not directly prompt value-based purchasing discussions between purchasers and plans but contributed to broader dialogues on healthcare quality initiatives. Both states opted to work through the Bridges to Excellence program. The project developed a survey for medical group managers in Minnesota, and later in Colorado, to assess perceptions of pay-for-performance, public reporting, and quality incentives. The survey results, particularly in Colorado where incentive programs were less advanced, engaged employers in active dialogue with the medical community regarding value-based purchasing. This dialogue created employer demand for such programs and educated providers about implementation. The Colorado physician survey results were presented to the Colorado Business Group on Health and the Colorado Medical Society, with both groups finding the information enlightening. Although no direct followup information is available, there were plans to assess the project's impact on purchaser and health plan activities in the future. **Publications:** 0
Piet De Groen **Mayo Clinic, Rochester** Rochester, Minnesota	R01 HS17537 [Grant] **Improving Colonoscopy Quality Through Automated Monitoring** 2008-2012 $778,309	**Purpose:** Study whether software tools created to derive metrics about endoscopist-related factors from video files obtained during colonoscopy measured colonoscopy quality. **Key Findings/Impact:** A final report was not available; however, investigators successfully validated their software system on 2,464 hours of live video (>265 million frames) from endoscopy units where colonoscopy and upper endoscopy were performed. A previous classification method achieved a frame-based sensitivity of 100% but a specificity of only 89.22%. The latest method achieved a frame-based sensitivity and specificity of 99.9% and 99.97%, respectively, a significant improvement. Investigators believed their system was robust for day-to-day use in medical practice. **Publications:** 9

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
		MISSOURI
Gregory Alexander **University of Missouri-Columbia** Columbia, Missouri	R01 HS22497 [Grant] **A National Report of Nursing Home Quality Measures and Information Technology** 2013-2022 $1,994,595 Final Report	**Purpose:** Conduct a 3-wave, longitudinal, repeated measures study, measuring information technology sophistication (ITS) in a national sample of nursing homes (NHs). Conduct a 4-round Delphi technique with 30 NH IT experts to validate an NH IT maturity survey that included 29 content areas in resident care, clinical support, and administrative activities. Delphi experts helped develop an NH IT maturity staging model based on NH IT capabilities, extent of IT use, and IT integration. **Note:** This work built on a previous AHRQ K08 grant (K08 HS16862) awarded to Gregory Alexander (2007-2013) that resulted in at least 10 publications related to this topic. **Key Findings/Impact:** This study showed that increasing IT sophistication in every health domain seemed to influence quality measures (QMs) in these facilities. For example, QMs significantly correlated with multiple ITS scales, indicating that IT may have broader impacts across an organization. Continuing to trend IT capabilities, extent of IT use, and degree of integration beyond this 3-year period provides an opportunity to assess the future impact of federal legislation driving IT adoption to improve quality. Knowledge about trends in IT help in understanding the impact on quality of care occurring in NHs. The realization that multiple dimensions of ITS influence QMs in every healthcare domain provides an opportunity to design a reporting system that joins these important variables, to be assessed on a national scale, which can help define greatest areas of need where IT systems can improve care quality. **Publications:** 25
Richard Griffey **Washington University** Saint Louis, Missouri	R18 HS25052 [Grant] **Demonstration Project To Refine, Automate and Test a Novel Emergency Department Trigger Tool** 2016-2019 $1,029,573 Final Report	**Purpose:** Develop an emergency department trigger tool (EDTT) specifically tailored for detecting and characterizing adverse events in the ED. **Key Findings/Impact:** The EDTT is a promising efficient and high-yield approach for detecting all-cause harm to guide quality improvement efforts in the ED. Researchers derived and validated predictive models for adverse events (AEs) with good properties. The identification of triggers and models associated with ED and place of occurrence AEs highlights the potential of the EDTT to identify these events as part of routine surveillance reviews for quality improvement. Data gathered using the EDTT could be used to provide feedback to post-acute and long-term care facilities on either individual patients or in a summative way. These data, particularly if collected over time and applied across a health system, might also help identify outlier facilities or outlier problems with quality of care. **Publications:** 17
Richard Griffey **Washington University** St. Louis, Missouri	R01 HS27811 [Grant] **Multicenter Study of the Emergency Department Trigger Tool** 2020-2025 $1,531,163	**Purpose:** Evaluate a refined and automated emergency department trigger tool (EDTT) in a multicenter study. **Key Findings/Impact:** This project is ongoing until July 31, 2025, but several publications have already been produced. One found that emergency clinicians had higher measure scores if reporting qualified clinical data registry (QCDR) or Quality Payment Program (QPP) non–emergency medicine specialty set measures. Emergency clinician participation in national value-based programs is common, with one in four participating through Merit-based Incentive Payment System (MIPS) Alternative Payment Models. Those using specific strategies such as QCDR and group reporting received the highest MIPS scores and payment adjustments, emphasizing the role that reporting strategy and affiliation play in the quality of care. **Publications:** 10

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
MONTANA		
Ann Cook **University of Montana** Missoula, Montana	R01 HS11930 [Grant] **Quality Care and Error Reduction in Rural Hospitals** 2001-2005 $1,109,382 Final Report	**Purpose:** Improve patient safety, encourage disclosure and reduction of error, and identify best practices for error reduction in rural healthcare settings. **Key Findings/Impact:** The findings of this work can be grouped into three major categories: (1) working conditions and professional barriers that influence the development of a culture of safety; (2) internal and external system or organizational barriers that impact the adoption of interventions; and (3) individual-level barriers related to cognitive perceptions and behavioral responses to errors. The research indicated that profound professional differences in definitions of error, limited recognition of error, and systemic barriers impeded patient safety in rural settings. The use of a case-based curriculum promoted changes in recognition, attitudes, and behaviors across professions with respect to errors and broadened the scope of patient safety interventions. It resulted in increased collaboration and successful protocols for systemwide dissemination. This approach seemed to be effective for several reasons. First, the process of developing the case studies required identification of critical issues. Second, the methodology used for analysis of the studies lent itself to systematizing information and providing ongoing education and training on patient safety. Third, an e-mail approach offered a way to integrate education into a busy working schedule. This integration seemed to retain the interest of healthcare providers and keep them focused and engaged. Thus, patient safety stayed on the radar screen. Fourth, the format for accompanying questions (topic, issues, guides, learning points, room for improvement) offered a structured way for participants to play with different scenarios in a nonthreatening and nonshaming way. Fifth, the approach was conducive to generalizability as new situations developed; therefore, it could be used for training in other areas such as pain management. **Publications:** 3
NEW HAMPSHIRE		
Donald Likosky **Dartmouth College** Hanover, New Hampshire	R13 HS20562 [Grant] **National Cardiovascular Surgery Quality Improvement Network Planning Conferences** 2011-2012 $37,440	**Purpose:** Establish a network for linking cardiothoracic surgical collaboratives together to (1) develop and implement research and quality improvement projects, and (2) improve the safety and value of cardiac surgical care across their respective regions. **Key Findings/Impact:** A final report was not available, but one publication reported small but significant differences in patient case mix across regions. Red blood cell (RBC) transfusions of 1 or 2 units occurred among 25.2% of coronary artery bypass graft procedures (2,826 out of 11,200). Significant variation in the number of RBC units used existed across regions. Variation in overall transfusion rates remained after adjustment (9.1%-31.7%; p<.001). Investigators concluded that delivery of small volumes of RBC transfusions was common yet varied across geographic regions. These data suggest that differences in regional practice environments, including transfusion triggers and anemia management, may contribute to variability in RBC transfusion rates. **Publications:** 1

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
NEW JERSEY		
Derek Delia **Rutgers University** Piscataway, New Jersey	R13 HS17511 [Grant] **Bridging the Gap Between EMS and Health Services Research: A Conference for Research** 2008-2009 $25,000 Final Report	**Purpose:** Create stronger links between emergency medical services (EMS) and health services research. **Key Findings/Impact:** The Rutgers Center for State Health Policy convened an invitational conference on July 23, 2009, in New Brunswick, New Jersey. The conference brought together 59 stakeholders, including researchers, healthcare quality experts, EMS providers, hospital representatives, and government officials, to facilitate improvements in the quality and coordination of EMS systems by creating a stronger link between EMS and health services research. The issues raised in the conference were critical to improving medical care for many AHRQ priority populations (e.g., elderly, chronically ill). Improvements in EMS and the coordination of prehospital and emergency care can help strengthen these facilities, which serve as the healthcare safety net for poor and uninsured patients. **Publications:** 0
NEW YORK		
Harold Kaplan **Columbia University** New York City, New York	U18 HS11905 [Grant] **Reporting Systems and Learning: Best Practices** 2001-2005 $6,412,612	**Purpose:** Expand on and test two error-reporting systems, a voluntary near-miss medical event reporting system and a state-mandated incident reporting system; and improve healthcare delivery processes and training. **Key Findings/Impact:** A final report was not available, but this demonstration grant was a consortium effort of two large, geographically and ethnically diverse, integrated healthcare delivery systems: New York-Presbyterian (the University Hospitals of Columbia and Cornell) and the University of Chicago Hospitals and Health System. The core of this grant was a voluntary near-miss medical event reporting system and a state-mandated incident reporting system: the New York Patient Occurrence Reporting and Tracking System. This integrated reporting system was implemented in New York-Presbyterian Hospital, which served as the pilot site for a broader rollout to the constituent hospitals of the New York-Presbyterian network and the University of Chicago network. The program had educational, data collection, and evaluation components. Investigators offered training to staff members about how to report their own mistakes and the mistakes of others in a nonpunitive fashion. Once the reporting system was in place with its associated analytic system and corrective actions, the investigators determined if near-misses and events with potential for harm showed the expected decrease. Experience with systems such as the Medical Event Reporting System for Transfusion Medicine (MERS-TM) revealed an initial increase in event reporting during the first phase of program implementation; however, errors ultimately decreased because of better event monitoring and corrective action implementation. This grant demonstrated the value of reporting by showing its effects on patient safety, organizational culture, and economic outcomes. **Publications:** 10

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Christie Teigland **Foundation for Long Term Care** Albany, New York	R18 HS11869 [Grant] **Using Prospective Minimum Data Set (MDS) Data To Enhance Resident Safety** 2001-2005 $1,365,240	**Purpose:** Determine whether preventable adverse outcomes for the frail elderly population in long-term care settings could be reduced by providing prospective computerized information that alerted nursing and other staff to the likelihood of the problem occurring, and by further providing resident-specific risk factors likely to cause the adverse outcome so that preventive actions could be taken. **Key Findings/Impact:** A final report was not available; however, one publication describes a model of translating clinical informatics research into practice. Researchers stated their findings were consistent with other studies on organizational change and implementation of clinical information systems in healthcare. The implementation and effectiveness of informatics systems depend not only on the quality and timeliness of data, but also on the organizational context. Many decision support system projects fail despite the usefulness of the information and good intentions of participants. These failures are due largely to organizational barriers. Researchers noted that the "lessons learned" in participating facilities regarding conditions for success and barriers to use of computerized risk reports would provide new guidance to nursing homes nationwide regarding the effective use of technology and clinical informatics to improve care. **Publications:** 1
Laurent Glance **University of Rochester** Rochester, New York	R01 HS13617 [Grant] **Are Volume Standards Accurate Measures of Quality?** 2003-2007 $888,738 Final Report	**Purpose:** Test whether regionalizing high-risk surgery by diverting patients from low-quality centers would lead to better population outcomes than diverting patients from low-volume centers. Also test whether (1) the absence of date stamping leads to biased measures of severity of disease and comorbidity and (2) the absence of date stamping yields biased measures of hospital quality. **Key Findings/Impact:** Overall, investigators found a weak association between hospital quality and hospital volume. Most high-volume hospitals were not high quality, and most low-volume hospitals were not low quality. Selective referral to either high-volume centers or high-quality centers was moderately to highly effective but extremely disruptive and unlikely to be feasible. Selective avoidance of low-volume centers did not lead to improved outcomes, whereas selective avoidance of low-quality hospitals yielded minor improvements in outcome. The use of procedure volume as the basis for evidence-based hospital referrals should be reevaluated by all stakeholders before undertaking further efforts to regionalize healthcare delivery using volume-based referral strategies. Investigators also found that the use of routine administrative data without the present on admission indicator to construct hospital quality report cards may lead to inaccurate report cards. **Publications:** 12
Weill Medical College of Cornell University New York City, New York	290-00-0013-9 [Contract] **Root Cause Analyses of Precursor Events Using an Electronic Reporting System** 2003-2005 $360,570	**Purpose:** Examine the root causes of three types of medical errors, analyze whether their similarities were associated with the severity of potential or actual patient safety events, and test whether these associations varied by clinical focus. **Key Findings/Impact:** A final report was not available, and publications could not be found. Researchers were tasked with testing existing assumptions that the underlying causes and contributing factors for three types of medical errors were the same, similar, or had no relationship by examining their root causes. They were to further test whether this similarity was associated with the severity of potential or actual patient safety events and whether such associations varied by clinical focus. **Publications:** 0

