Summary of AHRQ Health Information Technology Portfolio-Funded Projects as of 2008, Abridged

Prepared for:
Agency for Healthcare Research and Quality
U.S. Department of Health and Human Services
540 Gaither Road
Rockville, MD 20850
www.ahrq.gov

Contract No. 290-04-0016

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AHRQ Publication No. 09-0068-EF
September 2009

Preface

The Agency for Healthcare Research and Quality (AHRQ), through its Health Information Technology (IT) Portfolio, sponsors a variety of contracts, grants, and cooperative agreements that examine the impact of health IT implementation and use on quality, safety, and other important health care outcomes. The abridged version of this inaugural report features a summary of activities in the Health IT Portfolio as of 2008 as well as links to the Web-based summaries of 124 grant-specific and 26 contract-specific AHRQ-managed health projects. This summary does not include the Health IT Portfolio's Interagency Agreements (IAA) to support projects managed by other Federal agencies or IAA from other Federal agencies to contract for projects to be conducted by the National Resource Center (NRC) for Health IT.

AHRQ is quite grateful for contractor and grantees' regular provision of timely, informative reports, and their participation in this inaugural initiative to generate project-specific calendar-year summaries.

We welcome comments on the utility of the summary of the Health IT Portfolio provided in this report and of the Web-based 150 project-specific summaries. Comments may be sent by mail to the Program Officials named below at: Agency for Healthcare Research and Quality, 540 Gaither Road, Rockville, MD 20850, or by e-mail to Angela.Lavanderos@ahrq.hhs.gov.

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Acknowledgments

The authors would like to thank the following individuals for their contributions to this report:

Kai Carter (Booz Allen Hamilton), Imelda Demus (NORC), Erin Grant (Booz Allen Hamilton), Jeffrey Hackett (NORC), Georgina Milstead, Corey Mackison (AHRQ), Angela Lavanderos (AHRQ), Shamis Mohamoud (NORC), Julius Patterson (AHRQ), Salina Prasad (AHRQ), Anita Samarth (Clinovations), and Emily Shortridge (NORC).

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Structured Abstract

Objectives: To develop a summary of Agency for Healthcare Research and Quality (AHRQ)-managed activities of the Health Information Technology (IT) Portfolio and to develop easy-to-access Web-based project-specific summaries for the 124 grants and 26 contracts funded through the Health IT Portfolio as of 2008.

Data Sources: Under the direction of AHRQ staff, contractors with the National Resource Center for Health IT (NRC) reviewed pre-existing grantee- and contractor-prepared documents, including project proposals, final reports, grantees' quarterly reports, some elements of annual requests for continuation of grant funding, and final reports. Additional information about principal investigators' (PIs') grant histories was extracted from the IMPAC II (see Appendices B and C for details). The staff of the NRC leveraged existing content of the NRC Web site, including type of health IT technology used and the identification of awardees' publications and presentations, to enhance content of project-specific summaries.

Methods: The staff of the NRC assigned one of three Health IT Portfolio strategic goals (Medication Management, Enabling Patient-Centered Care or Health Information Exchange (PCC or HIE), or Improved Decisionmaking) and one of three AHRQ business goals (Knowledge Creation, Synthesis and Dissemination, or Implementation and Use) as primary goals for each of the projects (see Section II. A. Project Classification). Many of these projects address multiple strategic goals and, to a lesser extent, business goals. In 2009, AHRQ staff, in cooperation with NRC staff, generated templates for the unique content elements of the grant-specific and contract-specific summaries. The NRC staff drafted summaries to reflect project status as of the end of calendar year 2008 based on information reported as of April 15, 2009. As necessary, the NRC staff conferred with PIs to seek clarification of content and approval of project-specific summaries.

Results: AHRQ's Health IT Portfolio funded 124 grants and 26 contracts in 2008. The vast majority of these projects were multi-year in duration. In total, AHRQ will provide nearly one-quarter of a billion dollars in support over the lifetime of the projects. AHRQ lifetime funding for these grants is $151 million and for these contracts is $70 million.

In 2008, organizations in 39 States and the District of Columbia had active Health IT-sponsored projects. Since 2004, organizations in all 50 States have received Health IT Portfolio-sponsored projects.

The most common Health IT strategic goal in the portfolio was enabling Patient-Centered Care or Health Information Exchange (PCC or HIE), which was ascribed to 69 projects (13 contracts and 56 grants), which comprise 46 percent (69/149) of Health IT Portfolio-sponsored projects as of 2008.[1] In total, AHRQ will provide these 69 projects $102.7 million in funding over the lifetime of the projects.

[1] Does not include the 5-year multi-million dollar contract for the National Resource Center (NRC) for Health IT, which supports activities across all of the strategic and business goals.

The next most common strategic goal among the Health IT Portfolio was Improved Decisionmaking, which was ascribed to 47 projects (10 contracts and 37 grants) and contributes 32 percent (47/149) of the Health IT Portfolio-sponsored projects as of 2008. In total, AHRQ will provide these 47 projects $54.7 million in lifetime funding.

The 33 projects (2 contracts and 31 grants) with Medication Management as their strategic goal comprise 22 percent (33/149) of the Health IT Portfolio-sponsored projects as of 2008. In total, AHRQ will provide these 33 projects $41.5 million.[2]

Implementation and Use was the dominant business goal for both grants and contracts at 69 percent (86/124) and 52 percent (13/25), respectively. Among grants, Knowledge Creation was the second most frequent business goal at 35 percent (43/124), followed by Synthesis and Dissemination at 16 percent (20/124). Among contracts, Synthesis and Dissemination was the second most popular business goal at 28 percent (7/25) followed by Knowledge Creation at 20 percent (5/25).

In part, the difference in distribution of business goals is a result of the types of information sought for certain types of mechanism (grant or contract).

While 15 percent (23/149) of the individual Health IT Portfolio-sponsored projects have the business goal of Dissemination and Synthesis, this small number should not be interpreted to indicate an undervaluing of dissemination or synthesis activities. On the contrary, dissemination of results is a requirement specified in each Health IT Portfolio-sponsored project. In addition, AHRQ's Office of Communications and Knowledge Transfer (OCKT) and the National Research Center for Health IT (NRC) are actively engaged in numerous syntheses and dissemination activities to support the Health IT Portfolio (see Section V. Dissemination).

The Health IT Portfolio included a diversified pool of grantee PIs. There were 116 unique PIs among the 124 active grants.

Largely due to the intent of the Transforming Healthcare Quality Through Information Technology (THQIT) initiative to engage with rural hospitals and community health center one-time Request For Applications (RFA), 53 percent (29/55) of the THQIT grants active in 2008 had been awarded to individuals who had not previously served as PI on an NIH- or AHRQ-sponsored grant. The Ambulatory Safety and Quality (ASQ) RFAs focused on use of health IT in ambulatory settings, emergency departments, or transitions in care. Among the 69 ASQ grants active in 2008, 25 percent (17/69) were awarded to first-time PIs. All 12 PIs who received funding in 2008 in response to the ASQ RFA, Improving Management of Individuals with Complex Healthcare Needs through Health IT (HS-08-002), were experienced PIs. Five of these PIs had previously received career (K) awards or training (T-32) grants.

Among the 86 grants that continued on into 2009, 17 percent (15/86) address Medication Management, 30 percent (35/86) address Improved Decisionmaking, and 54 percent (46/86)

[2] Although not reflected in this summary, through Inter Agency Agreements (IAA) the Health IT Portfolio provided the Centers for Medicare and Medicaid Services (CMS) $1.5 million dollars to conduct a CMS-led Electronic Prescribing Pilot and a $422,503 CMS-led Care Management Performance Demonstration project.

address PCC or HIE. The dominance of projects with PCC or HIE as a strategic goal is, in part, a result of the Health IT Portfolio's focus (2004-2008) to fund new PCC projects through its Ambulatory Safety and Quality FOA and to fund HIE research and development through the THQIT initiative.

Readers are encouraged to use the Project Tables in this report to identify project-specific summaries to peruse. To find project-specific summaries on AHRQ's NRC Web site (www.healthit.ahrq.gov), select "AHRQ-Funded Projects" or the U.S. map, then follow the instructions and make selections on the AHRQ-Funded Projects page.

Summaries are organized within project tables by Health IT Strategic and AHRQ Business Goals (see Section VII Grant-Specific Summaries and Section VIII Contract-Specific Summaries), as well as by Principal Investigator's last name (see Appendix A). AHRQ intends for the summaries of both concluded and ongoing projects to be informative references for implementers of health IT, prospective research applicants, and others interested in the challenges and successes of real world health IT implementation, use, and evaluation.

