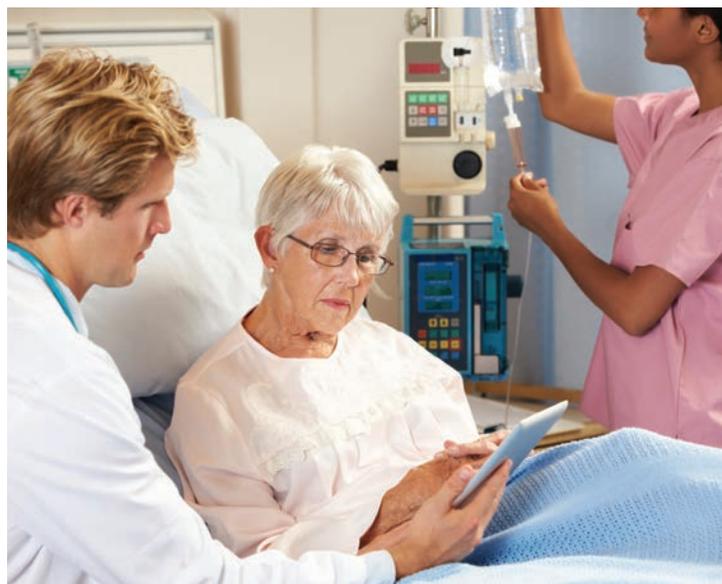
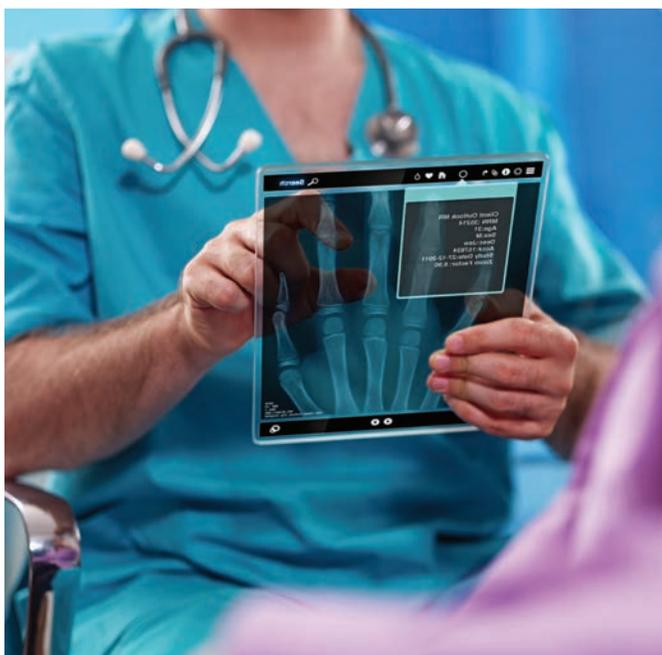


AHRQ HEALTH INFORMATION TECHNOLOGY PORTFOLIO

2012 ANNUAL REPORT



Agency for Healthcare Research and Quality
Advancing Excellence in Health Care • www.ahrq.gov

HEALTH IT

AHRQ Health Information Technology Portfolio 2012 Annual Report

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HEALTH IT

Director's Message

The Agency for Healthcare Research and Quality is pleased to offer this annual report, which highlights the Health Information Technology (IT) Portfolio's priorities and extensive accomplishments in 2012.

It was a very productive year for all of our grantees and contractors, and we invite you to review our report, which outlines the many initiatives, developments, and activities that marked this past year. The Agency's health IT projects demonstrate how health IT improves quality, enhance the evidence base for health IT, and prepare the field for effective use of future innovations. This work is also highly complementary to related activities supported by our colleagues in the public and private sectors.

Thank you to the researchers we support, our staff, and our partners. With your continued involvement and support, we look forward to another rewarding year.

We hope that you find this report helpful and informative.



P. Jon White, M.D.

Director

Health IT Portfolio

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Report Acronym List

- ACTION** – Accelerating Change and Transformation in Organizations and Networks
- AHRQ** – Agency for Healthcare Research and Quality
- ASQ** – Ambulatory Safety and Quality Program
- CDS** – Clinical decision support
- CERTs** – Centers for Education and Research on Therapeutics
- CMS** – Centers for Medicare & Medicaid Services
- EHR** – Electronic health record
- EQM** – Enabling Quality Measurement through Health IT Program
- FOA** – Funding opportunity announcement
- HIE** – Health information exchange
- IAA** – Interagency agreement
- IDIQ** – Indefinite delivery indefinite quantity
- IQHIT** – Improving Quality through Clinician Use of Health IT Program
- IT** – Information technology
- MCP** – Management of Individuals with Complex Healthcare Needs through Health IT Program
- PA** – Program announcement
- PBRN** – Practice-based research network
- PCC** – Enabling Patient-Centered Care through Health IT Program
- PHR** – Personal health record
- RFA** – Request for application
- RFP** – Request for proposal
- RFTO** – Request for task order
- SEN** – Special emphasis notice

II. Health IT Portfolio Projects

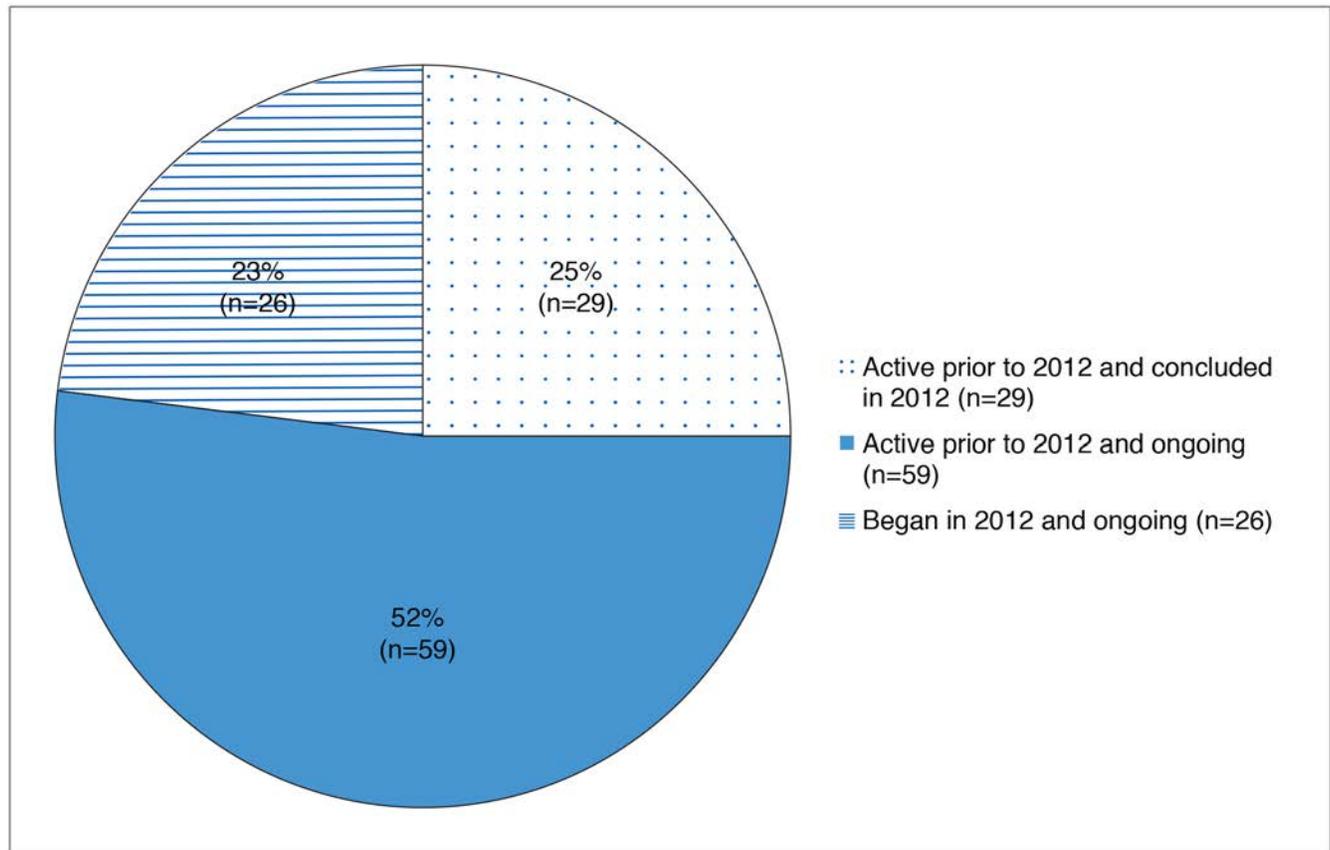
A. Funding Opportunities

The Health IT Portfolio uses a variety of funding mechanisms to achieve its research goals; these include grants, contracts, and interagency agreements. Each mechanism specifies the content, format, and timeline for deliverables, including periodic reporting requirements for completion of milestones and budget updates. Collectively, these mechanisms provide funding for a wide variety of health services research and administrative activities and are described in more detail below.

Grants

Grants provide money, property, or other direct assistance for approved projects or activities that support a public purpose that does not directly benefit the government. AHRQ does not provide substantial programmatic involvement to a grant recipient during the project period. Grant proposals are submitted to AHRQ in response to a funding opportunity announcement (FOA). One-time FOAs are known as request for applications (RFAs), and recurring FOAs are known as program announcements (PAs).

Figure 1: 2012 Status of Health IT Portfolio Funded Grants: New, Ongoing, Concluded



Grant Highlight: Findings from the Ambulatory Safety and Quality Program

From this program, AHRQ synthesizes findings and lessons that can provide timely, relevant information about the use of health IT in emerging care models, such as accountable care organizations and patient-centered medical homes.

The [Ambulatory Safety and Quality \(ASQ\) program](#) Web page was launched in 2012. This page highlights content from the 69 grants funded under the ASQ program, which was designed to foster research to improve the safety and quality of ambulatory health care in the United States.

In 2012, AHRQ released the first of four synthesis reports titled [Findings and Lessons From the Enabling Quality Measurement Through Health IT Grant Initiative](#) that highlights key findings from the 17 organizations that received grant funding under this initiative.

In 2012, there were 114 active Health IT Portfolio funded grants, with lifetime AHRQ funding equaling \$86.7 million. Lifetime AHRQ funding refers to the total financial support that AHRQ obligates to a project during the entire project period.

Figure 1 shows the status of grants in terms of how many new projects began in 2012, as well as how many projects began prior to 2012 and either concluded or remained ongoing at the year's end. The majority of the grants (59 projects, or 52 percent) began prior to 2012 and remained ongoing through the entire year, while 26 new grants (23 percent) began and 29 grants (25 percent) ended in 2012.