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Robyn Gershon **Columbia University** New York City, New York	R03 HS18284 [Grant] **Safety in the Home Healthcare Sector: A Pilot Study** 2009-2010 $98,346 Final Report	**Purpose:** Develop and test a novel household safety survey tool for use in the home healthcare (HHC) setting. **Key Findings/Impact:** Investigators reported 57 homecare aides were trained on household hazards and conducting household safety surveys using a checklist. They concluded that this tool, with some minor modifications, could help in identifying household hazards that could place both HHC patients and workers at risk of injury/exposures. The tool is low cost and easy to implement. The surveys were rapidly completed. Investigators stated the next step was to determine the rate and type of remediation that results from a household safety audit, and if the remediation results in significant reductions of injuries/exposures in patients (and workers). Intervention studies were required as the next step in this trajectory of safety research. **Publications:** 1
Lawrence Kleinman **Mount Sinai School of Medicine** New York City, New York	R18 HS18032 [Grant] **Improving Implementation and QI Research With Regression Risk Analysis** 2010-2012 $581,397 Final Report	**Purpose:** Extend and validate methods for estimating risk measures (ratios and differences) and standard errors from logistic regression to account for complex designs, including weighted samples and clustered data interactions; and use multinomial regression to develop and share computer code to make these techniques accessible to typical health services and quality improvement researchers. **Key Findings/Impact:** Investigators reported their regression risk analysis (RRA) made adjusted risk ratios and adjusted risk differences more accessible to researchers, in general, and its extensions accommodated the specific needs of quality improvement and implementation research. Investigators believed this work provided researchers with a way to accommodate these complex survey characteristics in their analyses, to report accurate, more intuitively understood measures of effect size, and to communicate their findings more effectively. Their discovery of the rank reversal phenomenon had strong implications for researchers and consumers. Investigators concluded that the products from this project, including the user-friendly SAS and STATA codes, conference proceedings, and manuscripts, provided researchers clear guidance for using RRA in their analyses. They planned to continue to circulate this work through ongoing development of their website, www.whatstherisk.org, with the goal of encouraging researchers to design and analyze their studies and disseminate their findings more effectively. **Publications:** 3

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Harold Pincus **Columbia University, School of Health Sciences** New York City, New York	R13 HS20543 [Grant] **Building Toward ICD-11: Improving the Coding of Quality and Patient Safety Data** 2011-2013 $200,000	**Purpose:** Support a series of meetings of the Quality and Patient Safety Topic Advisory Group (TAG) as part of the World Health Organization's development of the International Classification of Diseases, 11th edition (ICD-11). **Key Findings/Impact:** A final report was not available, but one publication reported key results of this project to date. The Quality and Patient Safety TAG explored meta-features of morbidity datasets, such as the optimal number of secondary diagnosis fields. Investigators found that among the participating countries, increasing the number of diagnosis fields was not associated with any overall increase in PSI rates. However, high proportions of PSI-related diagnoses appeared beyond the 6th secondary diagnosis field. Investigators concluded that 6 to 9 secondary diagnosis fields were inadequate for comparing complication rates using hospital administrative data; at least 15 (and perhaps more with ICD-11) were recommended to fully characterize clinical outcomes. Increasing the number of fields should improve the international and intranational comparability of data for epidemiologic and health services research, utilization analyses, and quality of care assessment. **Publications:** *7*
Jason Shapiro **Mount Sinai School of Medicine** New York City, New York	R01 HS21261 [Grant] **Advancing Quality Measurement and Care Improvement With Health Information Exchange** 2012-2017 $2,391,746 Final Report	**Purpose:** Create and validate health information exchange (HIE)-enabled versions of two proposed National Quality Forum e-Quality measures for potentially preventable ED visits: (1) returns to the ED within 72 hours (ED returns); and (2) frequent ED users. Then evaluate their impact on interventions currently using only "siloed" institution-specific data. **Key Findings/Impact:** Use of HIE data were validated across four hospitals (Aim 1), significantly increasing researchers' ability to identify both early (72-hour) return visits and frequent ED users (Aim 2). In turn, researchers' ability to identify and intervene on both populations increased (Aim 3). For early (72-hour) returns, 28,242 patients presented to the index ED over the 4-month study period. Of these, 2,185 patients (7.7%) returned to one of 31 HIE-linked hospitals within 72 hours of their index ED visit, including 1,513 (5.4%) who re-presented to the index hospital and 672 (2.4%) who re-presented to a different hospital, representing a 44% increase in the identification of 72-hour returns over the use of a single-site data source. Twenty same-site returns identified quality concerns from the index visit and 6 different-site returns identified quality concerns from the index visit, representing a 30% increase in the identification of quality concerns over a single-site data source. Researchers noted that using the HIE notifications, they identified a substantially higher number of frequent ED users in the pilot and enrollment periods than using the EHR-based report (30% and 34% more, respectively) and improved case management enrollment of frequent ED users during the enrollment period, with 16/343 (4.66%) enrolled through HIE-based notifications and 3/89 (3.37%) enrolled through the EHR-based report alone, a 38.4% relative increase in enrollment. **Publications:** 14

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Dennis Lee Fowler **Columbia University** New York City, New York	R03 HS21549 [Grant] **Determining a Learning Curve for Complex Laparoscopic Gastrointestinal Surgery** 2012-2014 $98,869.00 Final Report	**Purpose:** Validate the Global Operative Assessment of Laparoscopic Skills (GOALS) as an assessment tool; and define the learning curve for complex laparoscopic gastrointestinal surgery. **Key Findings/Impact:** This 2-year study analyzed 402 performance assessments of 148 surgical fellows to validate the GOALS tool and define learning curves for complex laparoscopic gastrointestinal surgery. Key findings showed significant improvement across all performance domains (depth perception, bimanual dexterity, efficiency, tissue handling, and autonomy) throughout the fellowship year ($p < 0.001$). The improvements were most pronounced for gastric bypass and bariatric procedures, while colectomies showed significant improvement only in overall performance, bimanual dexterity, and efficiency. The study demonstrated GOALS' construct validity as an assessment tool by documenting fellows' progression from moderate skill levels at the start of fellowship to superior technical skills by year's end, although larger assessment numbers would be needed to precisely define procedure-specific learning curves. **Publications:** 1
Harold Pincus **Columbia University, School of Health Sciences** New York City, New York	R13 HS23339 [Grant] **Developing ICD-11: Coding of Quality and Patient Safety Data to Support Health Services, Quality and Patient Centered Outcomes Research** 2014-2016 $70,000	**Purpose:** Support funding for two meetings of the Quality and Patient Safety TAG as part of WHO's ongoing development of ICD-11. **Key Findings/Impact:** A final report was not available, and publications could not be found, but AHRQ awarded Harold Pincus similar grants focused on ICD-11 (R13 HS20543, R13 HS24891, and R13 HS27288). **Publications:** 0
Lusine Poghosyan **Columbia University** New York City, New York	R03 HS24758 [Grant] **Further Psychometric Testing and Validation of the Errors of Care Omission Survey (EoCOS)** 2016-2018 $99,795 Final Report	**Purpose:** Determine the factorial structure of Errors of Care Omission Survey (ECOS) and finalize the subscales measuring care omission domains. **Key Findings/Impact:** Researchers concluded this study provided evidence supporting the factorial structure of ECOS and its use in research and practice to measure omissions threatening patient safety in primary care. ECOS is an important tool that can be used to measure omissions in primary care, and researchers anticipated it would be valuable for clinicians, administrators, and researchers. Given the known value of primary care provider (PCP) input, ECOS can help gather this important information about aspects of patient care that are often omitted but not often captured in traditional reporting systems. This evidence will further understanding of care that is routinely missed, potential risks to patients, and ways to minimize and eliminate these occurrences. Faster recognition of omissions can prevent patient harm by quickly creating and implementing preventive strategies and safety systems. Further psychometric testing was recommended with diverse samples of PCPs and across different settings. **Publications:** 4

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Yue Li **University of Rochester** Rochester, New York	R01 HS24923 [Grant] **Impact of State Policies on Nursing Home Patient Safety Culture** 2016-2019 $1,208,956 Final Report	**Purpose:** Identify different aspects of state nursing home regulatory and payment policies that may foster or prevent the development of nursing home patient safety culture. Such policies include Medicaid reimbursement approaches, state minimum quality mandates, and state minimum nurse staffing standards. **Key Findings/Impact:** Researchers concluded that patient safety culture as perceived by nursing home leaders varied substantially across facilities. Better patient safety culture score predicted better state regulatory performance indicators, including reduced deficiency citations for healthcare, fewer substantiated complaints, lower amounts of fines paid by nursing home to the CMS for quality and safety issues, and increased odds of being designated as 4- or 5-star facilities. These findings persisted after multivariable adjustment for nursing home, market, and state covariates and were robust to alternative ways of computing safety culture scores. The findings suggest a substantial potential that state nursing home regulations on multidimensional performance in safety, effectiveness, and patient-centered care can improve nursing home organizational culture of safe practices, which in turn improve quality of care and resident outcomes. The findings also showed that the associations of overall safety culture score with focused performance metrics were stronger and more consistent than those of individual safety culture domains. This finding further suggests that the broadly targeted state quality and care practice regulations may help improve overall performance in safety culture and safety of care, but improvements may manifest in different ways (e.g., shown in different safety culture domains) for different nursing homes in the state. **Publications:** 13
Harold Pincus **Columbia University, School of Health Sciences** New York City, New York	R13 HS24891 [Grant] **Developing ICD-11: Coding of Quality and Patient Safety Data to Support Health Services Research and Outcomes Research in the US and Internationally** 2016-2019 $105,000	**Purpose:** The Quality and Safety Topic Advisory Group (Q & S TAG) was tasked by the World Health Organization (WHO) with reviewing progressive drafts of the developing International Classification of Diseases, 11th Edition (ICD-11) and identifying practical modifications to enable better measurement of quality and patient safety in ICD-11. **Key Findings/Impact:** The Q & S TAG provided significant contributions to the ongoing revision process and fine-tuning of new coding rules across all chapters as reflected in the final version of ICD 11. The work, however, had implications beyond the revision of ICD, including creating the potential to expand the capacity and efficiency of quality measurement using secondary datasets, as well as greatly enhancing the efficiency of reporting efforts and concentrating efforts on shared outcomes of interest at a national and international level. The revised/improved ICD-11 and ICD-10-CM will not only have far-reaching applicability due to the penetration of ICD for epidemiologic studies, claims analyses, and quality measurement and reporting, but they will also greatly strengthen the informatics base for patient-centered outcomes research/comparative effectiveness research, while producing more and better information about healthcare quality and efficiency of healthcare systems at the national and international level. **Publications:** 8