Among the 40 (2 contracts and 38 THQIT grants) Health IT Portfolio-sponsored projects that ended in 2008, a few examples illustrate the variety of issues addressed and progress realized through these projects.

- **Holly Jimison, Ph.D., "Barriers and Drivers of Health Information Technology Use for the Elderly, Chronically Ill and Underserved." (Contract: 290-02-0024-9)**
  Highlights: Oregon Health Science University reviewed and synthesized available literature on the barriers and drivers of health IT use for the elderly, chronically ill, and underserved. The team found that several types of consumer health IT were usable and effective in many settings with all of the study's populations of interest. Convenience and ease-of-use were important drivers of system use, especially if the interventions could be delivered on technologies that users already had an interacted with on a daily basis. Perceived benefit, system trust, anonymity for sensitive conditions, and rapid clinician feedback were also important factors influencing the successful use of interactive consumer health IT. Complete report is available at:
  http://www.ahrq.gov/downloads/pub/evidence/pdf/hitbarriers/hitbar.pdf. Accessed September 2009.

- **Timothy G. Ferris, M.D., M.P.H., Improving Pediatric Safety and Quality with Healthcare Information Technology, (HS-04-012, R01 HS015002).**
  Highlights: Clinical decision support (CDS) within an electronic health record (EHR) used within pediatric practices was found to significantly improve medication safety, practice efficiency, guideline adherence for provision of care of children with chronic conditions, and documentation. At the end of this 4-year grant, improvements were found in all three clinical domains, preventive services, acute illness care, and chronic illness care. Low usage of CDS limited the effectiveness of the interventions. The reduction in dosing errors was partially offset by errors resulting from improper use of the CDS. Further improvements in quality and safety are possible through increased use of CDS, but this will require physician

willingness to change their workflow as well as improvements to EHR software. (see 2008 grant-specific summary).

- **David Lobach, M.D., Ph.D., M.S., "Showing Health Information Value in a Community Network." (HS-04-012, R01 HS 015057).**
  Highlights: This 4-year grant focused on using health IT to enable patient-centered care among Medicaid recipients through the use of health IT to share information in a community setting using a population health management care model.. The study found that e-mail notices sent to care managers on a weekly basis were well received and are reported to enhance productivity. The net effect of the intervention was a decrease in emergency department (ED) use and inpatient reimbursements (for ED and hospital care) for patients whose care managers received weekly e-mail notifications about sentinel events. Feedback reports sent quarterly to clinic managers did not impact ED use or hospitalizations, nor did letters sent to patients. Several valuable lessons were learned through the development, implementation and operational support of this population health management system. In the area of system development, resolving political issues related to the exchange of clinical information and identifying resources to implement the data exchange are often more challenging and time consuming than the technical aspects of information exchange. However, once the exchanged information was in use for proactive care management, clinical sites began to offer their information to the Health Information Exchange so that they could reap the benefits of the proactive care notices. (see 2008 grant-specific summary).

- **Susan Horn, Ph.D., "Nursing Home Information Technology (IT): Optimal Care and Medication Delivery." (HS-04-011, UC1 HS015350).**
  Highlights: Through this 4-year cooperative agreement, health IT and quality improvement activities were implemented in a targeted and coordinated effort in 15 skilled nursing facilities. This project featured a transition from paper-based medical records to the implementation of an electronic medical record (EMR) system that included best practices decision support modules and a digital pen system to record information into the EMR. The impact of coordinating IT implementation with targeted quality improvement activities in nursing homes was evaluated in terms of care processes; resident health outcomes, including pressure ulcers (PrUs); and staff efficiency and satisfaction. Facilities experienced positive impact on workflow and staff morale: improved documentation completeness, reduced time gathering and compiling information, improved access to information and multi-disciplinary communications, and staff satisfaction with technology versus paper processes. There were overall decreases of 18 percent in the Centers for Medicare and Medicaid (CMS) high-risk PrU and weight loss quality measures in 18 months. The learning from this grant was incorporated into the development of the "On-Time Quality Improvement" program, which combined health IT with quality improvement. The "On-Time Quality Improvement" program for the prevention of pressure ulcers has been expanded to included 55 nursing homes in California, New York, Idaho, Maryland, Arizona, North Carolina, and Washington, DC, through AHRQ contracts and various co-funding sources and partners including California Healthcare Foundation, New York State Health Department, and Delmarva Foundation. (see 2008 grant-specific summary).

Conclusions: There is a high overall level of detail and robustness in the project-specific summaries. They provide insight on real-world barriers, challenges, and mitigating factors encountered. The Health IT Portfolio will continue to review the 2008 project-specific summaries in detail to identify potential topics for technical assistance and other opportunities to increase success in completing health IT research and implementation projects, and to identify topics which should be explored further. With the release of three Health IT Portfolio-sponsored Program Announcements (HS-08-268, HS-08-269, and HS-08, 270) and a Special Emphasis Notice (NOT-HS-08-014) for career development grants in 2008, AHRQ expects continued and expanded work across the Health IT strategic goals and the AHRQ business goals, and the development of new researchers for years to come.

I. Purpose

The purpose of this project was to assemble and distribute information on the Health IT Portfolio as of the end of 2008 at both the portfolio and project-specific level. Through this exercise, AHRQ sought to understand the state of the Health IT Portfolio, inform the development of similar reporting for subsequent years, and provide the public with easy-to-access Web-based project-specific summaries for calendar year 2008.

This report summarizes the 150 projects that were directly funded by the AHRQ Health IT Portfolio in calendar year 2008. We recognize that there are AHRQ-funded projects with an important health IT component that were funded through other Agency funds during this time that are not included.[3]

The Health IT Portfolio is summarized in terms of the broad categories of projects, including: Health IT Portfolio strategic goals; AHRQ business goals; mechanism type (grant or contract); total funding from AHRQ over project period (i.e., AHRQ Lifetime Funding); duration of grants; PI's experience as a PI; State funding history; and usage rates of the NRC Web site (www.healthIT.ahrq.gov).

One hundred and fifty project-specific summaries of projects sponsored by the Health IT Portfolio provide the public with easy-to-access Web-based summaries synthesizing individual projects' first-hand experience in the implementation, use, and evaluation of health IT to improve health care outcomes. The summaries include highlights of the challenges; mitigating factors; status of specific aims (ongoing, upcoming, achieved); awardees' pertinent publications and presentations; preliminary findings, as appropriate; and grantees' overall progress of the projects in terms of spending pattern and meeting milestones.

- Each of the 150 project-specific summaries is currently available through the AHRQ-funded project search tool at AHRQ's NRC (www.healthIT.ahrq.gov). To find project-specific summaries on AHRQ's NRC Web site (www.healthit.ahrq.gov), select "AHRQ-Funded Projects" or the U.S. map, then follow the instructions and make selections on the AHRQ-Funded Projects page.

[3] Although not reflected in this summary, through Inter Agency Agreements (IAA) the Health IT Portfolio provided Centers for Medicare and Medicaid Services (CMS) $1.5 million dollars to conduct CMS-led Electronic Prescribing Pilot and a $422,503 CMS-led Care Management Performance Demonstration project.

II. Background

AHRQ supports a series of interrelated health services research programs that individually and collectively seek to improve the quality, safety, efficiency, and effectiveness of health care for all Americans. In 2008, intramural and extramural activities (i.e., grants and contracts) were organized into one of six AHRQ portfolios:

- Comparative Effectiveness
- Health Information Technology (IT)
- Innovations/Emerging Issues
- Patient Safety
- Prevention and Care Management
- Value

Health IT is broadly defined as the use of information and communication technology in health care to support the delivery of patient or population care or to support patient self-management. Health IT can support patient care-related activities such as order communications, results reporting, care planning, and clinical or health documentation.[4] Health IT applications can use a variety of platforms, such as desktop computer applications, cellular phones, personal digital assistants (PDAs), touch-screen kiosks, and others. Examples of health IT applications are, electronic health records (EHRs), EMRs, personal health records (PHRs), telemedicine, clinical alerts and reminders, computerized provider order entry, computerized clinical decision support (CDS) systems, consumer health informatics applications, and electronic exchange of health information. Health IT is recognized as a tool that, if appropriately designed, implemented, and used, may help mitigate a variety of challenges in the delivery of health care services and result in improved health care processes and outcomes.

A. Project Classification

In 2008, Health IT Portfolio-funded grants and contracts were categorized into one of three portfolio strategic goals and one of three AHRQ business goals:

i. Health IT Strategic Goals:

1. **Medication Management**: To develop and disseminate health IT evidence and evidence-based tools to improve the quality and safety of medication management via the integration and utilization of medication management systems and technologies.