Grants active in 2012 were awarded under the following programs.

Ambulatory Safety and Quality (ASQ) RFAs. The ASQ program awarded a total of 69 grants in 2007 and 2008 to support projects that focused on patient-centered care, quality measurement, and clinical management of complex patients in ambulatory health care settings. The ASQ program, now closed, funded grants through the following four RFAs:

- ***Enabling Quality Measurement (EQM) Through Health IT RFA (HS-07-002):*** Intended to develop safety and quality measures in ambulatory care settings; automate quality measurement; demonstrate the ability of electronic data systems; expand potential safety and quality measures; and demonstrate improved ability to export data for reporting performance on measures and improvement.
- ***Enabling Patient-Centered Care (PCC) Through Health IT RFA (HS-07-007):*** Designed to fund grants to investigate novel methods or evaluate existing strategies for using health IT to create or enhance patient-centered models of care.
- ***Improving Quality Through Clinician Use of Health IT (IQHIT) RFA (HS-07-006):*** Designed to investigate novel methods or evaluate existing strategies for clinician use of health IT to improve outcomes through more effective clinical decision support, medication management, or care delivery.
- ***Improving Management of Individuals with Complex Healthcare Needs Through Health IT RFA (HS-08-002), also referred to as "Management of Complex Patients" (MCP):*** Served to demonstrate the ability of health IT to assist clinicians, practices, systems, and patients and families in improving the quality and safety of care delivery for individuals with complex health care needs in ambulatory care settings, particularly in high-risk care transitions.

Health IT Funding Opportunities. Active grants were also supported by seven ongoing or closed Health IT Portfolio funding opportunities.

- ***Small Research Grants to Improve Healthcare Quality Through Health IT (R03) (PAR-08-268)***: Supports different types of small research studies including: 1) pilot and feasibility or self-contained health IT research projects; 2) secondary data analysis of health IT research; and 3) economic prospective or retrospective analyses of health IT implementation.
- ***Exploratory and Developmental Grant to Improve Health Care Quality Through Health IT (R21) (PAR-08-269)***: Provides funding for health IT exploratory and developmental research projects that support the conduct of short-term preparatory, pilot, or feasibility studies. The R21 grants are intended to be more comprehensive and broader in scope than the projects supported by the health IT R03 FOA.
- ***Utilizing Health IT to Improve Health Care Quality Grant (R18) (PAR-08-270)***: Supports demonstration research grants that study health IT implementation and use to improve the quality, safety, effectiveness, and efficiency of health care in ambulatory settings and transitions between care settings. This PA expired in May 2011; however the Portfolio funds projects through an Agency-wide FOA: [AHRQ Health Services Research Demonstration and Dissemination Grants](#) (R18, PA-09-071).
- ***Understanding Clinical Information Needs and Health Care Decision Making Processes in the Context of Health IT (R01) (PA-11-198)***: Funds research aimed at elucidating the nature of cognition, task distribution, and work in health care delivery settings.
- ***Understanding User Needs and Context to Inform Consumer Health IT Design (R01) (PA-11-199)***: Funds projects that help build a knowledge base about consumers' personal



health information management needs and practices and related design principles.

- ***Career and Dissertation Awards (R36, K01, K08)***: In 2008, AHRQ published a Special Emphasis Notice (SEN) (NOT-HS-08-014), to fund Career Development (K01, K08) and Dissertation (R36) grants designed to support the next generation of health IT-focused researchers. In 2011, this SEN was reissued (NOT-HS-11-016).
- ***Active Aging: Supporting Individuals and Enhancing Community-based Care Through Health IT (P50) RFA (HS-10-016)***: P50 grants focus on applied research with the objective of developing sustainable and reproducible strategies to translate research into practice effectively and efficiently. This RFA is now closed.

Other Health IT-Funded Grants. In addition to the grants described above, the Health IT Portfolio funds grants with a health IT focus, which are solicited through the following general agency FOAs:

- ***Conference Support Awards (R13)***: AHRQ supports conferences through its grant programs to fund both small (PAR-09-231) and large (PAR-09-257) conferences to help further its mission to improve the quality, safety, efficiency, and effectiveness of health care.

- ***AHRQ Health Services Research (R01):*** AHRQ funds projects through an Agency-wide FOA (PA-09-070) for ongoing extramural grants for research, demonstration, dissemination, and evaluation projects to support improvements in health outcomes, strengthen quality measurement and improvement, and identify strategies to improve access.
- ***Centers for Education and Research on Therapeutics (CERTs) (U18, HS-07-004; U19, HS-11-004):*** AHRQ was given responsibility for administering the CERTs demonstration program authorized by Congress as part of the Food and Drug Administration Modernization Act of 1997 (Public Law 105-115). CERTs conduct research and provide education to advance the optimal use of drugs, medical devices, and biological products; increase awareness of the benefits and risks of therapeutics; and improve quality while cutting the costs of care.
- ***Research Centers in Primary Care Practice-Based Research and Learning (P30) RFA (HS-12-002):*** P30 grants support Centers of Excellence in Primary Care Practice-Based Research and Learning, promoting clinical, behavioral, and translational research activities. This FOA is intended for consortiums of three or more regional practice-based research networks (PBRNs), or national PBRNs with at least 120 member practices.

Contracts

A contract is an agreement that is initiated by the government to acquire a product or service under specified terms. The Health IT Portfolio uses various contract mechanisms to solicit requests for proposals (RFPs), including one-time RFPs and requests for task orders (RFTOs) when a master contract has been issued under an indefinite delivery indefinite quantity (IDIQ). Master contracts are a special type of RFP that are issued to a group of qualified contractors who are

then eligible to compete for a subsequent series of RFTOs.

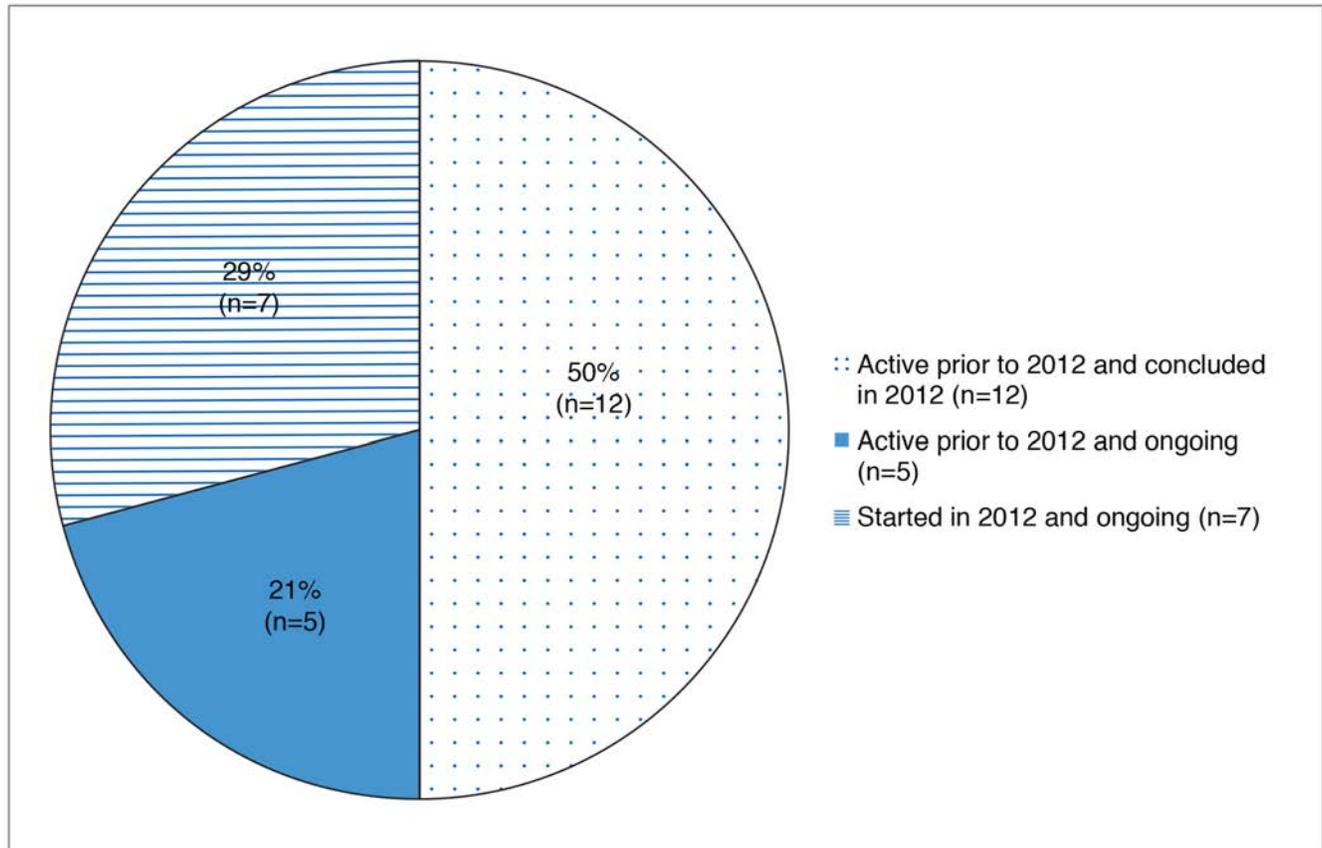
In 2012, the Health IT Portfolio had 24 active research contracts, varying in length from 1 to 5 years, and ranging in a wide variety of topics such as using health IT in practice redesign, developing an electronic health record (EHR) format that is specific to pediatric patients, and using health IT to improve quality in primary care practices. AHRQ lifetime funding for health IT contracts is \$34.2 million. Two contracts from the Clinical Decision Support (CDS) Initiative were funded at \$6.2 million each and therefore make up more than a third of the AHRQ contract lifetime funding in 2012.

Figure 2 shows the status of contracts in terms of how many new projects began in 2012 as well as how many projects began prior to 2012 and either concluded or remained ongoing at the year's end. There were seven new contracts awarded in 2012. Among the 17 projects that were funded prior to 2012, over half of them concluded and 5 remained ongoing.

Contract Highlight: AHRQ Supports Greater Access to Meaningful Use Data

The United States Health Information Knowledgebase (USHIK) was developed in 2008 through collaboration between health information organizations and Federal agencies, including AHRQ, the Veterans Health Administration, and the Centers for Medicare & Medicaid Services.

In 2012, USHIK redesigned the Meaningful Use Measures Metadata portal, providing a one-stop shop for health IT stakeholders such as electronic health record developers, clinicians, researchers, and policymakers to access meaningful use data through a custom interactive informational model.