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Jialin Mao **Weill Medical College of Cornell University** New York City, New York	R03 HS26291 [Grant] **Developing Evidence for Safety Surveillance from Device Adverse Event Reports** 2018-2019 $786,185 Final Report	**Purpose:** Develop an annotation model and apply natural language processing to device adverse event reports of reoperations following hysteroscopic sterilization (HS) to summarize associated patient- and device-specific complications and additional surgeries. Evaluate the impact of regulatory activities by examining the differences in reporting sources and patterns before and after a September 2015 panel discussion. **Key Findings/Impact:** Researchers found that the number of adverse event reports increased significantly over time. The most pronounced increase was in 2017. Most reports examined were reported by lawyers, followed by consumers and providers. Most of the reports submitted by patients were submitted through regulatory authority. Fifteen percent of patient reports were submitted through voluntary reporting. The most common patient events reported among patients undergoing reoperation was abdominal/pelvic/back/genital pain, followed by menstrual disorder and bleeding. The most common device events reported among patients undergoing reoperation was device dislocation, followed by the perforation of organs and device breakage. Among patients who reported they were pregnant and underwent reoperation, more than half reported device complications, with the most frequent being device dislocation. Two-thirds of patients undergoing reoperation reported patient events only. One-fourth of patients reported both patient and device events. **Publications:** 1
Caleb Ing **Columbia University for Health Sciences** New York City, New York	R01 HS26493 [Grant] **Prenatal Exposure to Anesthesia and Subsequent Neurodevelopmental Disorders** 2018-2024 $1,173,997	**Purpose:** Assess the safety of prenatal exposure to anesthesia by evaluating long-term neurodevelopmental outcomes in children whose mothers were exposed to surgery and anesthesia during pregnancy. **Key Findings/Impact:** This project was completed on July 31, 2024, but a final report is not yet available. However, three studies have been published thus far. Researchers found that combining results of studies using prospectively collected outcomes showed that a single general anesthetic (GA) exposure was associated with statistically significant increases in parent reports of behavioral problems with no difference in general intelligence. Researchers also conducted a literature review to search for studies that assessed neurodevelopmental outcomes and prospectively enrolled children exposed to a single GA procedure compared with unexposed children. They concluded that given the limitations of this study and because avoiding necessary surgery during pregnancy can have significant detrimental effects on the mother and child, further studies are needed before changes to clinical practice are made. **Publications:** 3

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Helena Temkin-Greener **University of Rochester** Rochester, New York	R01 HS26893 [Grant] **Patient Safety Culture in Assisted Living: Association with Outcomes** 2019-2024 $1,173,814	**Purpose:** Identify those aspects of patient safety culture and key state regulatory policies that may impact health and safety outcomes of individuals residing in assisted living. **Key Findings/Impact:** This project was completed on April 30, 2024, but a final report is not yet available. However, it has resulted in several publications focused on assisted living communities and the importance of state regulations, healthcare access, and COVID-19 policies in shaping care quality. Stricter staffing and training regulations are linked to better end-of-life care transitions, while disparities in care persist, especially for racial and ethnic groups. The pandemic exacerbated these issues, with neighborhood deprivation and state social distancing policies impacting infection rates. Studies also emphasize the role of telemedicine for residents with dementia, the influence of online reviews on patient outcomes, and the need for improved data on healthcare use and patient safety. These findings suggest that enhancing regulatory standards and access to healthcare could improve outcomes for assisted living residents. **Publications:** 27
Harold Pincus **Columbia University** New York City, New York	R13 HS27288 [Grant] **Developing ICD-11: Coding of Quality and Patient Safety Data to Support Health Services and Outcomes Research in the US and Internationally** 2020-2023 $49,728	**Purpose:** Support funding for future meetings of the Quality & Patient Safety Topic Advisory Group (Q&S TAG) as part of the World Health Organization's ongoing development of the International Classification of Diseases (ICD), 11th edition. **Key Findings/Impact:** The Q&S TAG provided significant contributions to the revision process of the final version of ICD 11, which was endorsed by the World Health Assembly at the 72nd meeting in 2019 and was introduced globally in January 2022. The Q&S TAG also engaged various stakeholders to explore early opportunities for adaptation of ICD-11 innovations within ICD-10 CM. Notably, the group organized a meeting in March 2023 that involved key stakeholders from U.S. agencies reviewing and discussing a wide range of issues related to the potential adoption of ICD-11 in the United States. The revised and improved ICD-11 will have far-reaching applicability due to the penetration of ICD for epidemiologic studies, claims analyses, and quality measurement and reporting. It will also greatly strengthen the informatics base for patient centered outcomes research/comparative effectiveness research, while producing more and better information for implementing strategies to improve healthcare quality and efficiency for healthcare systems, both nationally and internationally. **Publications:** 2
Maxim Topaz **Visiting Nurse Service of New York** New York City, New York	R01 HS27742 [Grant] **Homecare-CONCERN: Building Risk Models for Preventable Hospitalizations and Emergency Department Visits in Homecare** 2020-2025 $400,000	**Purpose:** Bring together an interdisciplinary team of experts in home care, data science, nursing, and risk model development to explore whether cutting-edge data science approaches can improve timely identification of patients at risk in home care. **Key Findings/Impact:** This project is ongoing until July 31, 2025, and a final report is not available yet. However, this project has produced several publications already, which focus on using predictive models and natural language processing to identify risk factors for hospitalizations and emergency department visits in home healthcare, especially for patients with heart failure. By analyzing clinical notes and patient data, these models help anticipate risks and enable earlier interventions, improving patient outcomes. The publications also highlight the importance of social determinants of health and clinician perspectives on electronic health records, underscoring the need for decision support systems that are intuitive and meet clinician needs. These advancements can enhance care, reduce hospitalizations, and optimize healthcare resources in home care settings. **Publications:** 19

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
	NORTH CAROLINA	
Shula Bernard **Research Triangle Institute** Chapel Hill, North Carolina	290-00-0018-3 [Contract] **Validating the HCUP Patient Safety Indicators** 2001-2002 $299,999	**Purpose:** Validate Healthcare Cost and Utilization Project quality indicators (to include Patient Safety Indicators) to accurately measure adverse events. **Key Findings/Impact:** A final report was not available, and publications could not be found. **Publications:** 0
Shula Bernard **Research Triangle Institute** Chapel Hill, North Carolina	290-00-0018-13 [Contract] **Developing a Targeted Injury Detection System** 2005-2009 $621,619	**Purpose:** Develop and implement Targeted Injury Detection Systems (TIDS) for adverse drug events (ADEs) in inpatient settings via two companion task orders (AHRQ Contract No. 290-00-0018, Tasks 13 and 16) and a separate contract with Emory Health Care (AHRQ Contract No. 290-00-0011, Task 5). **Key Findings/Impact:** The ADE TIDS implementation experience was influenced by a variety of trigger and organizational characteristics. Hospitals participating in both alpha and beta testing of the ADE TIDS had limited success with implementation. Of the 10 hospitals in which implementation was planned, 3 did not begin implementation for several reasons. These included concerns about resources and costs that would be required; an inability to program ADE triggers in existing IT systems at another hospital; inadequate staffing levels in the pharmacy department; and a lack of convincing evidence for and perception of benefits that ADE TIDS would generate. In sum, the perceived benefit of manual ADE TIDS was not apparent. The potential for wider dissemination of ADE TIDS to hospitals and outpatient care settings may be limited, unless it coincides with implementation of organizationwide IT systems that allow an easy integration of trigger components. **Publications:** 1
Elizabeth Tant **Research Triangle Institute** Chapel Hill, North Carolina	290-10-00024i-1 [Contract] **Proactive Risk Assessment During the Clinical Laboratory Testing Process To Reduce Diagnostic Error** 2011-2013 $515,664	**Purpose:** Improve procedures, tools, and guidance for detecting and better understanding the errors that can cascade through the testing process. **Key Findings/Impact:** A final report was not available, and publications could not be found. **Publications:** 0
Paula Tanabe **Duke University** Durham, North Carolina	R18 HS19646 [Grant] **Improving Emergency Department Management of Adults With Sickle Cell Disease** 2011-2014 $865,365	**Purpose:** Redesign the process of emergency department (ED) management for adults with sickle cell disease (SCD) by identifying failures via root cause analysis (RCA) and redesigning them. **Key Findings/Impact:** A final report was not available, but one publication found that failure modes, effects, and criticality analysis facilitated the identification of failures of ED SCD care and guided quality improvement activities. Many "high-risk" failures existed in the two participating institutions, including a lack of recognition of high-risk or high-user patients and a lack of emphasis on psychosocial referrals. Specific to SCD analgesic management, one setting inconsistently used existing analgesic policies, while the other setting did not have such policies. Investigators concluded that interventions should focus on improvements in specific areas targeting improvements in the delivery and organization of ED SCD care. Improvements should correspond with the National Heart, Lung, and Blood Institute-sponsored guidelines for treatment of patients with SCD. **Publications:** 12

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Kimberly Johnson **Duke University** Durham, North Carolina	R18 HS22763 [Grant] **Implementing Best Practice in Palliative Care** 2013-2018 $2,492,204 Final Report	**Purpose:** Introduce the Quality Data Collection Tool for Palliative Care (QDACT-PC) within the engaged research and clinical care footprint of the Palliative Care Research Cooperative (PCRC) to create a national network for point-of-care palliative care quality monitoring and demonstrate its capabilities for conducting continuous quality improvement projects and reinforcing contemporary standards for clinical best practice. **Key Findings/Impact:** This project successfully developed and implemented the first patient-level quality monitoring system for specialty palliative care within a research collaborative. Key findings revealed the importance of tailored consultations with mandatory domains (i.e., physical symptoms; psychological, psychiatric, and cognitive aspects of care; spiritual, religious, existential concerns; medical decision making and care planning; care transitions and coordination of care; cultural aspects of care and other factors) and identified significant variations in quality measure adherence across sites. The system's deployment within PCRC marks a crucial step toward a rapid learning healthcare model in palliative care. This foundational work led to a Moore Foundation-funded initiative for nationwide implementation of QDACT-PCRC, to create a more comprehensive quality measurement registry. This registry would facilitate benchmarking and identify improvement opportunities, ultimately enhancing care for seriously ill patients and advancing the field of palliative care. **Publications:** 13
Anthony Weekes **Carolinas Medical Center** Charlotte, North Carolina	R01 HS25979 [Grant] **Short-term Clinical Deterioration After Acute Pulmonary Embolism** 2018-2021 $1,011,703 Final Report	**Purpose:** Compare right ventricular dysfunction dependent and independent prognostic models for short-term serious adverse events in pulmonary embolism (PE) patients. **Key Findings/Impact:** Researchers' findings showed better performance of a right ventricular dysfunction (RVD) inclusive model over RVD exclusive model after vetting more than 100 candidate variables. Right ventricular (RV) assessments added significant prognostic value. This research culminated in the development and validation of a prognostic model, which was converted into a simple points model for clinical application. The prognostic models were assembled using a large field of candidate variables and identified 24.3% prevalence of important clinical deterioration endpoints within 5 days. RV assessments added significant prognostic value regardless of logistic regression or machine learning model. Patient-reported quality of life was affected as early as 30 days after acute PE based on these outcomes. The outcomes and the timeframe of 5 days that were focused on were important, common, and impact quality of life. These outcomes should be factored into PE management considerations. The investigators identified high-value predictors by both logistic regression and machine learning prognostic models. They demonstrated very good to strong prognostic performance with a simplified points model PE-SCORE (user friendly), logistic regression model, and a more complex out of bag random forest model. **Publications:** 8