2. **Patient-Centered Care (PCC) or Health Information Exchange (HIE)**: To develop and disseminate health IT evidence and evidence-based tools to support patient-centered care, the coordination of care across transitions in care settings, and the use of electronic exchange of health information to improve quality of care.

[4] Shortliffe EH and JJ Cimino, "Biomedical Informatics: Computer Applications in Health Care and Biomedicine." Third Edition. 2006.

3. **Improved Decisionmaking:** To develop and disseminate health IT evidence and evidence-based tools to improve health care decisionmaking through the use of integrated data and knowledge management.

ii. AHRQ Business Goals:

1. **Knowledge Creation:**
    - Collecting data on and producing measures of the quality, safety, effectiveness, and efficiency of American health care and health care systems.
    - Fostering the development of knowledge about improving health care, health care systems, and capacity (training, placement).

2. **Synthesis and Dissemination:**
    - Creating tools and synthesis of evidence (including knowledge, measure, and data).
    - Disseminating information to multiple stakeholders to improve the system.

3. **Implementation and Use:**
    - Partnering with stakeholders to implement proven strategies for health care improvement, including empowering Americans to be proactive patients.

B. Mechanisms

There are a variety of mechanisms available to the Health IT Portfolio for funding projects that will further its goals. Each award mechanism specifies the content, format, and timeline for deliverables, including periodic reporting requirements for completion of milestones and budget updates. Four of the more common mechanisms used at AHRQ to carry out a wide variety of directed health services research and administrative activities are:

i. Grant:

A financial assistance support mechanism providing money, property or other direct assistance in lieu of money, or both to an eligible entity to carry out an approved project or activity in support of a public purpose and not the direct benefit of the Government. A grant is used whenever the Operating Division (OPDIV) [health IT Portfolio] anticipates no substantial programmatic involvement with the recipient during performance of the financially assisted activities.[5]

ii. Cooperative Agreement:

A financial assistance support mechanism used when there will be substantial Federal programmatic involvement. Substantial involvement means that OPDIV program staff will collaborate or participate in project or program activities as specified in the Notice of Grant Award. The difference between grants and cooperative agreements is the degree of Federal

[5] Page B-6 of the HHS Grants Policy Statement (http://www.hhs.gov/grantsnet/docs/HHSGPS_107.doc)

programmatic involvement rather than the type of administrative requirements imposed. Therefore, statutes, regulations, policies, and the information contained in this policy statement that are applicable to grants also apply to cooperative agreements, unless the award itself provides otherwise.

For purposes of this report, the term grant is henceforth used to include both grants and cooperative agreements.[6]

iii. Contract:

Contracts may be awarded by AHRQ pursuant to the Federal Acquisition Regulation (FAR). A contract is an agreement, initiated by the Government, to acquire an identifiable product or service under specified terms.

iv. Interagency Agreement:

Interagency Agreements (IAAs) are used to provide to, purchase from, or exchange goods or services with another Federal agency.

C. Health IT Portfolio

AHRQ's Health IT Portfolio is both an organizing construct for research and a designation for a collaborative team of AHRQ staff mainly located in AHRQ's Center for Primary Care, Prevention, and Clinical Partnership. P. Jon White, M.D., Director, Health IT Portfolio, works with a core team of eight full-time employees. This team is the proverbial "tip of the iceberg" of the Health IT Portfolio at AHRQ. The ballast of the Health IT Portfolio is provided by myriad staff across AHRQ who serve as project officers and staff in the Office of Communications and Knowledge Transfer (OCKT); the Office of Performance, Accountability, Resources, and Technology (OPART); and the Office of Extramural Research, Education, and Priority Populations (OEREP), as well as others who support the activities of the Health IT Portfolio, and the numerous recipients of health IT-sponsored grants and contracts, including the multi-year contract to support the NRC.

In 2008, under the leadership of Jon White, the health IT team applied its skills and dedication to the Health IT Portfolio in various ways: served as project officers on health IT-sponsored grants and contracts; managed the portfolio; set forth strategic and business goals for the portfolio; conducted intramural research; published peer-reviewed manuscripts; issued three new grant Funding Opportunity Announcements (FOAs); issued a series of requests for contracts; and participated in and presented at numerous interagency and public meetings.

Each of the 124 grants and 22 of the 26 contracts active in 2008 were multi-year projects (see Table 1). Collectively, AHRQ's lifetime funding for these projects is substantial—nearly one-quarter of a billion dollars. Thirty-eight of the grants and two of the contracts ended in 2008. The remaining 110 projects continued into 2009.

[6] Page B-4 of the HHS Grants Policy Statement (http://www.hhs.gov/grantsnet/docs/HHSGPS_107.doc)

Table 1: Counts and Lifetime AHRQ Funding for Health IT Portfolio-Sponsored Grants and Contracts Active as of 2008

Mechanism	Count	Lifetime AHRQ Funding[7]
Grants[8]	124	$151.3
AHRQ Project-Specific Contracts[9]	25	$47.6
5-Year Master Contract for the Health IT National Resource Center	1	$22.4
Total	150	$221.3

i. Grants: Funding Opportunity Announcements

Proposals for grants and cooperative agreements are submitted in response to AHRQ's issuance of an FOA. One-time FOAs are known as Request for Applications (RFAs) and recurring FOAs are known as Program Announcements (PAs). An RFA is a one-time funding opportunity issued to solicit specific research projects quickly. A PA allows applications to be submitted over multiple years at one of three submission cycles in a given year. (See standard due dates at http://grants1.nih.gov/grants/funding/submissionschedule.htm.) Unlike RFAs, which do not allow unfunded applications to be revised and resubmitted, PAs may allow up to two resubmissions.

Since 2004, the Health IT Portfolio has issued 11 FOAs distributed across three waves of funding (see Table 2). All of the grants active in 2008 had been awarded through now closed one-time RFAs.

1. **Transforming Health Care Quality through Information Technology RFAs.**AHRQ's Health IT Portfolio's THQIT initiative includes grants funded through four RFAs. The THQIT projects were funded by AHRQ in order to support different aspects of organizational and community-wide activities to support health IT implementation and to elucidate various stakeholders' perspectives and/or demonstrate the value of health IT implementation and use with a focus on rural hospitals and community-based health care settings.

- The THQIT planning grants (HS-04-010) were designed to support the planning phase and development of health IT infrastructure for those communities interested in preparing

[7] In millions of dollars.
[8] Not included are projects sponsored by other AHRQ portfolios, e.g., Comparative Effectiveness, Innovations and Emerging Issues, Prevention/Care Management, Patient Safety, and Value, which may feature health IT components.
[9] Includes six Health Information Exchange State and Regional Demonstration (SRD) projects, two clinical decision support (CDS) contracts, and 17 other individual contracts.

for effective exchange of health information within the community across multiple health care organizations.

- The initial THQIT implementation grants (HS-04-011) were intended to assess the extent to which health IT implementation contributes to measurable and sustainable improvements in patient safety, cost, and overall quality of care.
- The second set of THQIT implementation grants (HS-05-013), referred to here as post-planning implementation grants, have the same objectives as the initial THQIT implementation grants. These awardee institutions had the benefit of receiving and completing a planning grant prior to pursuit of the implementation grant.
- The THQIT value grants (HS-04-012) sought to generate insight on the value of health IT, which includes clinical, safety, quality, financial, organizational, effectiveness, efficiency, or other direct or indirect benefits that may be derived from the use of health IT in the delivery of health care. These value assessments according to the FOA were to be from various stakeholders' perspectives including patients, providers, purchasers, payers, policymakers, or other important stakeholders and decisionmakers.

In total, 118 THQIT grants were funded by AHRQ. As indicated in Table 2, 55 of the THQIT grants were still active in 2008 and contributed 44 percent (55/124) of the active grants in that year. In 2009, the Health IT Portfolio will award a contract to synthesize the findings and evaluate the success both within and across the four RFAs that comprise the THQIT Initiative.