Figure 2: 2012 Status of Health IT Portfolio Funded Contracts: New, Ongoing, and Concluded

Health IT Contracts. AHRQ funds a variety of research contracts, including those funded through the following mechanisms and RFPs:

- Accelerating Change and Transformation in Organizations and Networks (ACTION) I and II:*** ACTION I and II are networks designed to conduct field-based research to promote innovation in health care delivery by accelerating the diffusion of research into practice. The ACTION I network, now closed to new funding opportunities, includes 15 large partnerships and collaborating organizations. The ACTION II network includes 17 large partnerships and more than 350 collaborating organizations. The networks conduct practice-based implementation research focused on testing or expanding the investigation of innovations that are new to the health care field; implementing interventions or improvement

approaches that have been demonstrated to work in a limited type or number of settings; spreading one or more proven innovations or delivery system improvements; and evaluating and supporting sustainability. In 2012, there were three active ACTION I and three active ACTION II task order contracts funded by the Health IT Portfolio.

- Primary Care Practice-Based Research Networks (PBRNs):*** AHRQ funds primary care practice-based research networks defined as a group of ambulatory practices devoted principally to the primary care of patients and affiliated in their mission to investigate questions related to community-based practice and to improve the quality of primary care. In 2012, there were four active PBRN contracts funded by the Health IT Portfolio.

Guide Highlight: Developing Effective Consumer Health IT Applications

AHRQ is working to speed the development of effective consumer health IT applications so people can better use their personal health information to manage their health.

AHRQ published a guide that offers suggested recommendations for designers and developers of consumer health IT products titled [Designing Consumer Health IT: A Guide for Developers and Systems Designers](#). Recommendations include general guidance for designers and design teams that can be applied to the process of designing and developing a product; and specific recommendations to a design phase such as idea generation, identification of end users, testing, and commercialization.



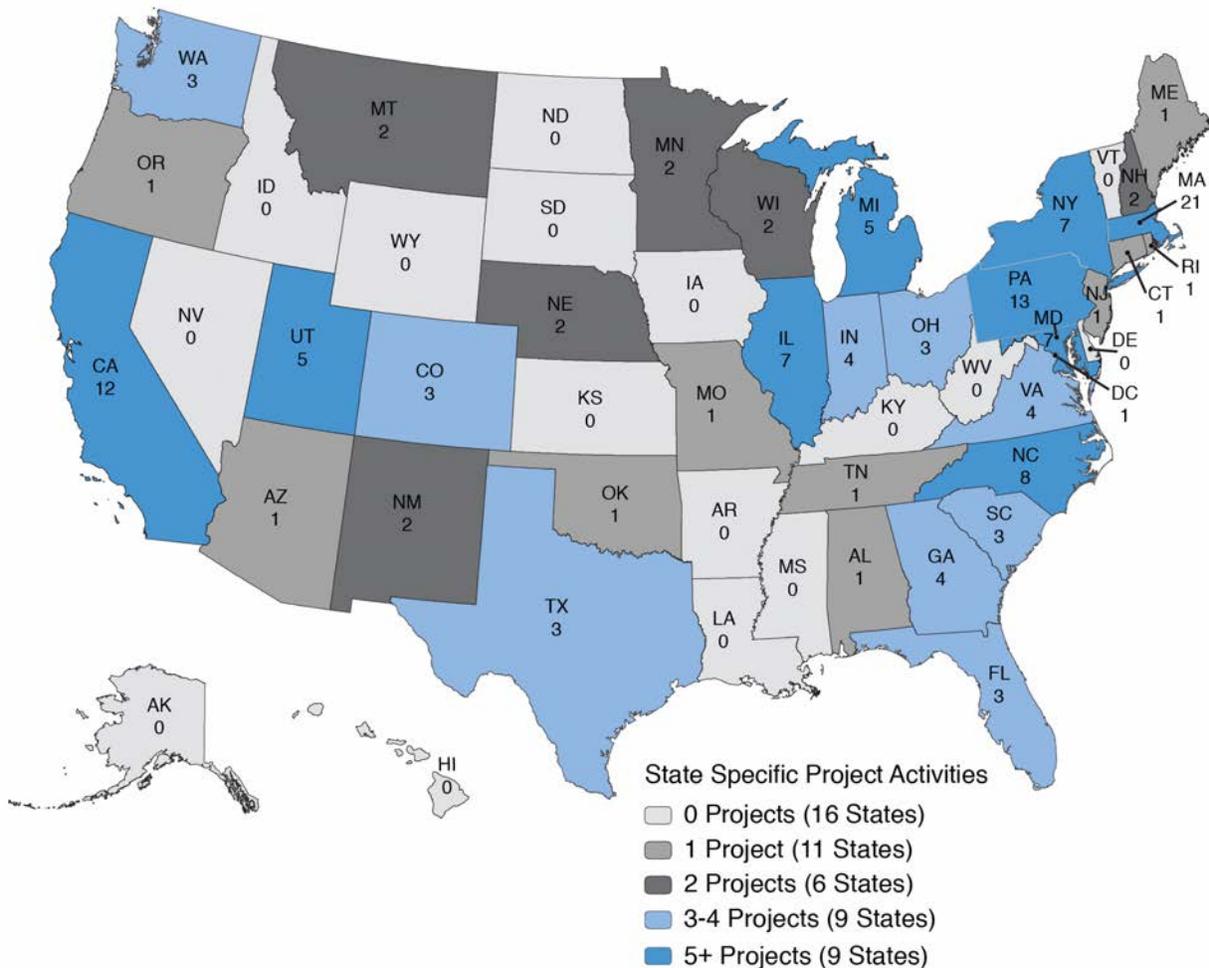
- **Clinical Decision Support (CDS) Services:** In 2008, AHRQ funded two demonstration projects in support of the design, development, implementation, and evaluation of guidelines-based CDS. The demonstration projects were awarded to Brigham and Women's Hospital (Clinical Decision Support Consortium [CDSC] project) and Yale University School of Medicine (GuideLines Into Decision Support [GLIDES] project). The CDS demonstrations focus on translation of clinical guidelines and outcomes related to preventive health care and treatment of patients with chronic illnesses.

Interagency Agreements

Interagency agreements (IAAs) are used to provide, purchase from, or exchange goods or services with another Federal agency. In 2012, the Health IT Portfolio funded two projects managed by other Federal agencies: the Indian Health Service and the Centers for Medicare & Medicaid Services (CMS); and one which is co-led by AHRQ and the National Science Foundation.

B. Geographic Distribution of Projects

In 2012, projects were led by organizations located in 34 States and the District of Columbia (see Figure 3). Massachusetts, with 21, was the State with the highest number of active health IT projects, followed by Pennsylvania and California with 13 and 12 projects, respectively. Projects are classified by the State where the lead organization is located, but many projects include collaborators from multiple organizations. For example, the Using Health IT in Practice Redesign project (contract #290-2010-00031I-2) is led by a principal investigator from the University of Wisconsin-Madison, a project director from Abt Associates in Massachusetts, and entails studying six small ambulatory care practices in both Alabama and Wisconsin.

Figure 3: Number of Active Projects Sponsored by AHRQ's Health IT Portfolio as of 2012 by State

Note: 138 projects in 34 States plus the District of Columbia.

C. Characteristics of Health IT Projects

AHRQ funds diverse projects that focus on a range of health IT interventions, populations and conditions studied, and the settings and focus of care. Projects may include one or more of any of these categories.

Technologies

Projects are categorized by the health IT application or intervention being studied (Table 1). The most

common health IT category was EHR (59), followed by CDS (43), and personal health record (20).

The *Flu Alert: Influenza Vaccine Alerts for Providers in the Electronic Health Record* project (Grant # R18 HS 018158) is one example of a project categorized as an EHR project. This particular project, led by Melissa Stockwell, M.D., M.P.H., is tailoring and implementing influenza vaccine alerts in an EHR for pediatric providers serving minority low-income populations at four community health centers in New York.

Table 1: Technologies Studied

Technologies	Total
Electronic Health Record	59
Clinical Decision Support System	43
Personal Health Record	20
Health Information Exchange	11
Consumer Health IT	11
Computerized Provider Order Entry	10
Interactive Voice Response/Telephony	9
Internet	9
Home/Remote Monitoring	8
Automated Extraction System/Algorithm	6
e-prescribing	6
Telehealth Technology	6
Patient Portals	6
Medication Reconciliation	5
Secure Messaging	5
Natural Language Processing	5
Personal Digital Assistant	4
Smart Phone/Cell Phone	4
Clinical Messaging	3
Short Message System (SMS)	3
Data Warehouse/Data Repository	3
Disease Registries	3
Data Mining Software	2
Media Based Technologies	2
Radio Frequency Identification Device	2
Kiosk	2
Automated Surveillance System	1
Bar Coding	1
Standards	1
Electronic Medication Administration	1
Internet Social Networking	1
eDental Record	1
Total	253

Target Populations and Conditions Studied

The AHRQ Health IT Portfolio funds projects that study various populations and health conditions among different target populations, some of which also overlap with AHRQ's priority populations. AHRQ identifies "priority populations" as specified

by Congress in the Healthcare Research and Quality Act of 1999 (Public Law 106-129), consisting of groups with unique health care needs or issues that require special focus, such as racial and ethnic minorities, low-income populations, and people with special health care needs.

Table 2 outlines the frequency of projects categorized by each target population or condition; projects can be tagged with more than one category. For example, The Give Teens Vaccines Study (Contract # 290-07-10013-4), led by Alexander Fiks, M.D., is a project that focuses on two populations: pediatric and teenagers. This

project evaluated a health IT-enabled intervention using evidence-based strategies to increase HPV vaccine delivery and receipt in adolescent girls.

The most common category was adults (58), followed by chronic care (37), pediatric (26), and across all populations (26).

Table 2: Target Populations and Conditions Studied

Target Population and Conditions Studied	Total
Adults	58
Chronic Care*	37
Across Populations	26
Pediatric*	26
Racial or Ethnic Minorities*	16
Elderly*	13
Diabetes	12
Medicaid	12
Other Conditions**	10
Low-Income*	9
Safety Net	9
Cancer	8
Low Literacy	7
Teenagers	7
Women*	7
Hypertension	6
Medically Underserved	6
Mental Health/Depression	6
Obesity	6
Uninsured	5
Congestive Heart Failure	4
Inner City*	4
Medicare	4
Veterans	4
Asthma	3
Children with Special Health Care Needs	3
Chronic Obstructive Pulmonary Disease	3
Men*	3
Acute Respiratory Infections	2
Coronary Artery Disease	2
End-of-Life Care*	1
Persons with Disabilities*	1
Total	320

*This target population is one of AHRQ's priority populations.