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
	OHIO	
Jennifer Bailit **Case Western Reserve University** Cleveland, Ohio	R03 HS14352 [Grant] **Determinants of Intrapartum Obstetrical Quality** 2005-2007 $99,956 Final Report	**Purpose:** Build primary cesarean delivery risk-adjustment models and determine the association between hospital quality and hospital structural and process of care factors. **Key Findings/Impact:** Investigators concluded that all structural types of hospitals need improvement toward higher quality. In addition, race, ethnicity, and hospital structural factors have little impact on the ability to predict primary cesarean delivery. Induction is not accurately recorded in birth certificate datasets. **Publications:** 1
Douglas Smucker **University of Cincinnati** Cincinnati, Ohio	R03 HS18245 [Grant] **Patient Safety in Hospice Care** 2009-2011 $93,781 Final Report	**Purpose:** Explore the types and characteristics of patient safety incidents in home hospice care through the experiences of hospice interdisciplinary team members. **Key Findings/Impact:** Investigators reported that the most prominent patient safety themes centered on risks or safety incidents related to debilitated patients living alone, poor living conditions, lack of capability or understanding among family caregivers, and medication dosing or handling errors by patients and family members. Interviewees often characterized such risks or incidents as being outside of their control to prevent or mitigate. Even when prompted for specific types of patient safety incidents related to the process of home hospice care, only a few interviewees recalled any incidents or harm related to errors or missed opportunities by nurses or other hospice team members. Investigators state that this study resulted in the first reported descriptions of adverse events that occur during home hospice care. Many unique qualities of home hospice care deserve closer scrutiny as researchers move toward interventions that will improve the quality of hospice care provided in the United States. This research provides a foundation for future quality improvement interventions to prevent or mitigate patient safety incidents and adverse and unnecessary harm to patients and caregivers. **Publications:** 2
Terri Byczkowski **Children's Hospital Medical Center of Cincinnati** Cincinnati, Ohio	R03 HS19037 [Grant] **The Pediatric Emergency Department Experience: Measurable Family-Centered Care** 2010-2012 $98,338	**Purpose:** Develop preliminary data that will provide focus and direction for the subsequent development of a validated measure of the quality of family-centered care for children presenting in pediatric ED settings. **Key Findings/Impact:** A final report was not available, but one publication reports findings from a qualitative study involving eight focus groups with 68 parents who accompanied their child to an ED visit at a large tertiary-care pediatric health system. The analysis looked at eight dimensions: (1) emotional support; (2) coordination; (3) elicit and respect preferences and involved the patient and family in care decisions; (4) timely and attentive care; (5) information, communication, and education; (6) pain management; (7) safe and child-focused environment; and (8) continuity and transition. Compared with those published in the literature, the most notable differences were combining involving family and respect for preferences into a single dimension and separating physical comfort into two dimensions: pain management and safe/child-focused environment. Investigators concluded that the resulting dimensions provided a framework for measuring and improving the delivery of family-centered pediatric emergency care. **Publications:** 2

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Michael Rothberg **Cleveland Clinic Foundation** Cleveland, Ohio	R01 HS22883 [Grant] **Patient-Centered Approach to Reducing Harm from VTE** 2014-2015 $993,115 Final Report	**Purpose:** Use data from many patients at the Cleveland Clinic to create tools physicians could use to assess an individual patient's risk of both venous thromboembolism (VTE) and bleeding and weigh those risks. **Key Findings/Impact:** This study developed and validated a risk assessment model (RAM) for VTE in hospitalized medical patients. Key findings showed that the new model, which included 16 variables, demonstrated superior performance (C-statistic 0.79) compared with the existing Padua model (0.63) in predicting VTE risk. Through decision analysis, researchers determined that prophylaxis was cost-effective for patients with a VTE risk of at least 0.8%, although this threshold varied with patient age and life expectancy. While the RAM was successfully embedded in the electronic health record, physician adoption varied significantly (5-75% across hospitals), suggesting the need for mandatory implementation. The study's randomized controlled trial involving approximately 100,000 patients was completed, but final outcomes analysis was still pending at the time of the report. **Publications:** 1
OKLAHOMA		
Zsolt Nagykaldi **University of Oklahoma** Norman, Oklahoma	K08 HS16470 [Grant] **Using Health Risk Appraisal To Prioritize Primary Care Interventions** 2008-2013 $423,635 Final Report	**Purpose:** Develop and pilot test a novel, patient-centered, and comprehensive health risk appraisal (HRA) tool in primary care practices. **Key Findings/Impact:** Estimated life expectancy and its derivatives, including Real Age and Wellness Score, were significantly impacted by the HRA implementation ($p<0.001$). The overall rate of 10 preventive maneuvers improved by 4.2% in the intervention group vs. control ($p=0.001$). The HRA improved the patient-centeredness of care, measured by the CAHPS PCC-10 survey ($p=0.05$). HRA use was strongly associated with better self-rated overall health (OR=4.94; 95% CI, 3.85-6.36) and improved up-to-datedness for preventive services (OR=1.22; 95% CI, 1.12-1.32). A generalized linear model suggested that increase in Wellness Score was associated with improvements in patient-centeredness of care, up-to-datedness for preventive services, and inclusion in the intervention group (all $p<0.03$). Patients were satisfied with their HRA experience, found the HRA report relevant and motivating, and thought that it increased their health awareness. Clinicians emphasized that the HRA tool helped them and their patients agree on high-impact, evidence-based preventive measures. **Publications:** 2

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
	OREGON	
Valerie Stewart **Providence Portland Medical Center** Portland, Oregon	R03 HS16122 [Grant] **Putting a Face on Hospital Medical Errors: Communication** 2005-2006 $82,107 Final Report	**Purpose:** Identify how people assign blame or trust to hospitals and treating physicians after medical error disclosure. **Key Findings/Impact:** The outcome of this work showed that the role of hospital representatives in medical error disclosure is complex. Physicians were rated better alone in no outcome and the same in moderate outcome conditions compared with team communication. However, a surprising finding from this study shows that team communication buffered the blame and trust ratings in the severe outcome situation so that ratings were more positive than when the physician disclosed alone. Simulated meetings (regardless of whether team or doctor) were better than letter disclosures in moderate and severe outcomes. However, letter disclosures resulted in increased trust over simulated meetings for no-outcome errors. Qualitative analysis of themes revealed that community participants define medical error very differently than the medical establishment and seem to want an emphasis on respect and communication. Overall, patient perceptions of medical error disclosure show that a major driving factor is the severity of the outcome for the error. Furthermore, based on remarks from the qualitative portion of the findings, there is a potential for believing that bringing in important officials may be interpreted by patients as actions reflecting the level of importance and respect ascribed to the issue or as a system of checks and balances. **Publications:** 0
Judith Logan **Oregon Health and Science University** Portland, Oregon	R18 HS17017 [Grant] **Improving Quality in Cancer Screening: The Excellence Report for Colonoscopy** 2007-2010 $590,775	**Purpose:** Create and evaluate a quality measures program for gastrointestinal (GI) endoscopy, specifically for colonoscopies performed in an ambulatory setting. **Key Findings/Impact:** Six themes emerged from the analysis of the transcripts from the interviews and from the notes taken by the research team: Workflow, Organizational Structure and Accreditation, Temporal Issues, Integration Issues, Value of Measures and Reports, and The Need for Data of High Quality. Investigators concluded that clinicians would not need encouragement to participate in quality measurement programs, which are seen as inevitable and even desirable, but that programs would need to emphasize quality measures relevant to clinical care and be certain about the accuracy of the information presented. It was expected that with continued harmonization between the standards organizations such as HL7, HITSP, and IHE, this technology infrastructure would mature and become feasible to implement. **Publications:** 1

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Bentson McFarland **Oregon Health and Science University** Portland, Oregon	P20 HS17137 [Grant] **Ambulatory Patient Safety of Clients in Treatment for Substance Abuse** 2007-2009 $197,662 Final Report	**Purpose:** Address risk assessment for clients who make transitions among addiction programs, mental health clinics, and primary care providers within a large public-sector academic healthcare system. **Key Findings/Impact:** Analysis of qualitative and quantitative data produced several surprises, as some of the sources that might be expected to be problematic (e.g., patient deception, coordination of care across providers and across clinics) did not emerge as safety concerns. Conversely, the project identified some constraints that could adversely affect patient safety from unexpected sources. The most prevalent themes focused on workload, logistical constraints, physical limitations imposed by the environment, communication, and unclear reporting requirements for clinical errors. The issue raised most often was workload. Investigators concluded that their project set the stage for patient safety interventions useful for substance abuse treatment clients, of which there are more than a million every year in the United States. The researchers believed their study generated information needed to design future projects that could use standardized patient methodology to improve substance abuse patient safety. **Publications:** 0
Mary Minniti **Sacred Heart Medical Center** Eugene, Oregon	P20 HS17143 [Grant] **Medication Management at Home: Patient-Identified Processes and Risk Assessment** 2007-2009 $198,170 Final Report	**Purpose:** Conduct an exploratory and qualitative study to understand the patient experience and risks of managing medications at home. **Key Findings/Impact:** Four high-level medication management processes were found to be common among participants, providing a framework for discussion between patients and healthcare providers. Medication management methods used by patients were diverse and very individual. More than 300 risks were identified either by patients or the clinical team reviewing the transcripts. The potential risks identified were from the patients' perspective and highlighted some possible areas where interventions might improve medication management safety. A vital few represent areas for further study and exploration with patients and their healthcare team. Investigators state that understanding the medication management process from the patient perspective yielded a rich picture of what behaviors and practices patients use everyday. Sometimes those practices fail, and medication is not taken as planned or as prescribed. At times, patients are aware of the potential risk, and at other times learn about the risk only after a significant life-changing event. Primary care clinicians often shared frustrations about noncompliant patients. In the analysis of vulnerabilities, investigators identified common vital vulnerabilities noted by both patients and clinicians as areas of risk. **Publications:** 0
Lyle Fagnan **Oregon Health and Science University** Portland, Oregon	290-07-10016-3 [Contract] **Implementation and Beta Testing of the Medical Office Survey on Patient Safety (MOSOPS)** 2008-2010 $899,996	**Purpose:** Implement pilot testing of MOSOPS, a tool that describes the culture of medical offices, to provide a comparative database for AHRQ generalizable to a wide range of practice settings. **Key Findings/Impact:** A final report was not available, but a newsletter editorial by Fagnan described the results of this work. More than 9,000 members of primary care offices were surveyed across the United States to capture a comprehensive snapshot of safety culture by measuring within 12 domains. The Teamwork domain received the highest rating among the participants. The least positively rated domain was Work Pressure and Pace. The results of the survey indicated that MOSOPS had four main uses: (1) a diagnostic tool to assess the status of patient safety culture in a medical office; (2) an intervention to raise staff awareness about patient safety issues; (3) a mechanism to evaluate the impact of patient safety improvement initiatives; and (4) a way to track changes in patient safety culture over time. **Publications:** 2

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Richard Meenan **Kaiser Foundation Research Institute** Portland, Oregon	R01 HS17528 [Grant] **Developing an HIV-Specific Prevention Index Using the Electronic Health Record** 2010-2013 $1,489,788 Final Report	**Purpose:** Show where both general health prevention and HIV-related health prevention are deficient and where more systematic interventions to improve health maintenance among HIV-infected patients are needed. **Key Findings/Impact:** Results showed longitudinal and cross-sectional variation in practice patterns differed by service type and organization. Higher Disease Management Indices (DMI) scores for blood pressure were associated with lower incident disease and care use. The Prevention Indices (PI) scores for lipid screening were associated with reduced annual outpatient care use. Despite these results, investigators thought the PI methodology could inform quality of care issues in HIV. However, the ability to derive more robust results despite the great efforts that were given to data collection, cleaning, and validation was hampered by two primary factors: (1) the study was conducted inside the Kaiser Permanente healthcare system in which the "baseline" quality of care for HIV-infected patients was already quite high; and (2) the ability to assess the association of indices, whether PI or DMI, with related clinical outcomes was limited in many cases due to the infrequency of such outcomes, even over a 10-year observation period. Investigators noted that much work remained to determine the ultimate utility of the PI and DMI in the HIV context. Any quality-of-care measure is only valuable if it is used. Considerable education and consultation are needed to enhance the receptivity of providers to the potential of such indices to produce useful and, perhaps most important, timely data. **Publications:** 0
Matthew Lee Hansen **Oregon Health and Science University** Portland, Oregon	R01 HS28429 [Grant] **Emergency Medical Services for Children Evaluation of Readiness and Outcomes (EMSC-HERO)** 2022-2027 $399,864	**Purpose:** Expand on the previous methods used to measure readiness in hospital-based EDs to rigorously evaluate factors that improve pediatric readiness for EMS agencies and health outcomes for children. **Key Findings/Impact:** This project is ongoing, and no final report or publications are available yet. However, this project aims to improve the delivery of safe and high-quality prehospital care for children that maximizes outcomes. It will expand on the previous methods used to measure readiness in hospital-based EDs to rigorously evaluate factors that improve pediatric readiness for EMS agencies and health outcomes for children. **Publications:** 0