2. **Ambulatory Safety and Quality RFAs.** In 2007 and 2008, the Health IT Portfolio issued a series of RFAs (HS-07-007; HS-07-006; HS-07-002; HS-08-002) to support grants to improve the safety and quality of ambulatory health care in the United States, known as the Ambulatory Safety and Quality (ASQ) initiative.[10]

- The purpose of the Enabling Patient-Centered Care Through Health IT RFA (HS-07-007) was to support grants that investigate novel methods or evaluate existing strategies for using health IT to create or enhance patient-centered models of care in the ambulatory setting. Applicants were expected to demonstrate how patient-centered care can improve health outcomes, patient safety, and patients' reported experience with care. Applicants were encouraged to consider projects that focus on: shared decisionmaking, patient-clinical communication, PHRs, integration of patient information across transitions in care, or patient self-management of chronic conditions. There were three areas of research with set aside funding: primary care Practice-Based Research Networks (PBRN), projects that serve vulnerable populations, and medication management. Regardless of set aside research focus, all of these grants were assigned PCC or HIE as their Health IT Portfolio strategic goal because of the dominant theme of enabling PCC of the RFA.
- The purpose of Improving Quality Through Clinician Use of Health IT (IQHIT) (HS-07-006) was to support grants that investigate novel methods or evaluate existing strategies for clinician use of health IT in ambulatory settings to improve outcomes through more effective CDS, medication management, or care delivery. Applicants were encouraged to demonstrate the ability of EHRs and medication management systems to effectively

[10] A fourth ASQ RFA, called the Ambulatory Care Patient Safety Proactive Risk Assessment (HS-07-003), was issued by the Patient Safety Portfolio.

move evidence-based clinical information to providers and participants in HIE. There were three areas of research with set aside funding: primary care PBRNs, projects that serve vulnerable populations, and medication management. Health IT Portfolio strategic goals were selected based on the primary objective of a given grant.

- The purpose of the Enabling Quality Measurement (EQM) Through Health IT RFA (HS-07-002) was to support grants that develop safety and quality measures in ambulatory care settings, automate quality measurement, demonstrate the ability of electronic data systems (such as EHRs or claims data merged with EHR data) to expand potential safety and quality measures, and demonstrate improved ability to export data for reporting performance on measures and improvement.
- The purpose of the Improving Management of Individuals with Complex Healthcare Needs through Health IT RFA (HS-08-002) was to support the development of health IT that assists clinicians, practices, systems, and patients and families in improving the quality and safety of care delivery for individuals with complex health care needs (e.g., multiple chronic diseases) in ambulatory care settings with a particular interest in high-risk care transitions. The long-term goal of this effort is to ensure that patients receive the appropriate care and management for the prevention and treatment of priority conditions.

3. **Health IT-Oriented Program Announcements (PA).** In September 2008, AHRQ issued its continuum of three PAs (HS-08-268; HS-08-269; HS-08-270) to support research that examines how health IT can be used to improve health care quality in a progressively more complex fashion. Through these PAs with varying levels of expectations and other outreach efforts, AHRQ seeks to support the development and diversification of research infrastructures and individuals engaged in solving the important remaining challenges in health IT implementation, use, and evaluation as it relates to improving the health of all Americans.

Applications responsive to these PAs must focus on implementation of health IT in one or more of the following care settings: ambulatory setting(s), transitions in care between ambulatory settings, or transitions in care between an ambulatory and nonambulatory setting. For the purposes of these PAs, ambulatory care settings include: health care clinician offices; outpatient clinics; outpatient mental health centers; outpatient substance abuse centers; urgent care centers; ambulatory surgery centers; community-based, school, or occupational health centers; safety-net clinics; pharmacies; homes; independent living centers; and long-term residential care facilities. For more information, please see the notices. Given the lag time between publication of an FOA and awarding of grants, the first grants from these PAs will be funded in September 2009.

Also in 2008, the Health IT Portfolio issued a Special Emphasis Notice (NOT-HS-08-014) articulating its commitment to support the career enhancement of researchers focused on health IT through the funding of K-awards and research dissertation grants (R-36).

Table 2: AHRQ-Sponsored Health IT Funding Opportunity Announcements and Special Emphasis Notice Published, 2004-2008

Publication Number	Title and Hyperlink	Year Awarded	Number of Grants Active as of 2008	New Grant Proposals May Be Submitted
RFA-HS-04-010	Transforming Healthcare Quality Through Information Technology (THQIT)—Planning Grants	2004	None[11]	No
RFA-HS-04-011	Transforming Healthcare Quality Through Information Technology (THQIT)—Implementation Grants	2004	19	No
RFA-HS-04-012	Demonstrating the Value of Health Information Technology	2004	20	No
RFA-HS-05-013	Limited Competition for AHRQ Transforming Healthcare Quality through Information Technology—Implementation Grants	2005	16	No
RFA-HS-07-007	Ambulatory Safety and Quality: Enabling Patient-Centered Care through Health IT (R18)	2007	16	No
RFA-HS-07-006	Ambulatory Safety and Quality Program: Improving Quality through Clinician Use of Health IT (R18)	2007	24	No
RFA-HS-07-002	Ambulatory Safety and Quality Program: Enabling Quality Measurement through Health IT (R18)	2007	17	No
RFA-HS-08-002 (HS08-002)	Ambulatory Safety and Quality Program: Improving Management of Individuals with Complex Healthcare Needs through Health IT (R18)	2008	12	No
PAR-HS-08-268	Small Research Grant to Improve Health Care Quality through Health Information Technology (IT) (R03)	2009[12]	None to date	Yes[13]
PAR-HS-08-269	Exploratory and Developmental Grant to Improve Health Care Quality through Health Information Technology (IT) (R21)	2009	None to date	Yes
PAR-HS-08-270	Utilizing Health Information Technology (IT) to Improve Health Care Quality (R18)	2009	None to date	Yes
NOT-HS-08-014	Special Emphasis Notice: AHRQ Announces Interest in Career Development (K01, K02, K08) and Dissertation (R36) Grants focused on Health Information Technology (IT)	2009	None to date	Yes

ii. Contracts

The Health IT Portfolio uses various contract mechanisms to solicit requests for proposals including one-time Request for Proposals (RFPs) and Requests for Task Orders (RFTOs) when a master contract has been issued. Master Contracts are a special type of RFP that are issued to a

[11] The 39 THQIT planning grants finished in 2004 and 2005. Sixteen of the institutions that received a THQIT Planning Grant also received an HS04-011 Implementation Grant.
[12] These Health IT FOAs were published in September 2008; AHRQ anticipates awarding initial grants to these FOAs in late summer 2009.
[13] The three active Health IT FOAs and Special Emphasis Notice have an expiration date of November 17, 2011. AHRQ will consider renewal of them as appropriate.

group of well-qualified contractors who are then eligible to compete for a subsequent series of RFTOs that are issued through the Master Contract. Full text of closed AHRQ RFPs issued since 2000 are available at http://www.ahrq.gov/fund/contrarch.htm. Requests for Task Orders (RFTO) are provided to Master Contract awardees for a given program, such as the Primary Care PBRN. Nine of the Health IT Portfolio's active contracts in 2008 had been awarded through three one-time RFPs and 17 RFTOs issued through seven master contracts. The year the contract began and the number of Health IT Portfolio contracts, by mechanism, are shown below:

- One-time Request for Proposals (RFPs)
    - 2004, State and Regional Demonstrations in Health Information Technology (http://www.ahrq.gov/fund/contarchive/rfp040015.htm), n=6
    - 2004, Master Contract Health Information Technology Resource Center (HITRC), now known as the Master Contract to Support the National Resource Center for Health IT (http://www.ahrq.gov/fund/contarchive/rfp040016.htm), n=1
    - 2007, Clinical Decision Support Services (http://www.ahrq.gov/fund/contarchive/rfp0710045.htm), n=2

- Master Contracts through which active Health IT Portfolio Task Orders (TO) were issued and awarded:
    - 2007 and 2008, Program Evaluation and Analysis Task Order Contract (PEATOC), n=1
    - 2007, Department of Health and Human Services Program Support Center (PSC), n=2
    - 2007, Primary Care Practice-Based Research Networks, n=3
    - 2007, Evidence-Based Practice Care Centers, n=1
    - 2007 and 2008, Accelerating Change and Transformation in Organizations and Networks (ACTION), n= 8
    - 2008, Blanket Purchasing Agreement (BPA) for Support Services, n=1
    - 2008, National Quality Forum, n=1

In 2008, AHRQ announced its intent to issue a new series of Master Contracts stratified across four domains to support the National Resource Center for Health IT. That RFP, the Health IT Portfolio-issued AHRQ National Resource Center for Health Information Technology (IT) (Solicitation No. AHRQ-2009-10003), was published in January 2009 (http://www.ahrq.gov/fund/contarchive/rfp0910003.htm). These master contractors, through yet-to-be-awarded RFTOs, will provide support and help refine and reshape the construct and output of AHRQ's NRC for Health IT. As needed, in 2009 onward, the Health IT Portfolio will issue new RFPs and RFTOs through the most appropriate contract mechanism.

iii. Interagency Agreements

This report summarizes only Health IT Portfolio-sponsored projects managed by AHRQ. It does not include the Health IT Portfolio's IAA to support projects managed by other Federal agencies or IAAs from other Federal agencies to contract for projects to be conducted by the NRC.