** Other conditions include osteoporosis and sickle cell anemia.

Care Setting and Aspect of Care

Projects are categorized on the care setting (Table 3) and aspect of care (Table 4) of their research. For care setting, the majority of projects active in 2012 were conducted in ambulatory settings (n=112, 66 percent). Twenty-six projects focused on inpatient care, and 18 studied interventions aimed at patient care in their homes.

One example of a study conducted in ambulatory settings is *Using Health Information Technology to Improve Transitions of Complex Elderly Patients from Skilled Nursing Facilities to Home*, led by Terry Field, D.Sc. (Grant # R18 HS 017817). Her team evaluated an EHR-based intervention to measure the efficacy of communicating key health information and alerts to outpatient primary care physicians and visiting nurses.

Table 3: Care Setting Studied

Care Setting	Total
Ambulatory	112
Inpatient	26
Home	18
Emergency Department/Emergency Room	9
Long-Term Care Facility	2
Pharmacy	1
Laboratory	1
Hospice	1
Total	170

Table 4: Aspect of Care Studied

Aspect of Care	Total
Chronic Disease Management	44
Primary Care	38
Patient Education	35
Prevention	29
Specialty Care	24
Medication Management	24
Quality Measurement/Quality Improvement	23
Improving Care Across Transitions of Care	23
Protected Health Information Data Sharing	21
Care Coordination	19
Acute Care	11
Care Planning	6
Total	297

For aspect of care, which focuses on what type of care is being provided, 44 projects studied chronic disease management, followed by primary care (38) and patient education (35).

Trial of the CarePartner Program for Improving the Quality of Transition Support (Grant # R18 HS 019625), awarded to John Piette, Ph.D., is one example of a project that is categorized with two aspects of care: chronic disease management and improving care across transitions of care. This project is evaluating an intervention intended to improve the effectiveness of support for transitions from hospital to home for patients with common chronic conditions.

III. Successes from 2012

A. AHRQ Project Highlights from 2012

Over the course of 2012, there were many successful projects that helped develop and disseminate information to add to the health IT knowledge base. A sample of projects is highlighted below.

Advancing the Use of Clinical Decision Support

AHRQ has played a key role in recent initiatives to define and execute approaches for more effective clinical decision support (CDS). CDS, if well-integrated into clinical workflow and adopted by clinicians, holds great promise to improve the quality and safety of health care.^{1,2,3,4} However, without the ability to share CDS components across systems, such as rules, order sets, documentation templates and guideline recommendations, developing CDS can be expensive and inconsistent.^{5,6}

To advance this use of CDS in the United States, AHRQ funded two demonstration projects in support of the design, development, implementation, and evaluation of guideline-based CDS: the Clinical Decision Support Consortium (CDSC) project awarded to Brigham and Women's Hospital (contract # 290-08-10010) and the GuideLines Into Decision Support (GLIDES) project awarded to Yale University School of Medicine (contract # 290-08-10011).

- The study team at Brigham and Women's Hospital developed a model CDS system that could be shared across EHR systems. Small rural clinics demonstrated that they were able to implement in their own EHR systems CDS rules created and used by a separate entity. By using a standard model such as this, care delivery organizations (CDOs) can share knowledge artifacts and health information more seamlessly with other CDOs regardless of the EHR being used. This has implications for improving adoption of high-quality CDS in diverse CDOs. This project was recognized by the Office of the National Coordinator for Health IT's Health eDecisions (HeD) workgroup and Health Level 7 (HL7) as an international standard. The HeD workgroup identifies, defines, and harmonizes standards for creating, using, and sharing CDS across current and emerging EHR systems and services.
- The GLIDES project was a 5-year collaboration of guideline developers, disseminators, and implementers working to design, develop, implement, and demonstrate CDS applications into health care delivery at ambulatory care sites using systematic and replicable processes for knowledge transformation and CDS design. A centerpiece of the GLIDES strategy has been the Guideline Elements Model (GEM), a knowledge model for guideline documents

-
- 1 Garg AX, Adhikari NKJ, McDonald H, et al. Effects of computerized clinical decision support systems on practitioner performance and patient outcomes: a systematic review. *JAMA* 2005;293:1223–38.
 - 2 Kawamoto K, Houlihan CA, Balas EA, et al. Improving clinical practice using clinical decision support systems: a systematic review of trials to identify features critical to success. *BMJ* 2005;330:765.
 - 3 Dexter PR, Perkins S, Overhage JM, et al. A computerized reminder system to increase the use of preventive care for hospitalized patients. *N Engl J Med* 2001;345:965–70.
 - 4 Sintchenko V, Coiera E, Iredell JR, et al. Comparative impact of guidelines, clinical data, and decision support on prescribing decisions: an interactive web experiment with simulated cases. *J Am Med Inform Assoc* 2004;11:71–7.
 - 5 Wright A, Bates DW, Middleton B, et al. Creating and sharing clinical decision support content with Web 2.0: Issues and examples. *J Biomed Inform* 2009 Apr;42(2):334-46.
 - 6 Middleton B. The clinical decision support consortium. *Stud Health Technol Inform* 2009;150:26-30.

that incorporates a set of more than 100 tags to categorize guideline content. CDS incorporates a broad and complex array of activities. To date, GLIDES CDS implementation tools have been integrated at several primary and specialty clinics within the Yale New Haven collaborators systems, Children's Hospital of Philadelphia, Geisinger, and Alliance of Chicago. Tools that support improvements in guideline development are deployed at the American Academy of Pediatrics, American Academy of Otolaryngology, American Society for Clinical Oncology, and the American Urological Association.

Quality Measurement Enabled by Health IT

Quality measurement is necessary to inform quality improvement efforts. The Health Information Technology for Economic and Clinical Health Act supports more widespread use of EHRs for quality measurement and other essential aspects of health care delivery. With the proliferation of quality measurement and reporting programs from health care payors and others, gathering data for quality measurement can be an expensive and time consuming process.⁷ Research indicates that health IT could make the process more reliable and timelier.^{8,9} AHRQ continues to drive work on quality measurement enabled by health IT, including the funding of the EQM grants and the Pathways to Quality Measurement Through Health IT initiative.

Pathways to Quality Measurement Through Health IT (contract # 290-09-00024I-4): This is a 2-year initiative to advance health IT-enabled quality measurement and reporting by identifying strategies, a health services infrastructure, and

research issues related to health IT-enabled quality measurement. The first stage of the project included a review of the health IT-enabled quality measurement landscape which resulted in an [Environmental Snapshot](#). The Snapshot provides an overview of health IT-enabled quality measurement; describes possibilities and challenges to achieving the next generation of health IT-enabled quality measurement; and describes current Federal, State, regional, and private activities seeking to improve health-IT enabled quality measurement.

AHRQ is committed to engaging a diverse set of perspectives and stakeholders to facilitate and promote discussion around the identification of pathways to the next generation of quality measurement enabled by health IT. In September 2012, AHRQ released a Request for Information

Report Highlight: AHRQ continues to lead development of the evidence base on quality measurement enabled by health IT.

In July, AHRQ published [Quality Measurement Enabled by Health IT: Overview, Possibilities, and Challenges](#), that provides an overview of the historical and current state of quality measurement through health IT.

AHRQ launched the [Health IT-Enabled Quality Management](#) Web page, which describes the AHRQ-sponsored initiative intended to advance health IT-enabled quality measurement and reporting by identifying strategies, a health services infrastructure, and related research issues.

7 McGlynn EA, Asch SM, Adams J, et al. The quality of health care delivered to adults in the United States. *N Engl J Med* 2003;348(26):2635-45.

8 Hazelhurst B, McBurnie MA, Mularski RA, et al Automating care quality measurement with health information technology. *Am J Manag Care* 2012 Jun;18(6):313-9.

9 Kern LM, Malhotra S, Barrón Y, et al. Accuracy of electronically reported "meaningful use" clinical quality measures: a cross-sectional study. *Ann Intern Med* 2013 Jan 15;158(2):77-83.

(RFI) to identify successful strategies for improving health IT-enabled quality measurement. Responses from the RFI, followed by a series of focus groups with various health care stakeholders will inform the development of a report that will provide reflections on how to advance quality measurement enabled by health IT, as well as provide suggestions on incremental steps toward its advancement.

Developing and Testing Quality Measures for Interoperable Electronic Health Records (Grant # R18 HS 017067): Through an AHRQ-funded EQM grant, Rainu Kaushal, M.D., and her team identified existing measures and created new, clinical quality of care measures and demonstrated that these measures could be reliably retrieved from electronic systems, such as EHRs and health information exchanges (HIEs). The measures were implemented in a federally qualified health center in New York and tested to determine reliability of electronic reporting. AHRQ often shares its research findings with its Health and Human Services partners, and ultimately these evidence-based quality measures were leveraged for use at the national level. Specifically, 11 measures from Dr. Kaushal's final set informed some of the clinical quality measures incorporated as part of CMS' definition of Meaningful Use related to the EHR incentive program. A story highlighting this project's success can be found at <http://healthit.ahrq.gov/EQMStoryKaushal2012.pdf>. In addition, a video supplementing the story can be found at <http://healthit.ahrq.gov/AHRQHealthITSuccessStoriesKaushalVideo>.

Using Health IT To Improve Preventive Care

Preventive care plays a key role in improving health and well-being, yet Americans receive only approximately half of all recommended preventive services.¹⁰ Primary care providers are responsible for delivering comprehensive preventive care services to patients, but often do not have the time after addressing the immediate needs of their patients.¹¹ Therefore, new mechanisms facilitated by health IT are needed for effective delivery of recommended preventive care. AHRQ has funded various projects where health IT applications have supported the delivery of appropriate, individualized preventive health services that engage patients and integrate into clinical care practices, including the following projects.

Electronic Standing Orders Boost the Delivery of Adult Vaccinations and Other Health Maintenance Services (Contract # 290-07-10015-2): Lynne Nemeth, Ph.D., and her team implemented electronic standing orders into the daily workflow of eight different primary care practices to increase preventive services. Six of the eight practices successfully adopted the electronic standing order protocol and demonstrated meaningful improvement in care across study measures, including immunizations, mammogram rates, and screening for diabetes and osteoporosis. Key factors, such as technical competence and leadership, were identified to optimally adapt and use the system. A video highlighting one of the successful practices can be found at www.healthit.ahrq.gov/AHRQHealthITSuccessStoriesNemethVideo.

10 McGlynn EA, Asch SM, Adams J, et al. The quality of health care delivered to adults in the United States. *N Engl J Med* 2003 Jun 26;348(26):2635-45.

11 Yarnall KS, Pollak KI, Østbye T, et al. Primary care: is there enough time for prevention? *Am J Public Health* 2003 Apr;93(4):635-41.