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
		PENNSYLVANIA
John Feudtner **Children's Hospital of Philadelphia** Philadelphia, Pennsylvania	K08 HS000002 [Grant] **Profiling the Needs of Dying Children** 2000-2006 $581,429 Final Report	**Purpose:** Delineate through a series of studies the epidemiology of childhood life-limiting and terminal illnesses, identifying temporal trends and patterns of health service usage. **Key Findings/Impact:** Over the past quarter century, as the number of pediatric deaths declined, a greater percentage of deaths has been due to complex chronic conditions (CCCs). The site of death among children and young adults who died with underlying CCCs has shifted from the hospital toward home. Infants who died spent a substantial portion of their lives in hospitals, whereas children and adolescents who died from CCCs predominantly lived elsewhere during the last year of life. Other findings of this project included: • Pastoral care providers believe the spiritual care needs of hospitalized children and their parents are diverse and extensive. With system-level barriers cited as limiting the quality of spiritual care, considerable improvement may be possible. • Technology dependency is common among children discharged from a children's hospital. • The potential emotional, social, and financial burdens that greater distance between home and hospital imposes on dying patients and their families may be mounting as this distance increases and are likely borne disproportionately by children and certain ethnic groups. • The likelihood of home death is associated with local rates of home births, suggesting the influence of healthcare use preferences. **Publications:** 27
Jennifer Lofland **Thomas Jefferson University** Philadelphia, Pennsylvania	K08 HS000005 [Grant] **Patient Outcomes: Quality of Life and Lost Productivity** 2001-2005 $378,678	**Purpose:** Determine the factors associated with health-related quality of life and lost workplace and nonworkplace productivity of patients with migraine headache. **Key Findings/Impact:** For Aim 1, investigators successfully developed and validated a brief and self-administered PHS. For Aim 2, a systematic review provided a comprehensive list of the published, peer-reviewed survey instruments available to measure health-related lost workplace productivity. For Aim 3, 6 of 11 identified databases were found to capture metrics suitable for translation into a monetary figure, allowing the lost productivity of a given population to be appraised. This review of databases provided a taxonomy of productivity measurement within the currently available national databases and surveys within the United States. For Aim 4, based on an analysis of Medical Expenditure Panel Survey data collected from 1996 to 1999, several variables were found to be associated with lost workplace and nonwork productivity. Contrary to what investigators expected, a higher level of access to care was found to be significantly associated with an increased likelihood of missing work and with missing a greater number of workdays. **Publications:** 10

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Carl Sirio **University of Pittsburgh** Pittsburgh, Pennsylvania	U18 HS11926 [Grant] **Systems Approach for Improving Region-Wide Patient Safety** 2001-2005 $5,386,290 Final Report	**Purpose:** Understand (1) effectiveness of the Reporting Systems in creating usable information; (2) effectiveness of the Feedback Review Systems function; and (3) the Problem-Solving Systems through which knowledge is translated into organizational learning. **Key Findings/Impact:** The first focus of the Pittsburgh Regional Healthcare Initiative's patient safety programs was the implementation of the most credible data collection platforms available. Regionwide reporting of medication errors and nosocomial infections enhanced the region's focus on patient safety as a high-priority issue in healthcare. Overall results were inconsistent as investigators learned of the difficulties in linking feedback and reporting. In addition, institutional uptake of patient safety priorities varied. Inherent difficulties existed in creating a collaborative platform between competing institutions and a coordinating body whose goals and objectives were not closely coordinated. Voluntary, regional approaches to systems-based models for goal directed changes to improve patient safety remain difficult to sustain. A major resulting finding of this effort is that voluntary community-based organizations attempting to draw together multiple institutions cannot get too far ahead of their audience and constituents. **Publications:** 6
Norma Lang **University of Pennsylvania** Philadelphia, Pennsylvania	R13 HS12058 [Grant] **Measuring and Improving Health Care Quality** 2001-2003 $50,000	**Purpose:** Conduct a conference that focuses on measuring and improving healthcare quality—directly linked to AHRQ's mission to enhance the quality, appropriateness, and effectiveness of health services. The conference should also complement AHRQ's goal and the goal of Healthy People 2010 of developing and translating research to improve people's healthcare and the nation's delivery systems. **Key Findings/Impact:** A final report was not available, but one publication summarized the "state of the science" invitational conference on quality healthcare titled "Measuring and Improving Health Care Quality: Towards Meaningful Solutions to Pressing Problems, Nursing's Contribution to the State of the Science," held April 18–20, 2002, in Philadelphia. Investigators noted this conference stemmed from the work of the American Academy of Nursing (AAN) Expert Panel on Quality Health Care and had its genesis in June 1996 during the AAN Expert Panel on Quality's conference titled "Outcome Measures and Care Delivery Systems." The conference was also responsive to recent reports published by the Institute of Medicine and others, which concluded that quality problems could lead to poorer health and that widespread quality problems existed throughout American medicine. **Publications:** 1
Michael Devita **University of Pittsburgh** Pittsburgh, Pennsylvania	R13 HS15757 [Grant] **METS: Preventing Patient Crisis; Protecting in Crises** 2005-2006 $25,000 Final Report	**Purpose:** (1) Review impact on patient safety of designing and implementing hospital systems to identify and respond to patient deteriorations beyond the intensive care unit; (2) disseminate to healthcare professionals and institutions the concept of, benefits from, and alternatives to implementation of organized medical emergency teams (METs) to patients in medical crisis; and (3) provide an opportunity for experts in the field (who are geographically widespread) to convene, evaluate the state of the science, and develop a consensus statement. **Key Findings/Impact:** A MET conference was held June 25-26, 2005, in Pittsburgh, Pennsylvania. The conference was attended by more than 400 participants from 14 nations and 39 states and evaluations from the attendees indicated high satisfaction with the conference. It was video recorded with funding from another source, and both videos and slides were placed on www.METconference.com, which had almost 100,000 hits to date. The site is no longer accessible. **Publications:** 1

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Nicholas Castle **University of Pittsburgh** Pittsburgh, Pennsylvania	R03 HS16547 [Grant] **Incident Reporting in Nursing Homes** 2007-2010 $48,524 Final Report	**Purpose:** Examine the incident reporting practices in nursing homes (NHs) and identify to what extent these data are used for improving the safety of residents. **Key Findings/Impact:** This study was the first of its kind to report incident-reporting processes in the NH setting. It found numerous barriers and few facilitators to adverse event reporting. Investigators found only 15% of responding facilities had a system in place for staff to enter adverse event data using health information technology (HIT) at the unit level. Almost 18% of responding facilities did not use HIT to manage incident reporting processes and one-third of NHs conducted analyses by hand. Two of the top three most significant barriers influencing the reporting processes were related to fear of reporting the incident. The DOH State Surveyors results indicated that the variable state reporting policies in the United States widely impacted both the frequency and type of incidents reported. However, some consistencies were found across states. For example, abuse incidents were taken very seriously, while falls and pressure ulcers were not. The lack of a standardized incident reporting system limited the ability of nursing homes to manage adverse incidents with the goal of improving resident safety. In addition, the majority (81.3%) of the responder states imposed sanctions on NHs that fully disclosed adverse events, which could ultimately deter NHs from disclosing adverse events. This study provided an important step by increasing our knowledge base of the current state of adverse event reporting at the state level and could help identify potential vulnerabilities of the system. **Publications:** 0
James Jones **Weis Center for Research, Geisinger Clinic** Danville, Pennsylvania	P20 HS17144 [Grant] **Inpatient-Outpatient Transitions: Reducing the Rate of Readmission** 2007-2009 $199,486 Final Report	**Purpose:** Use failure mode effects analysis (FMEA) to identify modifiable risks associated with transition-related (inpatient-to-ambulatory) care processes. **Key Findings/Impact:** Investigators reported that by systematically identifying where, how, why, and how frequently failures in the transitional care process can lead to readmission, they developed a rigorous understanding of the capabilities required to reduce or eliminate the risk of transition-related readmissions. "Capabilities" were defined as the processes, information systems, expertise, staff, and facilities needed to ensure high-quality care. Although organizations may vary widely in how they develop and operationalize such capability, investigators believed their initial efforts to use FMEA to characterize these essential capabilities could have widespread value for organizations seeking to improve the quality of transitional care they provided. To extend the value of this research, they developed a draft assessment instrument that incorporated their findings related to key capabilities and that, with further development and refinement, could be used by payers, providers, and patients to assess the potential for any healthcare entity or system to provide high-quality transitional care. **Publications:** 0
Michael Devita **University of Pittsburgh** Pittsburgh, Pennsylvania	R13 HS17674 [Grant] **Rapid Response Systems: The Afferent Limb: Identifying Patients in Crisis** 2008-2009 $22,144	**Purpose:** Conduct a consensus conference on the Afferent Limb of the Rapid Response System in May 2008 to build on the success of the First International Consensus Conference on Rapid Response Systems in 2005. **Key Findings/Impact:** A final report was not available, but one publication reported that major findings included: (1) vital sign aberrations predict risk; (2) monitoring patients more effectively may improve outcomes, although some risk is random; (3) the workload implications of monitoring on the clinical workforce have not been explored but are amenable to study and should be investigated; and (4) the characteristics of an ideal monitoring system are identifiable, and it is possible to categorize monitoring modalities. It may also be possible to describe monitoring levels, and a system is proposed. **Publications:** 1

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Beth Ann Swan **Thomas Jefferson University** Philadelphia, Pennsylvania	R13 HS18895 [Grant] **Ambulatory Care Registered Nurse Performance Measurement Conference** 2010 $30,000	**Purpose:** Bring together leadership and technical staff from current and past research focused on exploring measuring quality at the RN provider level in ambulatory care and is distinct from advanced practice nurses (APNs) who also provide care in ambulatory settings. **Key Findings/Impact:** A final report was not available, but the application abstract stated the 2-day conference would include about 25 participants. One publication reported the conference was devoted to ambulatory care RN performance measurement and quality of healthcare. The specific emphasis was on formulating a research agenda and developing a strategy to study the testable components of the RN role related to improving care coordination and care transitions, improving patient outcomes, decreasing healthcare costs, and promoting sustainable system change. The objectives were achieved through presentations and discussion among expert interprofessional participants from nursing, public health, managed care, research, practice, and policy. Conference speakers identified priority areas for a unified practice, policy, and research agenda. Crucial elements of the strategic dialogue focused on issues and implications for nursing and interprofessional practice, quality, and pay for performance. **Publications:** 1
Elizabeth Alpern **Children's Hospital of Philadelphia** Philadelphia, Pennsylvania	R01 HS20270 [Grant] **Improving the Quality of Pediatric Emergency Care Using an Electronic Medical Record** 2011-2016 $2,465,381 Final Report	**Purpose:** Establish a data registry from electronic health records (EHRs) to collect and report quality measures of emergency care for important pediatric medical and trauma conditions; and implement a clinician feedback intervention to improve performance. **Key Findings/Impact:** This study developed a comprehensive pediatric emergency care registry across seven emergency departments to improve care quality through performance measurement and reporting. The registry collected data from 2.25 million visits and 911,239 distinct patients, including 13.9 million laboratory results and 13.7 million narrative documents. Key findings included successful implementation of monthly performance report cards for 475 clinicians and discovery of racial/ethnic differences in antibiotic prescribing for viral infections, with non-Hispanic Black and Hispanic children less likely to receive unnecessary antibiotics compared with non-Hispanic White children. The project demonstrated that emergency care data from different health systems and EHR vendors could be effectively harmonized into a single registry for quality improvement, benchmarking, and research purposes. **Publications:** 4