In 2008, through IAAs, the Health IT Portfolio funded three projects that were managed by other Federal agencies. Two IAAs provided Centers for Medicare and Medicaid Services (CMS) $1.5 million dollars to conduct a CMS-led Electronic Prescribing Pilot and $422,503 to conduct a CMS-led Care Management Performance Demonstration project. Through a third IAA with the National Institutes of Health (NIH) and the National Library of Medicine (NLM), the Health IT Portfolio provided $133,000 to an NLM-sponsored grant for the development of CDS guidelines.

III. Methods

AHRQ staff, in cooperation with NRC staff, developed processes for the drafting of 124 grant and 26 contract project-specific summaries. Staff from the NRC, with assistance from grantees, contractors, and AHRQ staff, drafted the project-specific summaries. For specific information on sources and methods, see Appendices B and C. Appendix B describes the process for developing each grant-specific summary. Appendix C describes the process for developing each contract-specific summary. AHRQ acknowledges that most of these project-specific summaries are snapshots of ongoing multi-year research projects. They neither preempt nor replace the thorough and thoughtful peer-reviewed publications of findings that are generated after conclusion and analyses of projects. Rather, these project-specific summaries articulate the challenges, milestones, and outputs from an array of ongoing and concluded (2008) Health IT Portfolio-sponsored initiatives in an unprecedented, more timely fashion. AHRQ intends for the summaries to be informative references for implementers of health IT, prospective research applicants, and others interested in the challenges and successes of health IT implementation and use in terms of research and practical application.

IV. Results and Discussion

Through these 150 projects, AHRQ is supporting the development and dissemination of evidence on how health IT can be used to improve the quality, safety, efficiency, and effectiveness of care in a variety of health care settings. The distribution of grants and contracts active in 2008 by Health IT Portfolio strategic goals, AHRQ business goals, and AHRQ lifetime funding are presented. There are a variety of databases that provide additional characteristics about grantees and grants that are not consistently available for contractors. As such, additional information about grantee characteristics is discussed, including grantees' self-reported performance in terms of spending and overall status of grantee-specified milestones, and PI's history of having served as a PI for a grant.

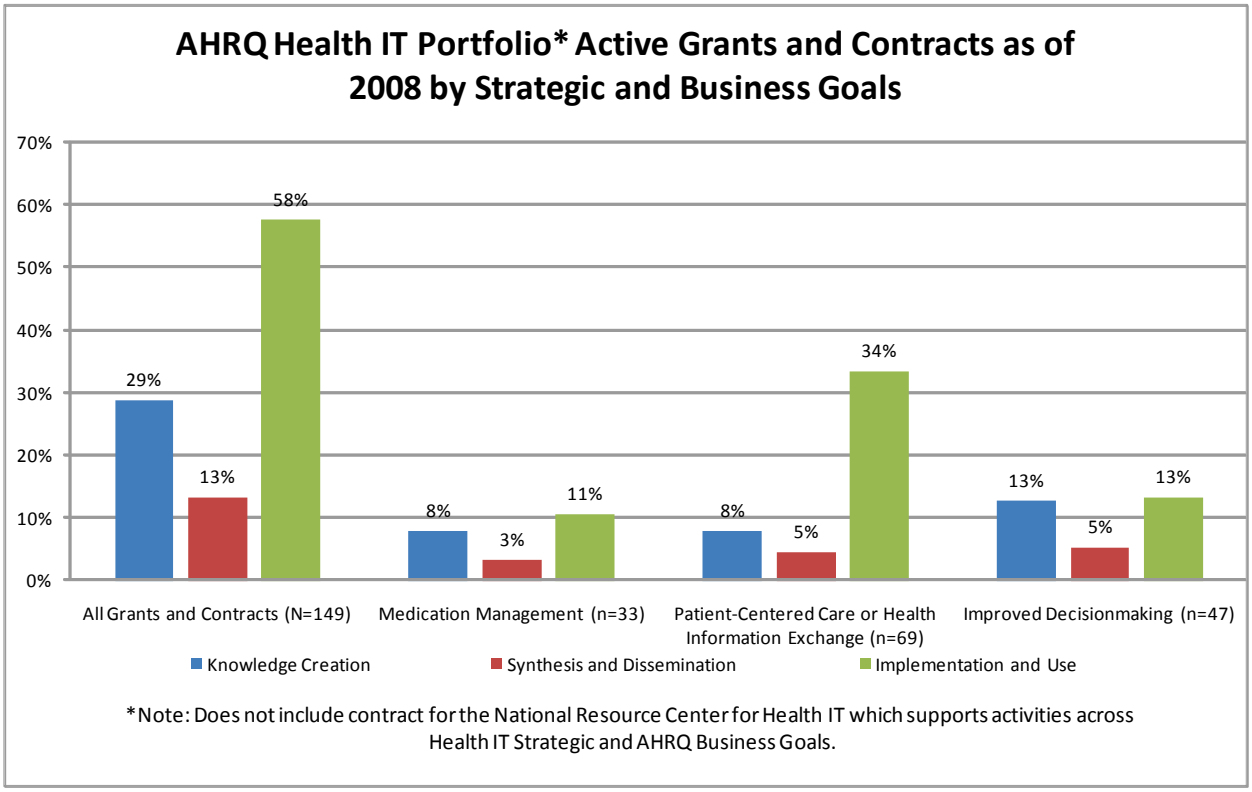
A. Health IT Portfolio Active Projects (Grants and Contracts)

i. By Strategic and Business Goals

Forty-six percent (69/149) of projects active in 2008 were primarily focused on the strategic category PCC or HIE (see Figure 1).[14] The next most popular strategic goal category was Improved Decisionmaking (32 percent; 47/149), followed by Medication Management (22 percent; 33/149).

The relative dominance of projects ascribed to have Implementation and Use as an AHRQ business goal (58 percent; 86/149), is notable. Knowledge Creation was the second most common AHRQ business goal category (29 percent; 43/149). Only 20 of the 149 projects (13 percent) were classified to have the AHRQ business goal of Synthesis and Dissemination.

Figure 1: AHRQ-Sponsored Health IT Grants and Contracts by Strategic Goals as of 2008



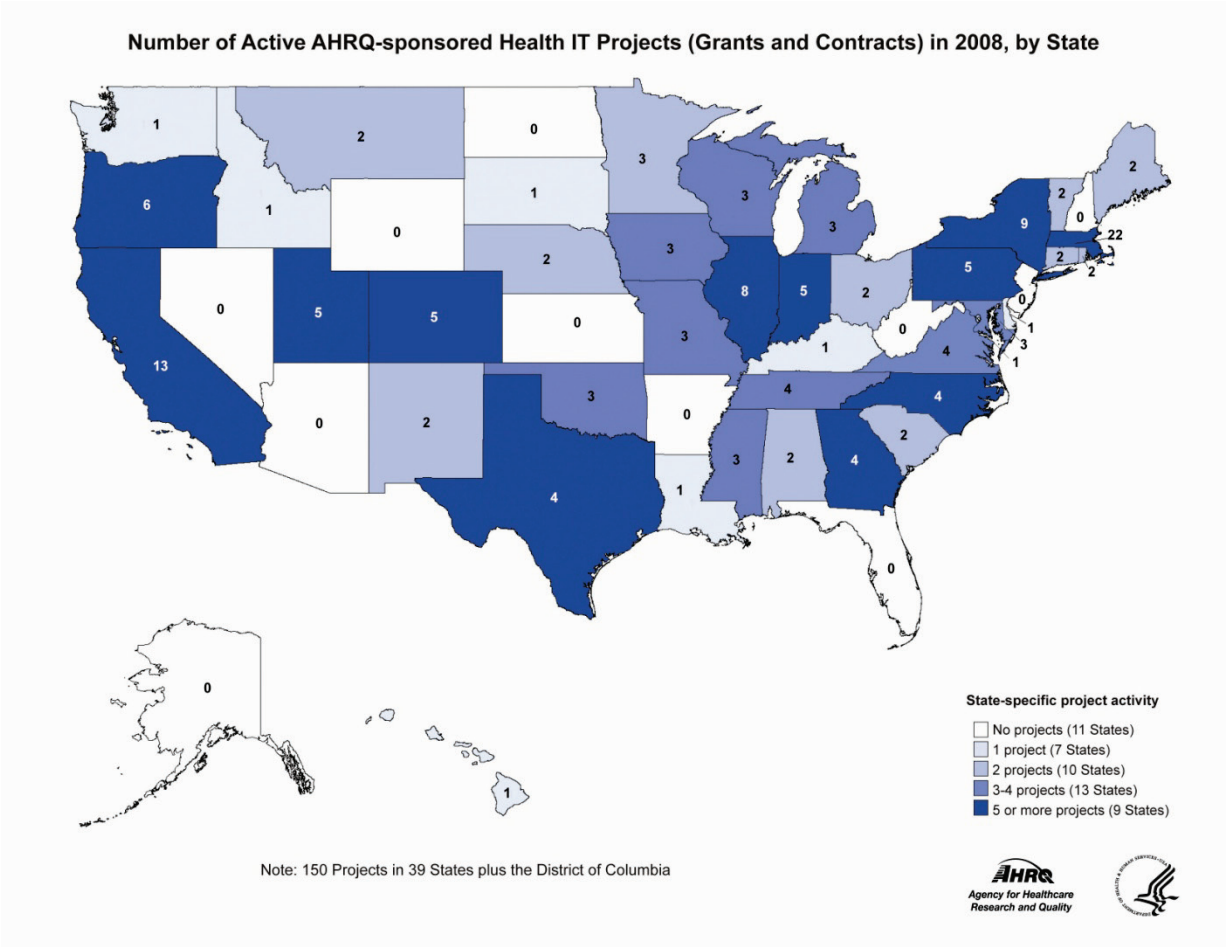
ii. Geographic Distribution of Active Projects