My Wellness Portal *Enhances Patient-Centered Preventive Care (Grant # R18 HS 017188)*: James Mold, M.D., and his team at the University of Oklahoma led the development of *My Wellness Portal*—a comprehensive, patient-centered, prevention-oriented, Web-based PHR that contains several tools and resources that allows patients to access their health information, manage their health care, and work toward achieving individualized health goals. Using the PHR, patients can maintain a personal profile that documents their history of preventive care, personal risk factors, care preferences, vital signs, symptoms, and medical encounters. The PHR includes patient education materials, a 3-year patient wellness plan, and an application that reminds patients about recommended preventive services. The investigators conducted a randomized controlled trial and found that the PHR increased the delivery of recommended preventive services, and increased clinician knowledge of patients' medical histories. A video highlighting the development of *My Wellness Portal* is available at www.healthit.ahrq.gov/AHRQHealthITSuccessStoriesMoldVideo.

Using Health IT to Promote Better Pediatric Care (Grant # R18 HS 017248): William Adams, M.D., from the Boston Medical Center led the development and evaluation of a telephony system to support pediatric primary care providers in delivering individualized and comprehensive preventive services during well-child visits. The telephony system, called the Personal Health Partner (PHP), is a fully automated, interactive conversational system that uses interactive voice response technology to engage parents at home. The system collects patient health information and counsels parents before upcoming well-child visits, and offers personalized followup



assessment and counseling after visits. Initial testing indicated that PHP is a promising tool: parents who used the PHP were more likely to report being better prepared for visits and discussing important issues such as parental depression and child prescription medication use with their provider during visits. A success story describing the PHP is available at <http://healthit.ahrq.gov/HealthITPromotesBetterPediatricCare>.

Improving Medication Management and Safety in the United States

Medication management covers all aspects of prescription medications, such as prescribing and ordering; communicating and transmitting orders from the prescriber to the pharmacist; dispensing, administering, and monitoring; as well as reconciliation, adherence, and education.¹² Medication management is a complex and expensive process with high potential for both benefit and harm. Substantial increases in medication costs are expected to continue based on the aging population and increased demand for medications (72-percent increase from 1997-2007).¹³ AHRQ has funded numerous projects where health IT applications have supported the work flow around the provision of prescription medications, control, and recording of use, including the following projects.

12 Bell DS, Cretin S, Marken RS, et al. A conceptual framework for evaluating outpatient electronic prescribing systems based on their functional capabilities. *J Am Med Inform Assoc* 2004;11(1):60-70.

13 McKibbin KA, Lokker C, Handler SM, et al. Enabling Medication Management Through Health Information Technology. Evidence Report/Technology Assessment No. 201. (Prepared by the McMaster University Evidence-based Practice Center under Contract HHS 290-2007-10060-I). AHRQ Publication No. 11-E008-EF. Rockville MD: Agency for Healthcare Research and Quality. April 2011.

Forging a Pathway for Electronic Prescribing of Controlled Medications (Grant # R18 HS 017157): Grant Carrow, Ph.D., and his team at the Massachusetts Department of Public Health conducted a pilot project to develop, implement, and evaluate a system for electronic prescribing of controlled substances (EPCS). Prior to this project, EPCS was not allowed under Drug Enforcement Agency (DEA) rules. Dr. Carrow received a waiver to the Controlled Substances Act, which prohibited EPCS, from the DEA. The team navigated DEA regulations, technology requirements, security measures, and work flow processes to demonstrate a safe and secure system for EPCS successfully. This effort directly informed the DEA's Interim Final Rule published in 2010 allowing controlled substances to be prescribed electronically nationwide for the first time.

Improving Outpatient Medication Lists Using Temporal Reasoning and Clinical Texts (Grant # R03 HS 018288): Li Zhou, M.D., of Brigham and Women's Hospital developed a natural-language processing (NLP) system called the Medical Text Extraction, Reasoning and Mapping System (MTERMS) to extract and encode medication information from electronic clinical notes in a structured format. Based on the success of this work, Dr. Zhou was awarded a followup R21 grant by AHRQ: Integration of a Natural Language Processing Based Application to Support Medication Management. The overall goal of this followup study is to use NLP to facilitate the medication reconciliation process in the ambulatory setting to improve the accuracy and completeness of medication lists.

Funding the Next Generation of Health IT Researchers

AHRQ continues to fund doctoral candidates to promote and build research capacity in the use of health IT to improve health care quality, safety, efficiency, and effectiveness.

Web-Based Assessment Shows Promise in Preventing Prenatal Alcohol Use (Grant # R36 HS 018071): The dissertation work of Katia Delrahim-Howlett, Ph.D., evaluated a health IT intervention designed to reduce risky alcohol use among low-income women. The intervention involved a Web-based screening tool that assessed alcohol consumption and provided personalized feedback. The study found that Web-based assessment alone is effective in reducing risky alcohol consumption and in sustaining that effect.

Factors that Influence Successful Use of a Patient Portal (Grant # R36 HS 018239): AHRQ funded Jessica Taha, Ph.D., to examine the ability of older adults to use a patient portal to perform common health management tasks and the individual characteristics that impact successful use of the portal including age, health literacy, and cognitive abilities. Dr. Taha's study suggests that older adults may encounter difficulties performing common tasks when using patient portals, and certain individual characteristics may influence success in using these tools. These findings provide important considerations for the design of health IT applications to ensure they can be successfully used by individuals of all ages.

These projects and two other health IT-focused grants funded through the dissertation program are highlighted in a success story available at <http://healthit.ahrq.gov/sites/default/files/docs/page/buildinghealthitresearchcapacity.pdf>. Drs. Taha and Delrahim-Howlett and their work are featured in AHRQ-developed podcasts available at <http://healthit.ahrq.gov/buildinghealthitresearchcapacitypodcasts>.

For more information on these and other projects, go to the [Clinical Decision Support Initiative, Success Stories](#), and [ASQ](#) Web pages, where success stories, videos, and podcasts highlighting many of the projects are available.

B. Publicizing Grantee and Contractor Outputs

In 2012 the Health IT grantees and contractors helped publicize their research findings in a number of ways, such as participating in AHRQ’s sixth annual conference; publishing work in peer-reviewed journals; making presentations to

stakeholder groups; and partnering with Federal and private organizations to support face-to-face and Web-based conferences.

During 2012, grantees and contractors reportedly produced a total of 55 peer-reviewed publications and 51 presentations. All reported outputs are categorized in Table 5.

Table 5: Grantee and Contractor Outputs from 2012

Type of Output	Number
Publication (peer reviewed)	55
Presentation	51
Publication (non-peer reviewed)	7
Tool	4
Total	117

Publications

Highlights from the Health IT funded projects’ publications include the following:

[The Effectiveness of Implementing an Electronic Health Record on Diabetes Care and Outcomes.](#)

David Ballard, Ph.D., M.D., and his team (Grant # R21 HS 020696) wrote a manuscript describing the analysis of an EHR’s impact on processes and outcomes of diabetes care. The results showed that after adjusting for age, sex, and insulin use, patients from the EHR practices were significantly more likely to receive optimal care when compared with those from the non-EHR practices. This manuscript was published by *Health Services*

Research in August 2012 and was selected by the editorial staff as the 2012 John M. Eisenberg Article-of-the-Year, an annual award established in 2003 that recognizes excellent and original research among all articles published in the Journal during the year.

[Behavioral Health Providers’ Beliefs about Health Information Exchange: A Statewide Survey.](#)

Wende Baker, M.Ed., and her colleague Nancy Shank collected survey data from 674 behavioral health providers in Nebraska and found that the majority are receptive to HIEs (Grant # R18 HS 017838). Despite that, many believe these systems would add cost and time burdens to their practices. They were also concerned about access to client information, as well as legal and ethical vulnerabilities. These results were published in an article in the July–August 2012 volume of the *Journal of the American Medical Informatics Association*.

Many of the projects’ publications were featured in AHRQ’s **Electronic Newsletter** or the

Please send us your publications!

When projects have publications resulting from their AHRQ-funded work, AHRQ requests sending the information to journalpublishing@ahrq.hhs.gov.

Tool Highlight: Find Research Findings Funded By AHRQ

AHRQ has developed a Health IT Projects Publication Database to further disseminate work of the funded projects.

The [AHRQ Health IT Projects Publication Database](#) serves as a central repository for publications. Users can search the database by category to search for articles that may be relevant to their own research projects.

monthly *Research Activities*. The Electronic Newsletter summarizes the Agency's research and programmatic activities. Featured topics in health IT included:

- [Electronic standing orders increase delivery of preventive services.](#)
- [AHRQ-funded study finds patient characteristics and preferences can impact the use of patient portals.](#)

Research Activities (RA) is AHRQ's monthly print and online newsletter that features articles and announcements on Agency products and projects and summarizes research findings from AHRQ-supported studies. During 2012, RA had nearly 65,000 electronic subscribers. Health IT-related headlines in 2012 included the following:

- [Clinical decision support systems are effective but research is needed to promote widespread use.](#)
- [Electronic health records can help detect diagnostic errors in primary care.](#)

Presentations

Grantees and contractors presented project related findings and activities at AHRQ's Annual Conference which took place on September 9–11, 2012, in Bethesda, Maryland. This conference,

titled "Moving Ahead: Leveraging Knowledge and Action to Improve Health Care Quality," was designed to showcase the best of the Agency's research and provide examples of how that research is being implemented at all levels of health care delivery. Highlights from the Health IT funded projects at AHRQ's 2012 Annual Conference include the following:

- David C. Ziemer, M.D., M.P.H., the principal investigator on the Computer Assisted Medication and Patient Information Interface (CAMPII) project (Grant # R21 HS 018236), presented on the development and evaluation of a tool to collect medication and hypoglycemia information from patients with diabetes. The tool was designed to enhance communication with providers and improve patient treatment outcomes. Dr. Ziemer summarized the design and implementation considerations of the tool and how it is integrated into workflow, preliminary results, and strategies and challenges to sustainability.
- Scott Finley, M.D., M.P.H., from Westat, Inc., provided an in-depth demonstration of the Children's EHR Format and instruction on the various ways it can help improve care for children (Contract # 290-2009-0023I03). The demonstration covered the specific features of the format and how they were used in the development of two different functionality prototypes.
- David H. Gustafson, Ph.D., presented an overview of the Active Aging Research Center and described its progress to date, lessons learned on key projects, as well as next steps (Grant # P50 HS 019917). The presentation included a discussion on how the project could serve as a model for enhancing independence for older adults, service coordination, and caregiver support.