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Yohai Doi **University of Pittsburgh** Pittsburgh, Pennsylvania	R03 HS21521 [Grant] **Optimizing Detection of MRSA Carriage** 2012-2014 $99,355 Final Report	**Purpose:** Develop a sensitive screening method for methicillin-resistant *Staphylococcus aureus* (MRSA) colonization to serve as a useful tool in studying the dynamics of MRSA colonization and evaluating the efficacy of infection control practices such as decolonization of carriers. **Key Findings/Impact:** This study of 105 subjects found that 56.2% had MRSA-positive specimens, with the standard nasal swab detecting only 50.9% of cases. Combining methods significantly improved detection: using a sponge on multiple skin sites with the nasal swab increased sensitivity to 86.4%, while combining pharyngeal and nasal swabs improved it to 72.9%. These results were statistically significant compared with nasal swab alone. Researchers concluded that combining sponge sampling with nasal swabs enhances MRSA detection, potentially improving infection control in hospitals. This improved screening approach could lead to more effective infection control measures and potentially reduce MRSA transmission in hospital environments, especially in areas with moderate MRSA infection rates. **Publications:** 1
Akira Nishisaki **Children's Hospital of Philadelphia** Philadelphia, Pennsylvania	R03 HS21583 [Grant] **Evaluating Safety and Quality of Tracheal Intubation in Pediatric ICUs** 2012-2014 $98,254 Final Report	**Purpose:** Expand a single-center pediatric tracheal intubation (TI) registry to a diverse spectrum (large to small, academic to private) of pediatric ICUs participating in the Pediatric Acute Lung Injury and Sepsis Investigators (PALISI) network. **Key Findings/Impact:** This 18-month study across 15 PICUs examined 1,715 TIs, finding that while 98% of primary TIs were successful, 20% had adverse events (TIAEs), with 6% classified as severe. Risk factors for TIAEs included hemodynamic instability, difficult airway history, and resident participation. Trainee level significantly impacted outcomes, with fellows showing lower TIAE odds than residents. Significant variability in TI practices and outcomes was observed across PICUs, with mixed cardiac surgical PICUs associated with higher TIAE rates. Based on these findings, researchers developed an Airway Bundle Checklist to improve safety. This study highlighted the need for improved resident training and provided a standardized approach to enhance TI safety in pediatric intensive care settings. **Publications:** 39
Christopher Bonafide **Children's Hospital of Philadelphia** Philadelphia, Pennsylvania	R18 HS26620 [Grant] **Pediatric Patient Safety Learning Laboratory To Re-engineer Continuous Physiologic Monitoring Systems** 2018-2023 $2,498,319 Final Report	**Purpose:** Create a patient safety learning laboratory to analyze and re-engineer hospital and home physiologic monitoring systems to maximize alarm informativeness. **Key Findings/Impact:** This study successfully re-engineered physiologic monitoring systems for both hospitalized children and home-monitored infants with bronchopulmonary dysplasia. In the hospital setting, interventions led to a 21% reduction in alarm notifications, decreased nurses' reported need to delay responses (from 68% to 46%), and improved critical alarm response times. For home monitoring, the team showed that adjusting oxygen saturation alarm parameters could significantly reduce unnecessary alarms while preserving detection of critical events. The project's success led to institutional changes at Children's Hospital of Philadelphia, including the establishment of a permanent Patient Monitoring Committee and expansion of the Human Factors and Systems Design Program. The research demonstrated that a systems engineering approach could effectively improve patient monitoring safety in both hospital and home settings. **Publications:** 17

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
John Harris **Magee-Women's Research Institution and Foundation** Pittsburgh, Pennsylvania	R01 HS26943 [Grant] **Developing and Testing an Evidence-Based Toolkit for Nursing Home Care of Residents with Obesity** 2019-2025 $1,932,110	**Purpose:** Evaluate nursing homes' use of specific organizational strategies that make it easier or more difficult to provide safe care for residents with obesity, and create and validate a toolkit to help decision makers and caregivers implement effective safety strategies to provide better care for nursing home residents with obesity. **Key Findings/Impact:** This project is ongoing until April 30, 2025, but one article has been published to date. It assessed perceptions of difficulty at rural nursing home encounters with respect to admitting and serving individuals with dementia, obesity, mental and behavioral health conditions, and medically complex conditions. Rural nursing home administrators identified challenges related to specific conditions and capacity constraints. To ensure appropriate and high-quality nursing home placement for rural residents and to minimize the disruption of transitions into nursing home settings, more attention is needed on addressing the constraints identified by rural nursing home administrators. **Publications:** 4
RHODE ISLAND		
Joan Teno **Brown University** Providence, Rhode Island	R01 HS10336 [Grant] **Resident Assessment of Pain Management (RAPM)** 2000-2003 $728,284	**Purpose:** Develop and validate a survey tool to audit pain management in nursing homes (NHs) and examine the degree to which a proxy can substitute for a nursing home resident (NHR). **Key Findings/Impact:** Investigators reported using a qualitative synthesis of guidelines, expert panel, and focus groups to develop a survey tool. A patient instrument was developed and validated with results warranting its use and further testing. In contrast to the Minimum Data Set (MDS) and a chart review, interviews provided important information. Concordance between proxy and NHR was poor, suggesting the proxy response should be interpreted with caution. Investigators recommended a strategy of examining the MDS, reviewing charts, and interviewing patients with the developed brief survey for auditing pain management in NHs. Investigators also recommended that future research examine the responsiveness of these measures with interventions to improve pain management. A second area for future research was to examine the use of this survey in a larger population of NHRs sampled from NHs with different staffing and other organizational characteristics. Their research did not find organizational characteristics associated with the pain problem score. An important area of research would be to examine the association of organizational characteristics of NHs with the developed pain problem score. **Publications:** 2

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
TENNESSEE		
Matthew Weinger **Vanderbilt University** Nashville, Tennessee	R18 HS26616 [Grant] **Cancer Patient Safety Learning Laboratory (CaPSLL): Preventing Clinical Deterioration in Outpatients** 2019-2023 $2,499,922 Final Report	**Purpose:** Create the Cancer Patient Safety Learning Laboratory to detect and respond more effectively to unexpected clinical deterioration more reliably. **Key Findings/Impact:** This study developed and evaluated a prototype surveillance-and-response system to detect clinical deterioration in cancer outpatients. The research team collected data from 50 patients using multiple sources, including wearable sensors, patient-reported outcomes, and electronic health records. Key findings showed that while activity monitor and geolocation data proved unreliable due to technical issues and the COVID-19 pandemic, the system successfully used patient-reported outcomes and clinical data to predict 7-day risk of unplanned treatment events with moderate accuracy (ROC AUC = 0.98). The study also developed an effective risk communication dashboard that received positive usability ratings from clinicians (SUS score = 76/100). The project demonstrated the feasibility of predicting outpatient deterioration but highlighted challenges in patient engagement and data collection that need to be addressed in future implementations. **Publications:** 1
TEXAS		
Eric Thomas **University of Texas Health Science** Houston, Texas	R13 HS13928 [Grant] **Tools and Methods for Monitoring Patient Safety** 2003 $20,323	**Purpose:** Develop and implement a 1-day preconference workshop, "Tools and Methods for Monitoring Patient Safety: The Role of Medical Records Review." The workshop would be given on Saturday, March 1, 2003, prior to the AHRQ Patient Safety Initiative Second Annual Meeting, March 2-4, 2003, in Arlington, Virginia. **Key Findings/Impact:** A final report was not available, and publications could not be found. **Publications:** 0
David Ballard **Baylor Research Institute** Dallas, Texas	R13 HS14501 [Grant] **Performance Measurements to Improve Quality of Care** 2003-2004 $36,752 Final Report	**Purpose:** The International Society for Quality in Health Care (ISQua) 6th Indicators Summit was designed to be a multinational "think tank" on emerging issues in clinical indicators for national health policy leaders, senior service providers, clinicians, researchers, and funding organizations. **Key Findings/Impact:** Summit registrants included 142 people from 33 countries. The summit was held November 1-2, 2003, in Dallas, Texas, and included plenary presentations, panels, and question-and-answer sessions. Posters addressed indicator initiatives in Argentina, Belgium, the Netherlands, Italy, Sweden, the United Kingdom, and the United States. Brief papers were presented on work in Australia, Canada, Denmark, Taiwan, the United Kingdom, and the United States. The final panel session discussed the program and its impact; comments were also collated from delegate statements on paper evaluations. Comments received were very positive and strongly recommended that future summit programs ensure a balance between international, national, and institutional efforts. **Publications:** 0

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Josie Williams **Texas A&M University System** College Station, Texas	R13 HS16493 [Grant] **Measuring Quality of Care and Patient Safety: Problems in Use and Interpretation** 2006-2007 $49,565 Final Report	**Purpose:** Address the critical issue of accurately assessing the health status of populations through the measurement of indicators of quality of care and patient safety in small community hospitals and rural facilities that experience small cell size issue. **Key Findings/Impact:** A conference was held in Dallas, Texas, on March 28-29, 2007. The audience included more than 100 researchers from academic organizations, healthcare service organizations, and governmental agencies, as well as hospital administrators and staff and graduate students from all regions of the United States. The program included methodological challenges posed by the low frequency of individual clinical processes and the development of composite measures. The overall message was the need to review the adequacy of quality of care and patient safety measurement tools given the small number of patients and events in rural and small community hospitals. Composite measures can be very valuable and can be used widely to assess quality of care by aggregating indicators. The use of risk-adjusted rates or weighting allows further refinements in the use and interpretation of composite measures. **Publications:** 2
Donald Kennerly **Baylor Research Institute** Dallas, Texas	P20 HS17134 [Grant] **Adverse Event Directed Analysis in Ambulatory Primary Care** 2007-2009 $199,986 Final Report	**Purpose:** Better understand the magnitude, nature, and causation of adverse events (AEs) in ambulatory primary care and design risk mitigation strategies that would yield demonstrable improvements in patient outcomes. **Key Findings/Impact:** A review of more than 10,000 charts revealed that more than 12% of patients age 50 years and over with three or more primary care visits in 1 year had an AE. Many AEs appeared to be preventable, indicating that efforts to improve the reliability of primary care may yield important improvements in patient outcomes. Continued testing and refinement of the Baylor version of the IHI Outpatient Trigger Tool (BI-OTT) should produce an effective tool that can be implemented in other healthcare systems to improve healthcare delivery and patient outcomes. Researchers concluded that through the refinement and testing of the BI-OTT audit process, they could better quantify and characterize AEs occurring in ambulatory primary care. Applying this technique provided a greater understanding of the magnitude of harm associated with such events. Further analysis of data collected would improve researchers' understanding of the specific processes of patient care in primary care practices that contribute to the development of AEs and help to improve these processes to prevent or mitigate the severity of these events. **Publications:** 0

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Virginia Moyer **Baylor College of Medicine** Houston, Texas	P20 HS17122 [Grant] **Crossing an Invisible Quality Chasm: From NICU to Ambulatory Care** 2007-2009 $191,863 Final Report	**Purpose:** Perform a healthcare failure modes and effects analysis™ (HFMEA) to proactively assess the risks of transitioning fragile infants from neonatal intensive care (NICU) to ambulatory followup, and qualitatively evaluate the HFMEA process. **Key Findings/Impact:** A team of healthcare providers, safety specialists, social workers, and parents identified 40 high-risk failure modes and 75 high-risk causes. The following issues were present across most of the identified failure modes and causes: 1. Healthcare providers in the NICU tend to act in isolation, which results in the lack of a standardized, coordinated, and comprehensive care plan. 2. Parents and caregivers may be inadequately prepared for home care and management of fragile neonates due to a lack of consistent and early communication between parents and NICU staff and a lack of coordinated educational and social service support programs before discharge. 3. Community providers may lack the required knowledge and skills to manage complex infants, leading to suboptimal office-based care and perceived overuse of the emergency system. Once these care transition issues were identified, the team developed a comprehensive plan for corrective action. The plan addressed information sharing between and among care providers within the NICU, improving parent/caregiver preparation to assume responsibility for the child's care upon discharge, and enhancing skills and knowledge of primary care providers who receive these infants into their practices after discharge from the NICU. **Publications:** 1
Martina Klein **Texas Tech University** Lubbock, Texas	R03 HS25548 [Grant] **Validity Assessment of a Real-Time Indicator of Attentional Load and Task-Induced Fatigue in the MIS Environment** 2017-2019 $103,397 Final Report	**Purpose:** Assess whether blood flow velocity (BFV) of the middle cerebral arteries (MCAs) can serve as a real-time indicator of attentional load, attentional resource depletion, and task deterioration in the laparoscopic environment. As experts are expected to experience lower attentional load, the present study also investigated whether MCA BFV can differentiate between novice and expert laparoscopists. **Key Findings/Impact:** This project provided support for the potential of MCA BFV profiles to differentiate between novices and experts on performance of a laparoscopic training task in a single-task environment. In addition, it provided preliminary support for the predictive validity of MCA BFV as a real-time indicator of vigilance performance in the laparoscopic training environment. Further, as the easy and difficult camera conditions used in the present study failed to be reflected in MCA BFV, future research is needed to determine whether BFV of MCAs is sensitive for identifying task difficulty (attentional load) caused by different factors in the laparoscopic training environment. **Publications:** 1