At least one research organization in each of the 50 States has received a health IT-sponsored project at some time during the program, 2004-2008 (see Figure 2). In 2008, the active recipient

[14] Does not include the 5-year substantial master contract for the NRC, which supports activities across strategic and business goals.

project institutions represented 39 States across the country. The level of project activity varied quite a bit from State to State. Massachusetts had the highest number of active health IT projects at 22. California had the next highest level, with 15 active health IT projects, followed by New York, which had 9. Indiana, Utah, Tennessee, Wisconsin, and New York are also examples of States with longstanding research programs dedicated to health IT funded by AHRQ.

Figure 2: Number of Active Projects Sponsored by AHRQ's Health IT Portfolio as of 2008, by State



B. Grants

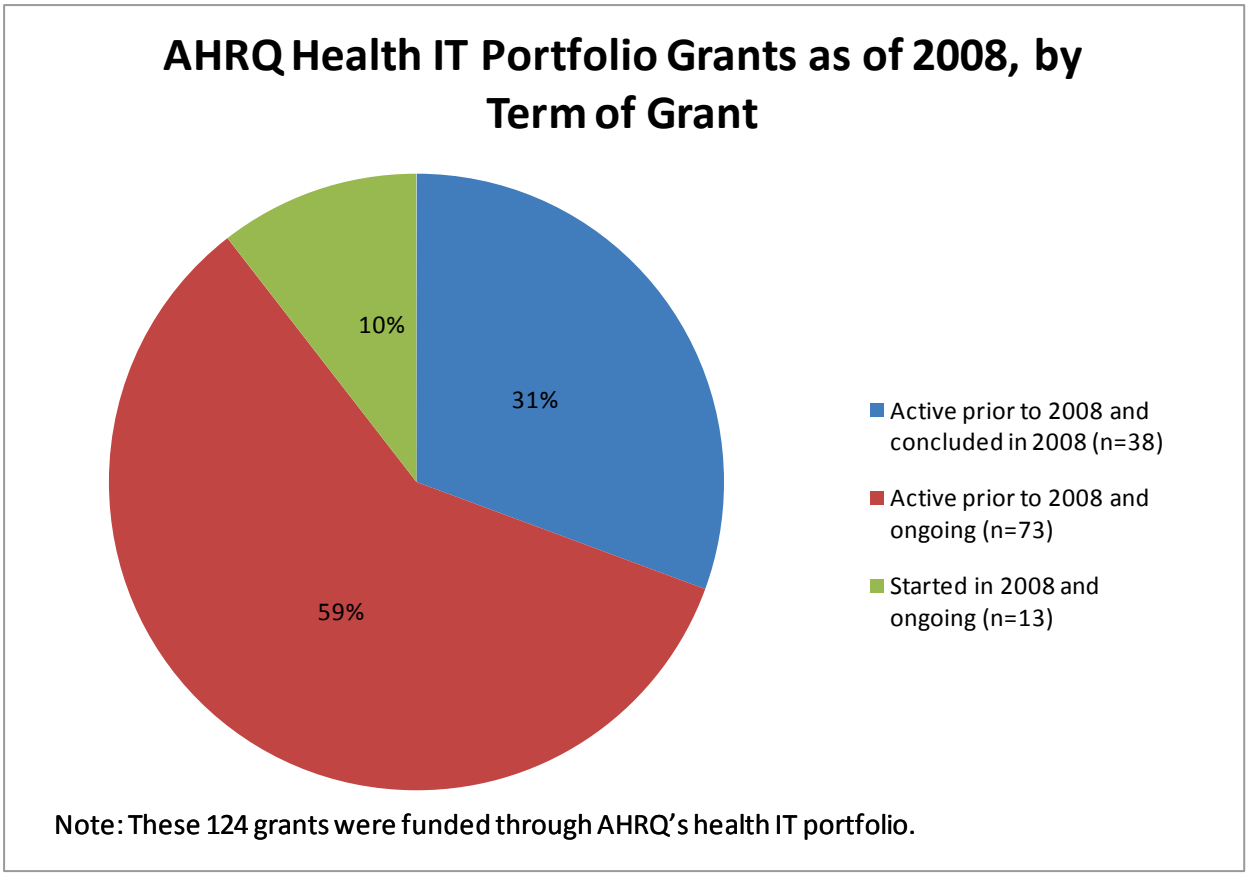
i. Term of Grants

Each FOA specifies the maximum project period for a grant. All of the Health IT Portfolio-sponsored grants active in 2008 were multi-year grants. Grants that were issued under expanded authority are able to issue a no-cost extension of up to 12 months beyond the grant project period without prior approval by AHRQ, as long as there were no changes in scope. Grants, including cooperative agreements, that were not issued under expanded authority may request no-cost extensions of up to 12 months. Among the 55 THQIT grants active in 2008, 96 percent (53/55)

were functioning under a no-cost extension. As of the end of 2008, all of the ASQ grants had at least several months, if not years, until they were eligible to request a no-cost extension. The Health IT Portfolio will continue to monitor the duration of and extent to which no-cost extensions are used among health IT grantees.

The disposition of grants, in terms of whether they had concluded in 2008, started in 2008, or were begun prior to 2008 and continued on through 2009, are presented in Figure 3. As demonstrated by this figure, there was a net reduction in the number of active Health IT Portfolio research grants at the end of 2008, with 38 THQIT grants concluding and only 13 ASQ grants beginning. With the release of the new Health IT Portfolio PAs in 2008, we expect continued and expanded grants in the years to come.

Figure 3: Health IT Grants, by Term of Grant as of 2008



ii. Grants: Lifetime AHRQ Funding by Term of Grant and Strategic Goals

Lifetime AHRQ funding refers to the total support (direct plus indirect costs) that AHRQ obligates to provide to a grant during the project period, as long as the grantee's performance indicates continuation of the grant. The project period and award amount for a grant are defined at the time that the Notice of Grant Award is made. In the event that, at the end of a grant, a

grantee has spent less of the money than it was awarded by AHRQ, this money is retained by AHRQ and may be applied to support new grant activities, or it may be returned to the Treasury. Among the 124 grants active in 2008, the strategic goal of enabling PCC or HIE dominated with 56 grants at $69.6 million lifetime AHRQ funding. Comparable funding amounts were found for the 31 Medication Management grants at $40.1 million lifetime AHRQ funding and 37 Improved Decisionmaking grants at $41.6 million lifetime AHRQ funding.

Over time, the relative increase in the number of grants with a strategic goal of PCC or HIE is seen. Forty-seven percent (34/73) of the grants that were begun prior to 2008 and continued into 2009 had PCC or HIE as their strategic goal. Ninety-three percent (12/13) of the grants funded in 2008 had a PCC or HIE strategic goal. This is expected, given that the focus of the sole open FOA in 2008 (HS-08-002) was to support health IT implementation and use for patients with complex medical needs.

The grants that ended in 2008 included: 16 grants with a strategic goal of Medication Management and $22.6 million lifetime AHRQ funding; 12 grants with a strategic goal of Improved Decisionmaking and $16.7 million lifetime AHRQ funding; and 10 grants with a strategic goal of PCC or HIE and $13.7 million lifetime AHRQ funding (see Table 3). In part, these research areas reflect the types of health IT that were better developed and more widely utilized—such as health IT to support medication management—at the time of the award of these grants in 2004 and 2005.

With the release of new Health IT Portfolio-sponsored PAs in 2008, AHRQ expects continued and expanded work across the health IT strategic goals and AHRQ business goals for years to come.