These presentations and many others allowed AHRQ staff, grantees, and contractors to

disseminate project results, share lessons learned, and build on each other's work. More information on these presentations and other conference sessions, as well as general conference information, is available at <http://www.ahrq.gov/news/events/conference/2012/index.html>.

C. Health IT Portfolio and Other Staff Presentations

Throughout the year, members of the Health IT Portfolio Team and other AHRQ staff participated in activities to disseminate the information generated by its programs and partners and contribute to the knowledge base on health IT research. Health IT Portfolio staff members made several presentations to various stakeholder groups and venues and contributed to publications. Several highlights from the year follow:

- At the annual Healthcare Information and Management Systems Society meeting held in February, Jon White, M.D., Director of the Health IT Portfolio, discussed the use of health IT as a tool to improve patient safety and quality of care; AHRQ's health IT priority list for 2012; and how the use of health IT can help reduce disparities in health. This [talk](#) specifically highlighted the AHRQ-funded work of Dr. Sanjeev Arora, who developed an Internet-based clinical management system for patients undergoing treatment for the hepatitis C virus in rural New Mexico.
- In March, Teresa Zayas-Cabán, Ph.D., Chief of Health IT Research, presented Consumer Health IT Application Development: Lessons From Other Industries at the Symposium on Human Factors and Ergonomics in Health Care: Bridging the Gap.
- Carolyn Clancy, M.D., Director of AHRQ at the time, published a commentary in *Government Health IT News* in September. This commentary—[National Health IT Week](#):



[Celebrating Health IT as an essential tool](#)—outlined AHRQ's contributions to the field of health IT over the past 10 years.

- Drs. Clancy, White, and Zayas-Cabán were part of a panel presentation at the 2012 American Medical Informatics Association Annual Symposium in November. The presenters described national health care priorities, the health IT investment by AHRQ, and Health IT Portfolio activities and findings.

D. Health IT Portfolio Staff Collaborations and Partnerships

Throughout 2012, Health IT Portfolio staff engaged in collaborations and partnerships with governmental and nongovernmental organizations. One example of this is the collaboration between AHRQ and the National Science Foundation (NSF). They jointly developed a solicitation to fund proposals that address systems modeling in health services. The solicitation addressed the research challenges outlined in a research and action agenda published previously by AHRQ and NSF. Through this partnership, AHRQ and NSF are fostering new collaborations between health services researchers and industrial and systems engineers, with a specific emphasis on the supportive role of health IT. In 2012, three projects were funded by the AHRQ Health IT Portfolio through an interagency agreement:

- Researchers from Wayne State University, Indiana University, and the University of Michigan Ann Arbor are developing a scientific foundation for new business rules and operation sciences useful for the patient-centered medical home model.
- A research team from the University of Massachusetts Amherst is developing and evaluating health IT interfaces that can be used to guide health care providers in real-time as they complete blood transfusions, a process that is complex and often prone to errors.
- Researchers from the University of Wisconsin–Madison and the University of Kentucky Research Foundation are developing an analytical framework for modeling the rapid response process in acute care delivery. The framework will be used to improve the efficacy of rapid response operations and patient safety.

E. Health IT Events and Social Media

National Web-Based Teleconferences

The National Web-Based Teleconferences conducted throughout 2012 spanned a range of topics and were attended by a variety of participants, including providers, researchers, and health IT professionals. The 2-hour sessions were comprised of informative presentations and interactive discussions. Post-presentation materials for all teleconferences are available on the AHRQ Health IT Web site under [Events](#). Examples of these teleconferences are as follows:

- The [Evaluation of Personal Health Record Systems and their Impact on Chronic Disease](#) presentation (January 25, 2012) described the learning process involved in implementing a PHR system for chronic disease care, identified health IT strategies that impact disease

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Go to the [AHRQ Health IT Web site](#) and select “Stay Informed,” located on the lower left corner to sign up for updates you are interested in.

outcomes through collaborative management, and described how the Office of the National Coordinator for Health IT’s consumer e-health strategy for creating opportunities for improved patient engagement is supported by AHRQ’s work.

- The [Use of Natural Language Processing to Improve Quality Improvement](#) presentation (April 11, 2012) outlined how new methods of analyzing free text data stored in EHRs can impact quality measurement.
- The [Purpose and Demonstration of the Health IT Hazard Manager and Next Steps](#) teleconference (June 11, 2012) described the motivation for developing the Health IT Hazard Manager—a tool for identifying, categorizing, and resolving health IT hazards—and how the Health IT Hazard Manager was tested and refined as well as strategies and implications for deploying it.
- The [Quality Measurement and Health IT: Overviews of New AHRQ Environmental Snapshot Report and Issuance of Non-regulatory Request for Information](#) (July 31, 2012) teleconference described highlights of an AHRQ report Quality Measurement Enabled by Health IT: Overview, Possibilities, and Challenges, including a catalog of current work in this area, possibilities for the next generation of health IT-enabled quality measurement, and a few anecdotes from Veterans Health Administration experience.

- The [E-prescribing: Overcoming Barriers with Successful Implementation Techniques](#) presentation (September 5, 2012) described the challenges associated with the electronic exchange of prescription data and what factors contribute to effective e-prescribing by physician practices and pharmacies. In addition, the presenters discussed two toolsets developed for health care provider organizations and independent pharmacies to support more effective e-prescribing system implementation and the challenges surrounding the adoption of e-prescribing of federally controlled substances.
- The [Innovative Use of Technology to Enable Behavioral Changes in Hard-to-Reach Patients](#) teleconference (September 13, 2012) provided an overview of the challenges to engage hard-to-reach populations and described three communications interventions designed to reach these populations.
- Presenters on the [Practical Models to Improve Patient-Clinician Communication Using Health IT](#) teleconference (December 18, 2012) discussed ways health IT can be used to support the delivery of patient-centered care by supporting more effective patient–clinician communication within the medical encounter. The projects presented showed how these approaches impact care delivery including preventive care, cancer survivorship planning, and medication management.

Social Media

Twitter and Facebook: AHRQ uses Twitter to broadcast short health messages (“tweets”) that can be accessed by computer or mobile phone. AHRQ’s Twitter feed disseminates reports, findings, and initiatives to AHRQ’s 22,000 followers. In 2012, more than 25 health IT topics and activities messages were sent. Some of the most popular Tweets included:



- [May 17, 2012:](#) AHRQ-funded study finds patient characteristics and preferences can impact the use of patient portals. #AHRQHealthIT
- [June 17, 2012:](#) AHRQ developing new tool to help identify health IT hazards and improve patient safety. #AHRQHealthIT
- [October 4, 2012:](#) #AHRQHealthIT study finds that establishing electronic standing orders improves use of preventive services.

For more updates, please follow AHRQ’s news releases on Twitter at <http://twitter.com/AHRQNews>.

Stay up-to-date with everything happening at AHRQ by liking AHRQ on Facebook at <http://www.facebook.com/ahrq.gov>.



Podcasts: You can listen to AHRQ’s podcasts on a wide range of topics via [Healthcare 411](#). This is a news series that features audio podcasts on consumer-oriented and timely topics such as women’s health, treatments for chronic care, and tips for navigating the health care system. On May 12, 2012, AHRQ issued [Health IT and Home Health Care](#), a health IT-specific 60-second podcast that describes how innovations in technology and design are enabling seniors to safely stay in their homes.

Videos and AHRQ YouTube: Since 2011, the AHRQ Health IT Portfolio has developed videos of funded projects to highlight innovative use of health IT to improve patient care and medical practice. Targeted to researchers, health care providers, and consumers, these media products demonstrate health IT best practices in various health care settings and encourage the successful design, implementation, and use of health IT. To access the videos, go to the AHRQ Health IT YouTube channel: <http://www.youtube.com/user/AHRQHealthIT>.



IV. Conclusion

The work funded by the AHRQ Health IT Portfolio in 2012 has helped to identify challenges to health IT adoption and use, solutions and best practices for making IT work in real world health care delivery settings, and tools that will help providers incorporate new IT successfully. The projects that were funded this year, as well as all the projects funded to date, have made important contributions to the field of health IT and further the evidence base regarding the impact of health IT on health care quality. Ultimately, our work produces field-leading research and summarizes evidence synthesis to inform future decisions about health IT by health care stakeholders and policymakers.

Our findings and lessons learned are shared through the [AHRQ Health IT Web site](#). We welcome you to visit the Web site to learn more about all of our

resources, initiatives, and funded projects. Our collective experience offers important learning opportunities for other health IT research across the country.



V. List of Projects Active in 2012

Table 6: Ambulatory Safety and Quality Grants

Enabling Patient-Centered Care Through Health IT (PCC)			
Completed in 2012?	Principal Investigator	Project Title	Funding Opportunity Announcement
Yes	Hahn, Elizabeth, M.A.	Implementing a Low-Literacy, Multimedia Information Technology System to Enhance Patient-Centered Cancer Care	RFA-HS-07-007
Improving Quality Through Clinician Use of Health IT (IQHIT)			
Completed in 2012?	Principal Investigator	Project Title	Funding Opportunity Announcement
Yes	Carrow, Grant, Ph.D.	Enabling Electronic Prescribing and Enhanced Management of Controlled Medications	RFA-HS-07-006
Yes	Simon, Steven, M.D., M.P.H.	Improving Laboratory Monitoring in Community Practices: A Randomized Trial	RFA-HS-07-006
Improving Management of Individuals With Complex Healthcare Needs Through Health IT (MCP)			
Completed in 2012?	Principal Investigator	Project Title	Funding Opportunity Announcement
No	Baker, Wende M., M.Ed.	Chronic Mental Health: Improving Outcomes through Ambulatory Care Coordination	RFA-HS-08-002
Yes	Ciemins, Elizabeth, Ph.D.	Evaluation of Effectiveness of a Health Information Technology-based Care Transition Information Transfer System	RFA-HS-08-002
Yes	Dorr, David, M.D., M.S.	Enhancing Complex Care through an Integrated Care Coordination Information System	RFA-HS-08-002
Yes	Druss, Benjamin, M.D., M.P.H.	An Electronic Personal Health Record for Mental Health Consumers	RFA-HS-08-002
Yes	Eisenstein, Eric, DBA	Improving Care Transitions for Complex Patients through Decision Support	RFA-HS-08-002
Yes	Feldman, Penny, Ph.D.	Improving Medication Management Practices and Care Transitions through Technology	RFA-HS-08-002
Yes	Field, Terry, D.Sc.	Using Health Information Technology to Improve Transitions of Complex Elderly Patients from Skilled Nursing Facilities to Home	RFA-HS-08-002
No	Friedman, Robert, M.D.	A Longitudinal Telephone and Multiple Disease Management System to Improve Ambulatory Care	RFA-HS-08-002
Yes	Kahn, James, M.D.	Randomized Controlled Trial Embedded in an Electronic Health Record	RFA-HS-08-002
Yes	Mertens, Ann, Ph.D.	Improving Pediatric Cancer Survivorship Care Through SurvivorLink	RFA-HS-08-002
Yes	Ritchie, Christine, M.D., M.S.P.H.	E-Coaching: Interactive Voice Response-Enhanced Care Transition Support for Complex Patients	RFA-HS-08-002
No	Singh, Hardeep, M.D., M.P.H.	Using Electronic Data to Improve Care of Patients with Known or Suspected Cancer	RFA-HS-08-002