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Hua Chen **University of Houston** Houston, Texas	R03 HS26790 [Grant] **Risk of Acute Asthma Associated With the Pediatric Use of Opioids** 2019-2021 $99,783 Final Report	**Purpose:** Examine whether exposing children with asthma to prescription opioids for cough or pain will lead to asthma exacerbation, and examine patient and provider characteristics relevant to the practice. **Key Findings/Impact:** Researchers concluded that opioid analgesics were commonly prescribed to children with asthma. The rate of use was higher among non-Hispanic White children and children with prior asthma-related emergency department visit and short-acting beta agonist overuse. Other than procedures and diagnoses associated with frequent opioid use, such as surgical and dental procedures, a considerable number of children with asthma also receive opioids for relatively minor conditions, including respiratory infections, abdominal pain, and general infections. Findings indicated that asthma exacerbation was uncommon after dispensing of either opioid or nonopioid analgesic medication in children with current asthma. There was no significant difference in the odds of asthma exacerbation following the dispensing of opioid vs. nonopioid analgesics. In addition, this study was the first population-based study that quantified the risk associated with using prescription opioids in children with asthma. **Publications:** 3
Muhammad Walji **University of Texas Health Science Center, Houston** Houston, Texas	R18 HS27268 [Grant] **Open Wide Learning Lab (OWLL): Improving Patient Safety in Dentistry** 2019-2024 $2,499,206	**Purpose:** Advance the dental Patient Safety Initiative by translating findings from identification of dental adverse events found in another project to implementing a patient safety learning laboratory at two large academic dental institutions. **Key Findings/Impact:** This project was completed on August 31, 2024, but a final report is not yet available. Resulting publications identified key factors contributing to adverse events in dental care and pediatric dental sedation. Findings highlight issues such as miscommunication, inadequate risk assessment, and clinical errors as common contributors to dental adverse events. In pediatric dental sedation, adverse outcomes were often linked to patient characteristics, sedation depth, and procedural factors. These studies emphasize the importance of improving safety protocols, enhancing risk management strategies, and fostering better communication within dental practices to reduce the occurrence of adverse events and improve patient safety, particularly in both adult and pediatric settings. **Publications:** 2
Hardeep Singh **Baylor College of Medicine, Houston** Houston, Texas	R01 HS27363 [Grant] **Application of Machine Learning To Enhance e-Triggers To Detect and Learn From Diagnostic Safety Events** 2019-2023 $1,494,980 Final Report	**Purpose:** Develop, refine, test, and apply Safer Dx electronic triggers (e-triggers) to enable detection, measurement, and learning from diagnostic errors in diverse emergency department settings. **Key Findings/Impact:** This project developed and evaluated e-triggers to identify diagnostic errors in emergency care, with positive predictive values (PPV) ranging from 10% to 52.4% for six triggers. Machine learning (ML) algorithms enhanced two specific triggers, achieving PPVs of 86% and 93%. The e-trigger portfolio shows promise for accelerating quality improvement efforts in emergency departments by efficiently identifying diagnostic errors, potentially reducing the need for manual chart reviews. Further development of ML algorithms, including incorporation of clinical notes and expansion to other care settings, could improve error detection and ultimately enhance patient safety and care quality in emergency settings. **Publications:** 45

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Ganesh Sankara-narayanan **University of Texas Southwestern Medical Center** Dallas, Texas	R01 HS29874 [Grant] **Developing Strategies for Implementation and Use of the Operating Room Black Box** 2024-2028 $399,999	**Purpose:** Develop strategies for effectively implementing the operating room black box and creating high-fidelity simulation-based training to reduce errors and improve patient safety. **Key Findings/Impact:** This project is ongoing until June 30, 2028, and no reports or publications are available yet. **Publications:** 0
UTAH		
Michael Silver **HealthInsight** Salt Lake City, Utah	P20 HS17139 [Grant] **Socio-Technical Probabilistic Risk Assessment in Home Health Care** 2007-2009 $197,246 Final Report	**Purpose:** Identify causes of preventable hospitalizations among patients receiving home health services. Results can inform efforts to improve care processes and more effectively support independent living for home care patients. **Key Findings/Impact:** More than two-thirds (68.7%) of the hospitalizations reviewed were assessed as appropriate and not preventable, and 1.5% were inappropriate hospital admissions. In 2.1%, the referring physician would not authorize needed care; 4.1% followed an inappropriate admission to home health; and 23.6% resulted from care process failures. Investigators identified home health management practices and staff training as root causes in most preventable hospitalizations. Researchers concluded that these findings increase the precision of their understanding of the performance gap in this setting and outcome. A 30% estimate for acute care hospitalization preventability translates to more than 135 hospitalizations and $685,000 annually in avoidable hospital costs to Medicare Part A for just the five Utah home health agencies participating in this study. Investigators also found that the nature of the performance failures provides even greater insight. These findings suggest that most preventable hospitalizations are not surprises resulting from occasional disturbances in what are otherwise sound processes, but rather the inevitable product of inadequacies in fundamental approaches to clinical and agency management practices. This pattern was observed at seven of the eight sites studied; it suggests interventions that target organizational and practice reform, rather than clinical process repair. **Publications:** 0
Michael Silver **Health Insight** Salt Lake City, Utah	R18 HS17903 [Grant] **Process Reliability and Organizational Learning in Home Health Care** 2008-2009 $241,646 Final Report	**Purpose:** Improve care in the home health setting by developing, implementing, evaluating, and disseminating an intervention program based on identified causes of preventable hospitalizations. **Key Findings/Impact:** Investigators reported that practice enhancement resources were developed to support effective care planning by visit staff. Materials included: an agency self-assessment tool, staff training and education materials, sample supporting policies and procedures, a physician communication tool, and an outcome monitoring process. This study developed training resources that targeted identified causes of preventable hospitalizations from home healthcare. In simulated training activities, home health professionals rated these materials as important and effective; they indicated intentions to use the materials in their practice. **Publications:** 0

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VERMONT		
Jeffrey Horbar **University of Vermont, State Agricultural College** Burlington, Vermont	P20 HS11583 [Grant] **Center for Patient Safety in Neonatal Intensive Care** 2001-2005 $575,053	**Purpose:** Determine how to learn most effectively from medical errors and then communicate that information to patients and families. **Key Findings/Impact:** Through several research projects, the Center for Patient Safety in Neonatal Intensive Care identified a broad range of errors, near-miss errors, and adverse events that occur in the medical care of high-risk newborn infants. New tools and learning about patient safety in the neonatal intensive care unit (NICU) were disseminated broadly through the Vermont Oxford Network Newborn Improvement Collaborative for Quality (iNICQ) and iNICQ Improvement Collaboratives. Tools included specific random safety audits for the NICU and a trigger tool for the NICU developed in partnership with the Institute for Healthcare Improvement and the Child Health Corporation of America. Center investigators noted that the most important result of the grant was the establishment of a dedicated multidisciplinary team with experience and expertise in patient safety for newborn infants. **Publications:** 5
VIRGINIA		
Steven Woolf **Virginia Commonwealth University** Richmond, Virginia	U18 HS11117 [Grant] **Characterizing Medical Error: A Primary Care Study** 2000-2002 $350,362	**Purpose:** Seek a new perspective on the definition of medical error by gathering the input of primary care patients and their providers. **Key Findings/Impact:** A final report was not available; however, in one publication investigators reported more than 50 unique errors and more than 30 unique injuries described by interviewed patients. The injuries patients reported were mostly psychological harms. Investigators concluded that patient stories sharply contrasted with the kinds of errors family physicians report. A focus on injury prevention may be a way of resolving the debate about whether some of these reports are "truly" medical errors. Rather than conduct epidemiologic studies, it seems more important to understand these error-harm stories as representing system design flaws amenable to analysis and change. **Publications:** 3
Ellen Crain **Academic Pediatric Association** McLean, Virginia	R13 HS10942 [Grant] **Improving EMS for Children Through Outcomes Research** 2001 $35,000	**Purpose:** Conduct a 2.5-day conference to cover issues relevant to outcomes research, such as definition, domains, strengths and weaknesses, need for standardized and validated measures, relationship between process and outcome, and application of measures to pediatric emergency medicine research. **Key Findings/Impact:** The conference, held March 30-April 1, 2001, in Reston, Virginia, was presented by the Ambulatory Pediatric Association in collaboration with the Emergency Medical Services for Children Program, Health Resources and Services Administration, Maternal and Child Health Bureau. Dr. Carolyn Clancy from AHRQ gave the keynote address, followed by five general talks on outcomes research, the need for standardized and validated measures, how randomized trials inform outcomes research, and the relationship between process and outcome. After these talks, workgroups met to discuss asthma, pain management, head injury, and trauma. On the last half-day of the conference, the workgroups developed hypothetical research questions to confirm or modify the findings from their prior deliberations. The conference closed with a report back to the large group by each workgroup. **Publications:** 0

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
George Stukenborg **University of Virginia** Charlottesville, Virginia	R01 HS10134 [Grant] **Administrative Data and General Comorbidity Models** 2001-2003 $380,758	**Purpose:** Develop and apply improved risk adjustment methods to assess inpatient mortality outcomes in the following patient populations: respiratory failure, septicemia, acute cerebrovascular disease, acute myocardial infarction, pneumonia, congestive heart failure, and chronic obstructive pulmonary disease. **Key Findings/Impact:** Mortality risk adjustment models that use present on admission data to define categories of comorbid disease yield levels of statistical performance that are substantial improvements over existing methods for defining comorbid disease. The study identified 37 categories of conditions closely related to aspiration pneumonia among patients in the study population. Alzheimer's disease and delirium (21%), respiratory failure (16%), and epilepsy and convulsions (12%) were the most commonly occurring categories. Another 228 categories of comorbid disease were identified. Fluid and electrolyte disorders (39%), gastrointestinal disorders (29%), and hypertension (25%) were among the most commonly occurring categories of comorbid disease. In the aspiration pneumonia study population, the model using present on admission diagnoses achieved meaningfully higher levels of discrimination among patients at high risk of death than models using the Deyo/Charlson method or models using the Elixhauser, et al., method. The fraction of variability in hospital death explained using present on admission diagnoses was more than 3 times that explained using the Deyo/Charlson method and twice that explained using the Elixhauser method. **Publications:** 6
Barents Group McLean, Virginia	290-96-0004-8 [Contract] **Patient Safety Measures** 2001-2002 Funding unknown	**Purpose:** Develop two measures to be used as instruments that determine context and antecedent conditions existing prior to initiation or at the beginning of implementation of AHRQ's patient safety research initiative. **Key Findings/Impact:** A final report was not available, and publications could not be found. Information about this contract was identified from an Office of the Assistant Secretary for Planning and Evaluation web page, which provides high-level summaries of various AHRQ evaluation projects. **Publications:** 0
John Nance **National Patient Safety Foundation (NPSF)** McLean, Virginia	R13 HS14026 [Grant] **National Patient Safety Foundation Joint Medical-Legal Conference at SMU** 2003-2004 $36,525 Final Report	**Purpose:** Bring together senior members of the medical and legal professions for an intense, collegial discussion to forge common goals in specific areas for the improvement of patient safety. **Key Findings/Impact:** The NPSF Joint Medical–Legal Conference was held on March 6-8, 2003, at Southern Methodist University. The topics considered included (1) creating effective medical reporting systems; (2) creating a legal atmosphere conducive to open clinical communication devoid of the fear of extraneous litigation; (3) establishing as a national standard full, immediate disclosure of injuries to patients (when such injuries involve medical mistake); and (4) identifying needed model statutory changes. Participants largely agreed regarding the major systemic, societal blockages to communication, disclosure of medical injuries, and establishment of reporting systems. The conference also produced the beginnings of a coherent series of steps for long-term and short-term national solutions, including immediate statutory changes. Cooperative work created a framework for understanding conflicts and providing new pathways to national solutions. Specifically, discovering that disclosure was already operationally effective in blocking punitive damage recoveries constituted a breakthrough. **Publications:** 0