Going forward, as the 86 active grants roll over into 2009, only 17 percent (15/86) will be addressing Medication Management, 30 percent (25/86) will address Improved Decisionmaking, and 54 percent (46/86) will address PCC or HIE.

Table 3: Counts and Lifetime AHRQ Funding for Active Health IT Grants as of 2008, by Term of Grant and Strategic Goals

	Medication Management		Patient-Centered Care or Health Information Exchange		Improved Decisionmaking		Total	
Grant Term	n (%)	AHRQ Funding* (%)	n (%)	AHRQ Funding* (%)	n (%)	AHRQ Funding* (%)	N (%)	**Total AHRQ Funding* (%)**
Active Prior to 2008 and Concluded in 2008	16	$22.6	10	$13.7	12	$16.7	38 (31%)	**$52.9 (35%)**
Active Prior to 2008 and Ongoing	15	$17.5	34	$41.6	24	$24.0	73 (59%)	**$83.1 (55%)**
Started in 2008 and Ongoing	0	$0.0	12	$14.3	1	$1.0	13 (11%)	**$15.3 (10%)**
Total	**31 (25%)**	**$40.1 (27%)**	**56 (45%)**	**$69.6 (46%)**	**37 (30%)**	**$41.6 (27%)**	**124 (100%)**	**$151.3 (100%)**

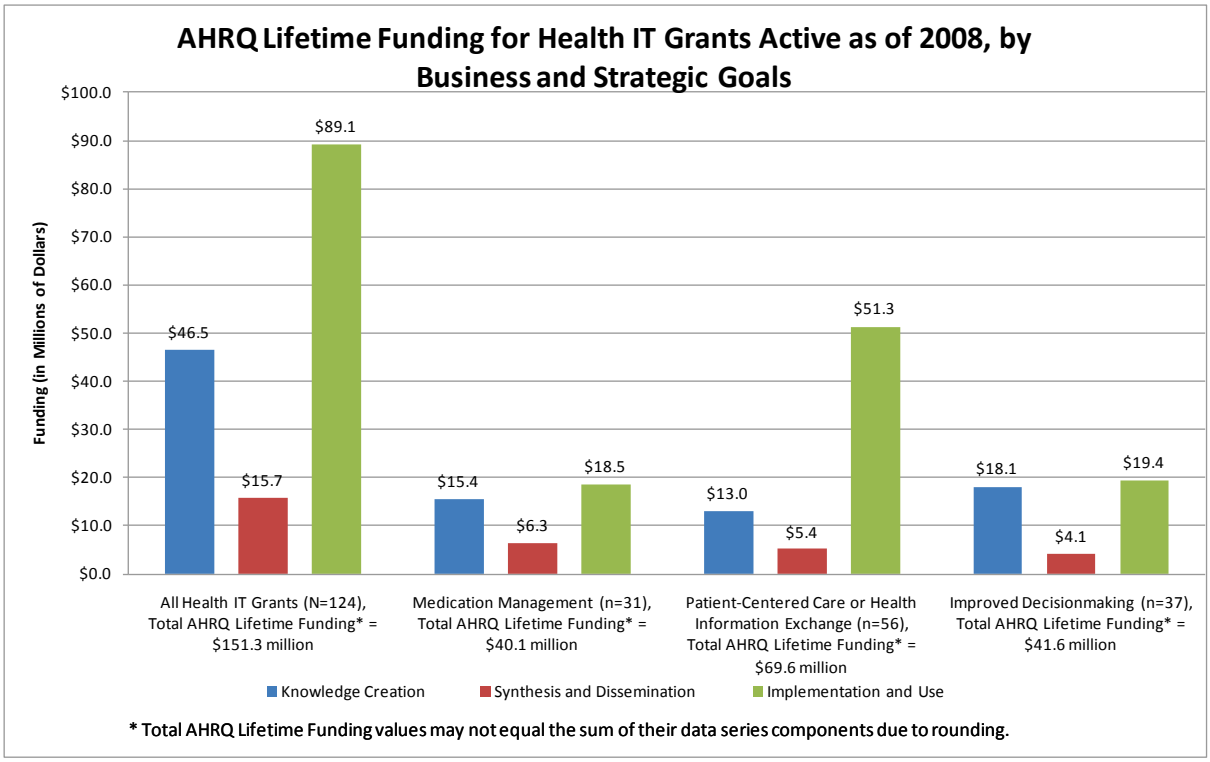
*In millions of dollars

The distribution of AHRQ lifetime funding by business and strategic goals is shown in Figure 4. Grants that focused on implementation and use of health IT dominate the portfolio in terms of number of grants (56 percent; 73/124) and percentage of AHRQ lifetime funding (59 percent; $89.1/151.3 million). There were nearly equal numbers of 55 THQIT grantees with business goals of Implementation and Use (n=24) and Knowledge Creation (n=25).

Grants that are ascribed to have a business goal of Knowledge Creation constitute 31 percent (38/124) of the grants and account for 31 percent ($46.5/151.3 million) of the AHRQ lifetime funding for grants. Knowledge Creation is a growing focus of the Health IT Portfolio as reflected in the purpose and scope of the currently open health IT PAs that were published in 2008.

Only 10 percent (13/124) of grants have the business goal of Dissemination and Synthesis. This small number should not be interpreted to indicate an undervaluing of dissemination or synthesis activities. On the contrary, dissemination of results is a requirement specified in each FOA and Notice of Grant Award. At a minimum, each grantee is encouraged to work with the NRC to share with them the status of the grant on a quarterly basis, to post materials on the NRC Web site, to notify AHRQ's OCKT when and where manuscripts are to be published, and to participate in the annual AHRQ-sponsored grantee meeting. However, these requisite dissemination requirements would likely be secondary to the business goals assigned to many of the grants.

Figure 4: AHRQ Lifetime Funding for Health IT Grants as of 2008, by Business and Strategic Goals



iii. Grantees' Most Recent Self-Reported Project and Spending Status

In an effort to understand grantees' experience and performance in reaching their specific project milestones, on a quarterly basis AHRQ Health IT Portfolio grantees report their project progress and challenges using the electronic AHRQ Research Reporting System (ARRS). Included in quarterly reports are self-reported categorical variables for grantees to report the extent to which they are on track reaching overall milestones and spending plans. Since these self-characterizations are reported quarterly, we anticipate some fluctuation may occur from quarter to quarter for a given project. AHRQ also recognizes that, through the course of the grant process, unexpected delays (e.g., loss of key personnel, additional time to ensure the Institutional Review Board's approval of plans for protection of human subjects, delays in software development, installation, or interfacing with pre-existing software) may occur that could temporarily impact research milestones and spending plans. AHRQ is mindful of the importance of early identification and remediation of challenges, especially in health IT implementation research projects.

AHRQ-sponsored health IT grantees' self-reported status regarding overall goals for calendar year 2008 were (see Figure 5):

- 14 percent (17/124) progress is completely on track
- 52 percent (64/124) progress is mostly on track
- 27 percent (33/124) progress is on track in some respects
- 2 percent (3/124) progress in meeting many milestones is stalled
- 0 percent (0/124) progress across the project is stalled
- 6 percent (7/124) did not report

In general, these grantees report a high level of reaching grant-specified milestones. AHRQ accepts that periodic delays in grant processes may occur. AHRQ is engaged in outreach efforts to facilitate grantees' reporting on this issue in a meaningful manner. Five of the seven grantees that did not report by the cutoff date were funded under the THQIT FOAs, while the other two grantees received more recent grants through ASQ FOAs. Since the reporting deadline for this report, the ASQ grantees have begun reporting, and active THQIT grantees have indicated their willingness to provide information as needed and requested.

AHRQ-sponsored health IT grantees' self-reported status regarding spending for calendar year 2008 were (see Figure 6):

- 16 percent (20/124) were significantly under spent, more than 20 percent
- 30 percent (37/124) were somewhat under spent, approximately 5-20 percent
- 48 percent (60/124) were spending roughly on target
- 0 percent (0/124) were significantly overspent, more than 20 percent
- 6 percent (7/124) did not report

More than one-half of grantees report under spending of budgeted AHRQ funds as of the most recent 2008 quarterly report. More than 59 percent (41/69) of ASQ grantees reported having under spent their allotted budget. These 41 grantees were relatively new, with 29

grantees having an average duration of 15 months and another group of 12 grants having an average duration of 3 months at the time of reporting. Several of the grantees explained in their 2008 summary that under spending of the budget was often a result of delays in implementation of the project early on. The same seven PIs did not report for either project milestones or spending categories.

It is of note that reporting of these spending levels through ARRS is, in part, voluntary. Grantees are required to report on budgeting and spending patterns in the requisite PHS Form 2590 in order to receive approval for continuation of funding for each multi-year grant, such as these grants.