Table 7: Health Information Technology Program Announcement Grants

Small Research Grant to Improve Health Care Quality Through Health IT (R03)			
Completed in 2012?	Principal Investigator	Project Title	Funding Opportunity Announcement
Yes	Balasubramanian, Hari, M.S., Ph.D.	Improving Patient Access and Patient-Clinician Continuity Through Panel Redesign	PAR-HS-08-268
No	Basco, William, M.D.	Assessment of Pediatric Look-Alike, Sound-Alike Substitution Errors	PAR-HS-08-268
Yes	Fink, Arlene, M.A., Ph.D.	Developing and Evaluating Online Education to Improve Older Adults Health Information	PAR-HS-08-268
Yes	Handley, Margaret, Ph.D., M.P.H.	Implementation Outcomes of a Health Information Technology Program For Vulnerable Diabetes Patients	PAR-HS-08-268
No	Levy, Douglas, Ph.D., M.P.H.	Economic Analysis of an Information Technology-Assisted Population-Based Cancer Screening Program	PAR-HS-08-268
No	Nemeth, Lynne, Ph.D., R.N.	Synthesizing Lessons Learned Using Health Information Technology	PAR-HS-08-268
Exploratory and Developmental Grant to Improve Health Care Quality Through Health IT (R21)			
Completed in 2012?	Principal Investigator	Project Title	Funding Opportunity Announcement
No	Ballard, David J., Ph.D., M.D., M.S.P.H.	Impact of Health Information Technology Implementation on Diabetes Process and Outcome Measures	PAR-HS-08-269
No	Baptist, Alan, M.D., M.P.H.	An Interactive Health Communication Program For Young Urban Adults With Asthma	PAR-HS-08-269
No	Buis, Lorraine, M.S.I., Ph.D.	Text Messaging to Improve Hypertension Medication Adherence in African Americans	PAR-HS-08-269
No	Casarett, David J, M.D.,M.A.	CHOICE: Coalition of Hospices Organized to Investigate Comparative Effectiveness	PAR-HS-08-269
No	Cummins, Mollie Rebecca, M.S.N., Ph.D.	Supporting Continuity of Care for Poisonings with Electronic Information Exchange	PAR-HS-08-269
No	Czaja, Sara, Ph.D., M.S.	Improving Meaningful Access of Internet Health Information for Older Adults	PAR-HS-08-269
Yes	Dalal, Anuj K., M.D.	An Automatic Notification System for Test Results Finalized after Discharge	PAR-HS-08-269
Yes	Eaton, Charles B., M.D., D.A.B.F.P., M.S.	eHealth BP Control Program	PAR-HS-08-269
No	Garfield, Craig F., M.D., M.A.P.P.	NICU-2-HOME: Using Health Information Technology to Support Parents of NICU Graduates Transitioning Home	PAR-HS-08-269
No	Glanz, Jason, M.S.I., Ph.D.	An Evaluation of an Interactive Social Media Website for Parents who are Concerned about Immunizing their Children	PAR-HS-08-269
No	Joshi, Ashish, M.D., M.P.H.	Feasibility of a Touch Screen Computer Based Breast-Feeding Educational Support	PAR-HS-08-269
No	Kahn, Michael, Ph.D., M.D.	Enhancing Fulfillment Data in Community Practices for Clinical Care and Research	PAR-HS-08-269
Yes	Kearns, William D., M.A., Ph.D.	Evaluation and Integration of an Automatic Fall Prediction System	PAR-HS-08-269
No	Kelchner, Lisa Nelson, Ph.D.	Access to Pediatric Voice Therapy: A Telehealth Solution	PAR-HS-08-269

LIST OF PROJECTS ACTIVE IN 2012

Yes	Krist, Alexander H., M.D., M.P.H.	Promoting Use of an Integrated Personal Health Record for Prevention	PAR-HS-08-269
No	Lai, Jin-Shei, Ph.D., M.S.	Symptom Monitoring and Reporting System for Pediatric Chronic Illness	PAR-HS-08-269
No	Lakshminarayan, Kamakshi, M.D.	Promoting Self-Management in Stroke Survivors Using Health Information Technology	PAR-HS-08-269
No	Li, Baoxin, Ph.D., M.S.	Exploring Clinically-relevant Image Retrieval for Diabetic Retinopathy Diagnosis	PAR-HS-08-269
No	Mane, Ketan, Ph.D., M.S.	VisualDecisionLinc: Real-Time Decision Support for Behavioral Health	PAR-HS-08-269
No	Miller, Amalia, Ph.D.	Health Information Technology in Ambulatory Care Settings: Effects on Quality and Disparities	PAR-HS-08-269
No	Mohan, Arun, M.D., M.B.A.	eCoach: Development and Pilot Testing of a Decision Aid for Prostate Cancer	PAR-HS-08-269
No	Mollica, Richard, M.D., M.A., M.A.R.	The Virtual Patient for Improving Quality of Care in Primary Healthcare	PAR-HS-08-269
No	Nease, Donald, M.D.	Health Information Exchange and Ambulatory Test Utilization	PAR-HS-08-269
Yes	Olson, Ardis L., M.D.	Healthy Teens TXT ME; Information Technology to Change Teen Health Risk Behaviors	PAR-HS-08-269
No	Ozer, Elizabeth, Ph.D., M.A.	Improving Adolescent Primary Care Through An Interactive Behavioral Health Module	PAR-HS-08-269
Yes	Rimmer, James Howard, M.S., Ph.D.	Improving Health Care Quality Through Health Information Technology for People With Intellectual Disability	PAR-HS-08-269
No	Sarkar, Urmimala, M.D., M.P.H.	Measuring and Improving Ambulatory Patient Safety with an Electronic Dashboard	PAR-HS-08-269
No	Schoenthaler, Antoinette, Ed.D.	Insights for Community Health	PAR-HS-08-269
No	Sheehan, Florence, M.D.	Patient Self Monitoring to Transfer Physical Therapy Exercise from Clinic to Home	PAR-HS-08-269
No	Shelley, Donna, M.D., M.P.H.	Testing Clinical Decision Support for Treating Tobacco Use in Dental Clinics	PAR-HS-08-269
No	Sokolow, Paulina, Dr.P.H., M.B.A., M.S.	Barriers and Facilitators to Implementation and Adoption of Electronic Health Record in Home Care	PAR-HS-08-269
No	Sorondo, Barbara, M.D.	Evaluating the Effectiveness of a Health Information Technology Self-Management Program for Chronic Disease	PAR-HS-08-269
No	Wexler, Randell, M.D., M.P.H.	Use of Health Information Technology to Increase Primary Care Access in Medicaid Patients	PAR-HS-08-269
Yes	Williams, Laurie Ann, M.B.A., Ph.D.	Use of Affordable Open Source Systems by Rural and Small-Practice Health Professionals	PAR-HS-08-269
No	Zhou, Li, M.D., Ph.D.	Integration of a Natural Language Processing-Based Application to Support Medication Management	PAR-HS-08-269
Yes	Ziemer, David C., M.D., M.P.H.	Computer Assisted Medication and Patient Information Interface (CAMPPI)	PAR-HS-08-269

Utilizing Health IT to Improve Health Care Quality (R18)

Completed in 2012?	Principal Investigator	Project Title	Funding Opportunity Announcement
No	Arora, Sanjeev, M.D.	Project ECHO Hepatitis C Ambulatory Care Quality Improvement in New Mexico through Health Information Technology	PAR-HS-08-270

LIST OF PROJECTS ACTIVE IN 2012

No	Atlas, Steven J., M.D.	The Medication Metronome Project	PAR-HS-08-270
No	Atlas, Steven J., M.D.	Technology for Optimizing Population Care in a Resource-Limited Environment	PAR-HS-08-270
No	Bates, David W., M.D., M.Sc.	Improving Uptake and Use of Personal Health Records	PAR-HS-08-270
No	Friction, James, D.D.S.	Decision Support to Improve Dental Care for Medically Compromised Patients	PAR-HS-08-270
No	Gance-Cleveland, Bonnie, M.A., Ph.D.	Health Information Technology to Support Clinical Decision Making in Obesity Care	PAR-HS-08-270
No	Green, Lee A., M.D., M.P.H.	Information Technology Implementation by Cognitive Engineering of Organizational Routines	PAR-HS-08-270
No	Haas, Jennifer, M.D., M.S.P.H.	Health Information Technology Enhanced Family Health History Documentation & Management in Primary Care	PAR-HS-08-270
No	Hazlehurst, Brian L., M.A., Ph.D.	Automating Assessment of Obesity Care Quality	PAR-HS-08-270
No	Hess, Rachel, M.D.	Functional Assessment Screening Patient Reported Information: FAST-PRI	PAR-HS-08-270
No	Johnson, Kevin B., M.D., M.S.	MyMediHealth: A Paradigm for Children-Centered Medication Management	PAR-HS-08-270
No	Levick, Donald, M.D., M.B.A.	Data Flow & Clinical Outcomes in a Perinatal Continuum of Care System	PAR-HS-08-270
No	McConnochie, Kenneth, M.A., Ph.D.	Facilitators and Barriers to Adoption of a Successful Urban Telemedicine Model	PAR-HS-08-270
No	McTigue, Kathleen M., M.S., M.D., M.P.H.	Online Counseling to Enable Lifestyle-focused Obesity Treatment in Primary Care	PAR-HS-08-270
No	Nkoy, Flory, M.D., M.S., M.P.H.	Improving Post-Hospital Transitions and Ambulatory Care for Children with Asthma	PAR-HS-08-270
No	Parsons, Amanda, M.Sc., M.D.	Bringing High Performing Systems to Small Practices	PAR-HS-08-270
No	Piette, John D., Ph.D., M.S.	Trial of the CarePartner Program for Improving the Quality of Transition Support	PAR-HS-08-270
No	Roberts, Mark Stenius, M.P.P., M.D.	Self Management & Reminders with Technology: SMART Appraisal of an Integrated Personal Health Record	PAR-HS-08-270
No	Sequist, Thomas D., M.D., M.P.H.	A Risk Based Approach to Improving Management of Chronic Kidney Disease	PAR-HS-08-270
No	Smith, Kenneth J., M.D., M.S.	Virtual Continuity and its Impact on Complex Hospitalized Patients' Care	PAR-HS-08-270
No	Stockwell, Melissa S., M.D., M.P.H.	Flu Alert: Influenza Vaccine Alerts for Providers in the Electronic Health Record	PAR-HS-08-270
No	Storch, Eric, Ph.D., M.S., M.Phil.	Utilizing Health Information Technology to Improve Health Care Quality	PAR-HS-08-270
No	Weiner, Michael, M.D., M.P.H.	Medication Reconciliation to Improve Quality of Transitional Care	PAR-HS-08-270