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Professional and Scientific Associates Reston, Virginia	290-08-10029 [Contract] **Triggers/TIDS Expert Meeting** 2008 $70,061	**Purpose:** Many of AHRQ's initial research projects related to triggers and targeted injury detection systems (TIDS) were ending. Therefore, this project convened a meeting of trigger and TIDS researchers and federal and private stakeholders to review progress on trigger/TIDS development and identify (or explore) options for future work in this area. **Key Findings/Impact:** A final report was not available; however, the expert panel meeting was summed up in a conference summary, published in 2009. The meeting was held June 30 and July 1, 2008, with 43 experts and key stakeholders in attendance to discuss triggers and TIDS. In the summary, investigators concluded that whether a manual trigger or an automated trigger system, researchers learned a lot about the challenges of implementing and sustaining trigger-based surveillance systems. Many organizations had begun trigger work as a research or pilot project and then struggled to disseminate this approach throughout the organization. **Publications:** 8
Benjamin Kozower **University of Virginia** Charlottesville, Virginia	K08 HS18049 [Grant] **Mortality Assessment in Lung Cancer Resection** 2009-2014 $751,735 Final Report	**Purpose:** Develop a clinically useful method to estimate patient-specific survival after lung cancer resection, and determine the specific threshold value of hospital volume at which mortality risk is substantially increased after lung cancer resection. **Key Findings/Impact:** There were 18,800 lung cancer resections performed at 111 participating centers. Perioperative mortality was 413/18,800 (2.2%). Composite major morbidity or mortality occurred in 1,612 patients (8.6%). The largest predictors of mortality were procedure type, performance status, renal insufficiency, and induction therapy. There were 40,460 lung cancer resection patients identified from 436 hospitals. Models demonstrated excellent performance characteristics (C index=0.92, Nagelkerke R2=0.37). There was no significant relationship between volume and in-hospital mortality using spline regression (p=0.42). Investigators concluded this work was extremely important because it did not demonstrate a significant association between hospital volume and mortality. This work showed that patient factors were much more important in predicting postoperative mortality, which contradicted most previously published work and showed flaws with previous methods. **Publications:** 9
George Stukenborg **University of Virginia** Charlottesville, Virginia	R01 HS17693 [Grant] **Mortality Risk Adjustment With Present on Admission Diagnoses** 2009-2013 $592,471	**Purpose:** Develop mortality risk-adjustment models that make optimal use of present on admission data to adjust for baseline differences among patients. **Key Findings/Impact:** A final report was not available; however, a product of this grant, LaPar, et al. (2012), found that hospital procedure volume was not a statistically significant predictor of in-hospital mortality for any of the four procedures assessed (pancreatic resection [PR], abdominal aortic aneurysm [AAA] repair, esophageal resection [ER], and coronary artery bypass grafting [CABG]). Using discharge data from the 2008 Nationwide Inpatient Sample, investigators reported unadjusted mortality rates of 4.7% for PR, 12.7% for AAA repair, 5.8% for ER, and 2.2% for CABG, with most operations being elective. Strong predictors of mortality included age, elective procedure status, renal failure, and malnutrition (p<0.001). **Publications:** 8

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Anthony D. Slonim **Virginia Tech** Blacksburg, Virginia	290-06-00019i-12 [Contract] **Healthcare Associated Infection Risk Assessment in Ambulatory Surgical Centers** 2010-2011 $316,094	**Purpose:** (1) Use a proactive risk assessment to identify the realm of risk factors associated with surgical site infections (SSIs) resulting from procedures performed at ambulatory surgical centers (ASCs); and (2) design an intervention to mitigate the probability of SSIs for the most common risk factors for a particular surgical procedure, as identified by the proactive risk assessment. **Key Findings/Impact:** Investigators found the sociotechnical probabilistic risk assessment (ST-PRA) valuable and an important tool for assessing risks associated with many different patient safety events in a variety of different healthcare contexts. They used this novel approach to identify contributors to the occurrence of SSIs in the ASC environment. The value of ST-PRA lies in the capacity to consider both individual contributors of risk and unique combinations of risks that contribute to the adverse outcome. The use of ST-PRA as a modeling tool to identify risks in the ASC environment is an important outcome of this work. The ST-PRA model also serves as a living document that can continue to be modified over time as new risk information is acquired, either through direct observation or improved methods for studying the ASC environment. **Publications:** 2
Michael J. Connors **Society for Pediatric Sedation** Richmond, Virginia	R13 HS20729 [Grant] **Society for Pediatric Sedation Consensus Meeting: Defining Quality in Pediatric Settings** 2011-2012 $34,970 Final Report	**Purpose:** Begin to define quality as it relates to the field of pediatric sedation. **Key Findings/Impact:** This consensus meeting brought together a multidisciplinary group of sedation providers and quality methodology specialists to define quality standards for pediatric sedation across six key areas aligned with the Institute of Medicine's quality aims: safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity. The group met November 13-15, 2011, in Baltimore, Maryland. Key findings included the need for standardized measures of sedation effectiveness beyond procedure completion, with the group developing specific definitions and metrics for each quality domain. For example, the group defined effective sedation as creating conditions that safely facilitate procedures while attenuating pain, anxiety, and movement without unpleasant recall. The meeting resulted in concrete next steps for each domain, including developing risk assessment tools for safety, creating standardized effectiveness scales, establishing patient/family-centered care measurement tools, defining timeliness benchmarks, creating efficiency metrics, and evaluating equity of access. The project successfully established foundational definitions and frameworks for measuring and improving pediatric sedation quality, with 93% of participants agreeing the outcomes would enhance sedation delivery if implemented. **Publications:** 1

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
ActioNet Vienna, Virginia	290-12-00007C [Contract] **PSO Privacy Protection Center (PSOPPC)** 2012-2015 $7,982,450	**Purpose:** Maintain the established PSOPPC, ensuring confidentiality of patient safety event information and high standards of quality control. **Key Findings/Impact:** A final report was not available, but according to AHRQ's original task order, it established the PSOPPC to help patient safety organizations (PSOs) and others meet the requirement that patient safety event information be made nonidentifiable prior to sending to the National Patient Safety Database (NPSD). The PSOPPC was to receive patient safety information in a standardized format (AHRQ Common Formats) and render it nonidentifiable before transmitting it safely and efficiently to the NPSD. The Patient Safety Rule requires PSOs, to the extent practical and appropriate, to collect patient safety event data from providers in a standardized manner. AHRQ's common definitions, data elements, and reporting formats are known as Common Formats. The PSOPPC only accepts data represented as AHRQ's Common Formats. The PSOPPC also delivers technical assistance to PSOs on the use of AHRQ's Common Formats. **Publications:** 0
ActioNet Vienna, Virginia	HHSA290201700002C [Contract] **PSOPPC and NPSD Systems: PSO Privacy Protection Center w/ NPSD and Certification of Installations** 2017-2021 $16,300,382	**Purpose:** The Patient Safety Organization Privacy Protection Center (PSOPPC) was created by AHRQ to support the implementation of the Patient Safety and Quality Improvement Act PL-109-41 (Patient Safety Act) passed by Congress in July 2005. The goal was to create a learning system for quality improvement strategies for PSOs and healthcare providers. **Key Findings/Impact:** ActioNet teamed with Health Services Advisory Group, Infinity Conference Group, and subject matter experts to maintain the PSOPPC infrastructure. The team significantly expanded the data products and analyses to add value to the PSOPPC NPSD contract for the PSOs and our AHRQ client. The PSOPPC team also supported all the in-person and virtual sessions of the PSO Annual Meetings held in 2018, 2019, 2020, and 2021. The PSOPPC team developed the annual PSO Landscape Presentation for AHRQ and presented a variety of topics over the years. There were 135 participants on average at the PSO Annual Meeting, which received an average approval rating of 4.6 out of 5. **Publications:** 0
WASHINGTON		
James Taylor **University of Washington** Seattle, Washington	P20 HS11590 [Grant] **Center for Evaluation and Research in Pediatric Safety** 2001-2005 $599,000	**Purpose:** Form a developmental center for evaluation and research in pediatric patient safety and develop programs to reduce, alleviate, and prevent medical errors in children. **Key Findings/Impact:** This research yielded important insights into medical errors in pediatric care. A systematic review of incident reports proved useful for identifying errors, but underreporting remained a significant issue, especially among physicians. An electronic, anonymous reporting system increased error reporting rates, particularly for near-miss events. In primary care settings, immunization errors were notably frequent, prompting system changes. Focus group results informed hospital efforts to improve patient safety and contributed to the design of an anonymous reporting system. Overall, the study highlighted the need for improved error reporting systems and targeted interventions to enhance patient safety in pediatric care. **Publications:** 0

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Thomas Gallagher **University of Washington** Seattle, Washington	K08 HS14012 [Grant] **Enhancing the Disclosure of Medical Errors to Patients** 2003-2007 $377,745 Final Report	**Purpose:** Conduct empiric and normative studies regarding the disclosure of harmful medical errors to patients. **Key Findings/Impact:** This series of studies found that patients uniformly wanted disclosure of harmful errors. Physicians in both the United States and Canada supported the disclosure of medical errors to patients but were unsure how this general principle should be implemented. Thus, disclosure often failed to meet patients' expectations for these conversations. Dr. Gallagher and his team also concluded the following: • U.S. and Canadian physicians' attitudes toward disclosure were much more similar than different despite different malpractice environments. • Many physicians experienced significant emotional distress and job-related stress after serious errors and near-misses. • Efforts to promote error reporting at the state and national level may not reach their full potential unless physicians can be more effectively engaged in error reporting at their institutions. • Although many trainees have disclosed errors to patients, only a minority is prepared to do so. • Formal disclosure curricula coupled with supervised practice are needed to prepare trainees to disclose errors independently to patients by the end of their training. **Publications:** 13
WISCONSIN		
Marc Gorelick **Medical College of Wisconsin** Milwaukee, Wisconsin	R03 HS11395 [Grant] **PEAT: Pediatric Emergency Assessment Tool** 2000-2003 $63,001 Final Report	**Purpose:** Develop and validate a predictive model to be used as a risk adjustment tool for use in evaluating outcomes of pediatric emergency care. **Key Findings/Impact:** Investigators reported that a model based on a small number of variables, routinely obtained at the time of triage, accurately predicted the level of resource use in the ED for pediatric patients. The predicted probabilities from this model could be used as a marker of severity; patients with higher predicted resource use were presumably more severely ill. Moreover, the predicted probabilities could be used to adjust for differences in baseline risk when comparing other outcomes and quality markers, such as costs and length of stay, across settings. Advantages of the Revised Pediatric Emergency Assessment Tool (RePEAT) score include parsimony (eight variables) and near universality of data availability (89% of charts abstracted at the four sites contained complete information on all predictors in the model.) Therefore, the RePEAT is potentially applicable to a wide variety of settings and may be amenable to application to large electronic datasets. **Publications:** 2

Principal Investigator Organization City, State	Project Number [Type] Project Title Project Period Total Investment to Date	Purpose, Key Findings/Impact, and Number of Publications
Ben-Tzion Karsh **University of Wisconsin** Madison, Wisconsin	P20 HS17115 [Grant] **Proactive Risk Assessment of Primary Care of the Elderly** 2007-2009 $199,147 Final Report	**Purpose:** Use proactive risk assessment methods to identify hazards and model their risk in the primary care of older patients. **Key Findings/Impact:** Investigators identified dozens of hazards using three different hazard identification methods (observation, reports, and focus groups). They identified 65 hazards for the primary care provider (PCP) step called "obtain information from an external provider." However, the most important hazard identified was "information chaos," defined as the experience of some combination of information overload, underload, scatter, uncertainty, and erroneous information. Therefore, improving the safety of primary care of older patients would require solutions that specifically reduced information chaos for PCPs. This issue has never been a target for primary care patient safety. Investigators acknowledged that many primary care redesign efforts had been proposed, but they argued that none of these efforts specifically targeted information chaos or its proximal outcomes of reduced situation awareness and increased mental workload. This was a new avenue for future research and one that should be addressed in the design of electronic health records. **Publications:** 5

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