Table 8: Career, Dissertation, and Other Grants

Small Research Grant to Improve Health Care Quality Through Health IT (R03)			
Completed in 2012?	Principal Investigator	Project Title	Funding Opportunity Announcement
No	Agarwal, Ritu, Ph.D., M.B.A., M.S.	Workshop on Health Information Technology and Economics	PAR-09-257
No	Chu, Lawrence, M.D.	Stanford Medicine X-Health Care and Emerging Technologies	PAR-09-257
No	Kuperman, Gilad, M.D., Ph.D.	AMIA Health Policy Conference Series	PAR-09-257
No	Pratt, Wanda, Ph.D.	Workshop on Interactive Systems in Healthcare 2012	PAR-09-231
Yes	Reddy, Madhu, Ph.D., M.S., M.S.	Workshop on Interactive Systems in Healthcare 2011	PAR-09-231
Yes	Schmaltz, Stephen, Ph.D., M.S., M.P.H.	Development of Risk-Adjusted Outcome Measures in the Electronic Health Record Environment	PAR-09-231
No	Schumann, Mary Jean, DNP	Symposium on Patient Engagement	PAR-09-231
Career Development (K01, K08) and Dissertation (R36) Grants Focused on Health IT			
Completed in 2012?	Principal Investigator	Project Title	Funding Opportunity Announcement
No	Armstrong, April, M.D.	Patient-Centered Online Care Model for Follow-Up Management of Atopic Dermatitis	NOT-HS-08-014
No	Baer, Heather, Sc.D.	Use of Electronic Health Records for Addressing Overweight and Obesity in Primary Care	NOT-HS-08-014
No	Del Fiol, Guilherme, M.D., M.S., Ph.D.	Context-Aware Knowledge Delivery into Electronic Health Records	NOT-HS-08-014
No	Gesteland, Per, M.D., M.S.	Using Health Information Technology to Support Population-Based Clinical Practice	NOT-HS-08-014
Yes	Graetz, Ilana, Ph.D. candidate	Electronic Health Record Use and Care Coordination	PAR-09-212
No	Hessels, Amanda, M.S.N., M.P.H.	Impact of Health Information Technology on Delivery and Quality of Patient Care	PAR-09-212
Yes	Hirsch, Annemarie, Ph.D. M.P.H.	Evaluating Electronic Health Record Data for Use in Diabetes Quality Reporting	PAR-09-212
No	Koopman, Richelle, M.D., M.S.C.R.	Patient Readiness to Use Internet Health Resources	NOT-HS-08-014
No	Lafleur, Joanne, Pharm.D., M.S.P.H.	Knowledge Engineering for Decision Support in Osteoporosis	NOT-HS-08-014
No	Rand, Cynthia M., M.S., M.D., M.P.H.	Using Health Information Technology to Improve Delivery of HPV Vaccine	NOT-HS-08-014
Yes	Valdez, Rupa Sheth, Ph.D.	Creating a Foundation for the Design of Culturally-Informed Health Information Technology	NOT-HS-08-014
No	Wen, Kuang-Yi, Ph.D., M.S.	MyHealthPortal: Using an Electronic Portal to Empower Patients with Breast Cancer	NOT-HS-08-014
No	Were, Martin, M.D., M.S.	Improving Management of Test Results that Return After Hospital Discharge	NOT-HS-08-014

LIST OF PROJECTS ACTIVE IN 2012

Centers for Education and Research on Therapeutics (CERTs) (U18 and U19)			
Completed in 2012?	Principal Investigator	Project Title	Funding Opportunity Announcement
Yes	Bates, David, M.D., M.Sc.	Health Information Technology and Improving Medication Use	RFA-HS-07-004
No	Bates, David, M.D., M.Sc.	Health Information Technology Center for Education and Research on Therapeutics	RFA-HS-11-004
No	Lambert, Bruce, Ph.D., M.A.	Tools for Optimizing Medication Safety (TOP-MEDS)	RFA-HS-11-004
AHRQ Health Services Research Projects (R01)			
Completed in 2012?	Principal Investigator	Project Title	Funding Opportunity Announcement
No	Alpern, Elizabeth, M.D., M.S.C.E.	Improving the Quality of Pediatric Emergency Care Using an Electronic Medical Record Registry and Clinician Feedback	PA-09-070
No	Carroll, Aaron, M.D.	Computer Automated Developmental Surveillance and Screening	PA-09-070
No	Dixon, Brian, Ph.D., M.P.A.	Improving Population Health Through Enhanced Targeted Regional Decision Support	PA-09-070
No	Siegel, Corey, M.D.	Evaluating a Prediction Tool and Decision Aid for Patients with Crohn's Disease	PA-09-070
Understanding Clinical Information Needs and Health Care Decisionmaking Processes in the Context of Health IT (R01)			
Completed in 2012?	Principal Investigator	Project Title	Funding Opportunity Announcement
No	Agha, Zia, M.D., M.S.	Quantifying Electronic Medical Record Usability to Improve Clinical Workflow	PA-11-198
No	Butler, Keith, Ph.D.	Modeling and Analysis of Clinical Care for Health Information Technology Improvement	PA-11-198
No	Zhang, Jiajie, Ph.D.	Opportunistic Decision Making Information Needs and Workflow in Emergency Care	PA-11-198
AHRQ Health Services Research Demonstration and Dissemination (R18)			
Completed in 2012?	Principal Investigator	Project Title	Funding Opportunity Announcement
No	Conroy, Margaret, M.D., M.P.H.	Maintaining Activity and Nutrition through Technology-Assisted Innovation in Primary Care	PA-09-071
Active Aging Supporting Individuals and Enhancing Community-based Care through Health IT (P50)			
Completed in 2012?	Principal Investigator	Project Title	Funding Opportunity Announcement
No	Gustafson, David H., Ph.D.	Bringing Communities and Technology Together for Healthy Aging	RFA-HS-10-016

Table 9: Contracts

Accelerating Change and Transformation in Organizations and Networks (ACTION) I and II			
Completed in 2012?	Principal Investigator	Project Title	Contract Number
No	Carayon, Pascale, Ph.D.	Using Health Information Technology in Practice Redesign: Impact of Health Information Technology on Workflow	290-2010-00031I-2
No	Ciemins, Elizabeth, Ph.D.	Using Health Information Technology in Practice Redesign	290-2010-0019I-1
Yes	Hurd, Donna, M.S.N.	Evaluation of AHRQ's On-time Pressure Ulcer Program	290-06-0011-8
No	Jain, Anjali, M.D.	Improving Sickle Cell Transitions of Care Through Health Information Technology	290-10-00033I-1
No	Wald, Jonathan S., M.D., M.P.H.	Using Health Information Technology in Practice Redesign	290-2010-00024I-4
Yes	Walker, James, M.D.	Health Information Technology Hazard Manager	290-2006-00011I-14
Clinical Decision Support Services			
Completed in 2012?	Principal Investigator	Project Title	Contract Number
No	Middleton, Blackford, M.D., M.P.H., M.Sc.	Clinical Decision Support Consortium	290-08-10010
Yes	Shiffman, Richard N., M.D., M.C.I.S.	Guidelines into Decision Support (GLIDES)	290-08-10011
General Health IT Contract			
Completed in 2012?	Principal Investigator	Project Title	Contract Number
No	Dimitropoulos, Linda, Ph.D.	Health Information Technology Horizon Scanning	290-2009-00021I
No	Dullabh, Prishilla, M.D.	Health Information Technology Intellectual Property and Dissemination Issues	290-09-00027I-2
No	Penoza, Chuck, M.B.A.	Support for the United States Health Information Knowledge-base (USHIK)	290-09-00002I-3
Medicaid and Children's Health Insurance Program Technical Assistance Contract			
Completed in 2012?	Principal Investigator	Project Title	Contract Number
No	Dimitropoulos, Linda, Ph.D.	Technical Assistance for Health Information Technology and Health Information Exchange in Medicaid and the Children's Health Insurance Program	290-07-10079
Yes	Thompson, Chuck, Ph.D.	Barriers to Meaningful Use in Medicaid	290-07-10079-2
Interagency Agreement			
Completed in 2012?	Principal Investigator	Project Title	Contract Number
Yes	Finley, Scott, M.D., M.P.H.	Development of an Electronic Health Record Format for Children	290-2009-00023I-3

LIST OF PROJECTS ACTIVE IN 2012

Yes	Lamer, Christopher, Pharm.D., B.C.P.S., M.H.S., C.D.E.	Health Information Technology to Support Integration of Self-Management Support in Primary Care Delivery	10-663F-10
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No	Not Applicable	Advancing Health Services through System Modeling Research	12-689F-12
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National Resource Center Task Order

Completed in 2012?	Principal Investigator	Project Title	Contract Number
No	Flemming, Anjanette, M.P.H.	Pathways to Quality through Health Information Technology	290-2009-000241
Yes	McCormack, Lauren, Ph.D., M.S.P.H.	Improvements and Upgrades to the Electronic Preventive Services Selector	290-09-000211
Yes	Montague, Enid, Ph.D.	Understanding Development Methods from Other Industries to Improve the Design of Consumer Health Information Technology	290-09-000231-10
No	Shoemaker, Sarah, Pharm.D, Ph.D.	Improving Electronic Health Record Patient Education Materials	290-09-00012I-4

Primary Care Practice-Based Research Network (PBRN)

Completed in 2012?	Principal Investigator	Project Title	Contract Number
Yes	Fiks, Alexander, M.D., M.S.C.E.	The Give Teens Vaccines Study	290-07-10013-4
Yes	Krist, Alexander H., M.D., M.P.H.	Using Health Information Technology to Improve Health Care Quality in Primary Care Practices and in Transitions between Care Settings	290-07-10011-3
Yes	Mold, James, M.D., M.P.H.	Using Health Information Technology to Improve Health Care Quality in Primary Care Practices and in Transitions between Care Setting	290-07-10009-5
Yes	Pavlik, Valory, M.D.	Evaluation of Computer Generated After Visit Summaries to Support Patient-Centered Care	290-07-10007-2



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