AHRQ is monitoring the progress in meeting milestones and spending patterns of grantees both within and across funding mechanisms in order to understand factors that influence overall project process and spending.

Figure 5: AHRQ-Sponsored Health IT Grantees' Self-Reported* Status Regarding Overall Goals by Funding Opportunity Announcement as of 2008

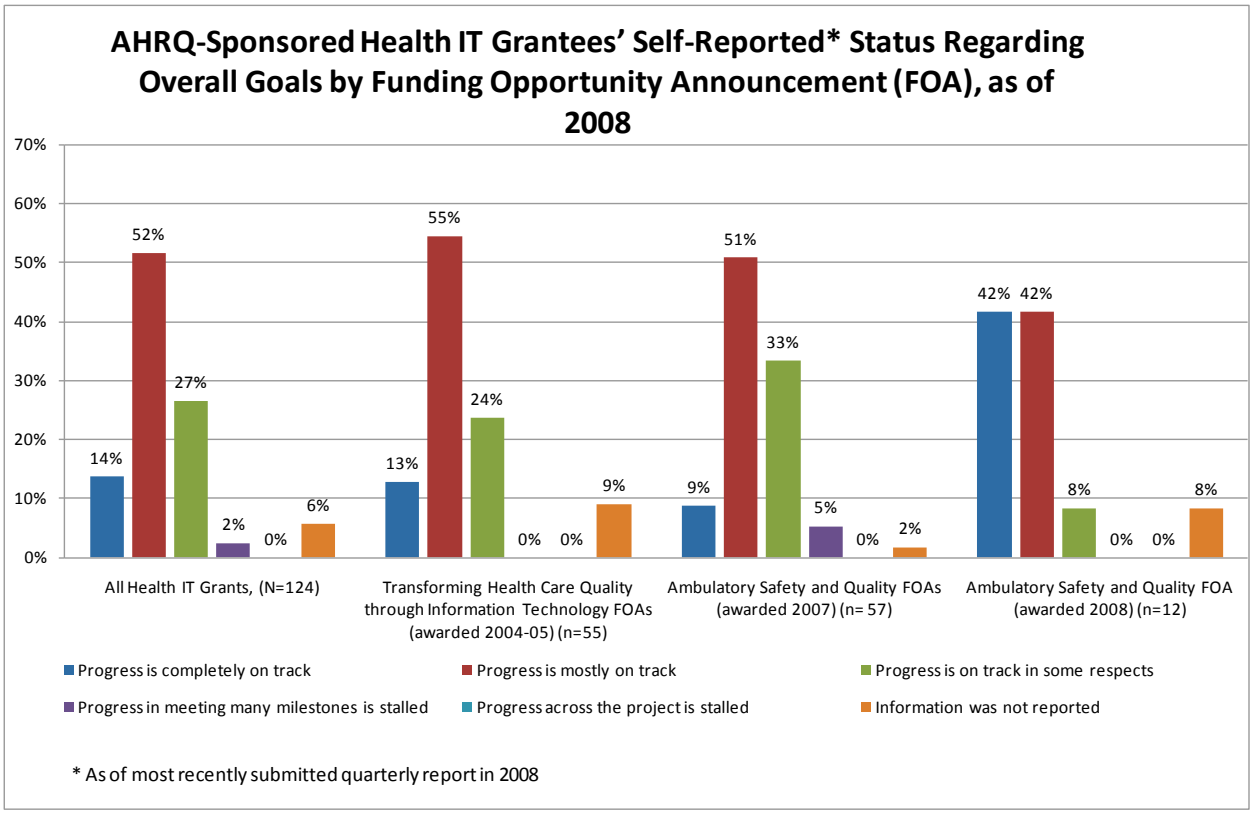
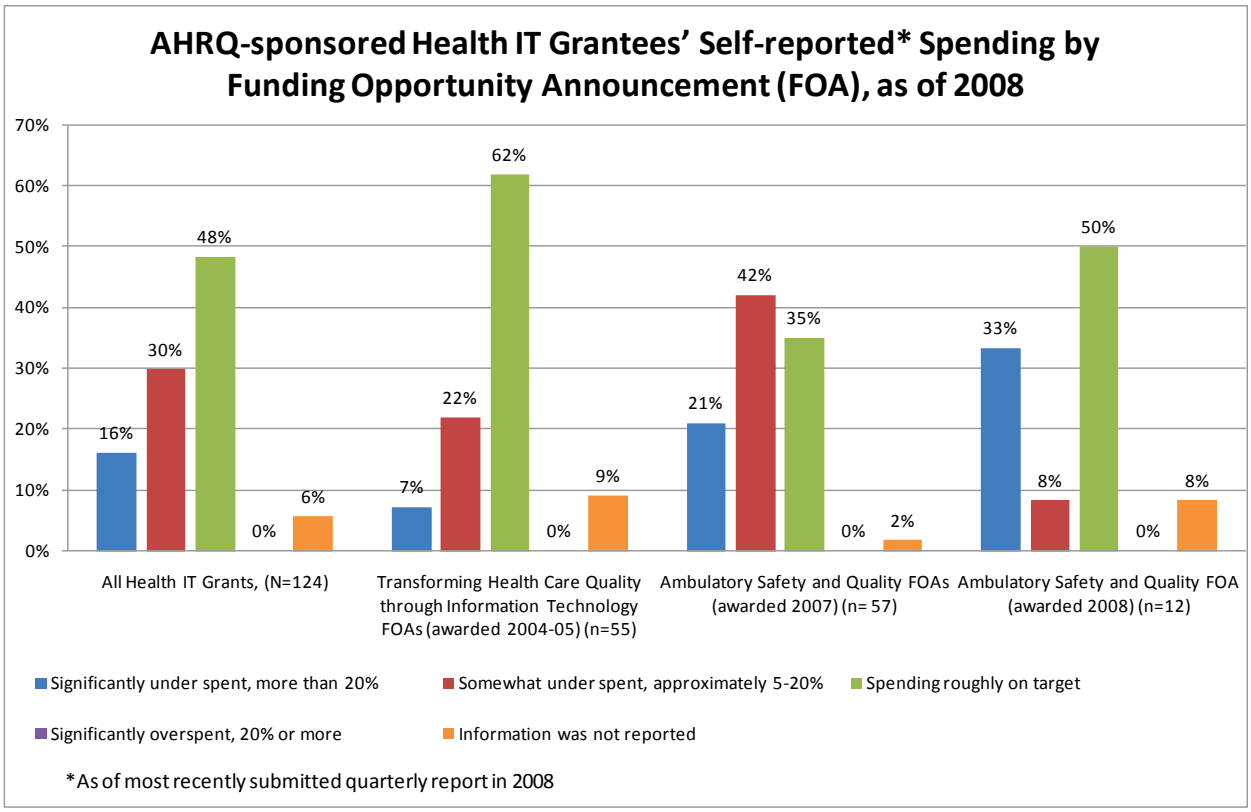


Figure 6: AHRQ-Sponsored Health IT Grantees' Self-Reported* Spending by Funding Opportunity Announcement as of 2008



iv. Principal Investigators

Grants and cooperative agreements are actually awarded to an institution and not to the PI. Yet, the PI is the individual designated by the recipient grantee organization as responsible for the scientific, technical, and programmatic aspects of the grant and for day-to-day management of the project. Among the 124 health IT grants active in 2008, there were 116 distinct PIs. Six of these PIs had two AHRQ-sponsored health IT grants active in 2008, and one PI has received successive AHRQ health IT grant awards over time, in 2004, 2007, and 2008, through different FOAs.

AHRQ gathered information about PI grantee award histories based on the information recorded in the IMPAC II database. This grantee award database is maintained by the National Institutes of Health and is used by Agencies within the Department of Health and Human Services including AHRQ, the Health Resources and Services Administration (HRSA), and the National Institute for Occupational Safety and Health. Among the 116 unique PIs who had an active health IT-sponsored grant in 2008, 18 (16 percent) had previously received a career award (K-award) or training grant (T-32) to enhance their research abilities. Among these 18 PIs, 10 had received a K-award and 8 had received a T-32 training grant. None of the 116 PIs appears to have received a dissertation grant (R-36). Three of the K-awards and three of the T-32 grants received had been sponsored by AHRQ. The other K-awards and training grants were sponsored

by Institutes from NIH (e.g., National Cancer Institute, National Institute of Mental Health, and National Center for Research Resources) or HRSA.

The THQIT FOAs (HS-04-010, HS-04-011, HS-04-012, HS-05-013) were specifically designed to target the involvement of community health centers, rural hospitals, and other health care settings and community representatives who are concerned with health IT implementation that, by design, may not have a history of conducting traditional health services research and evaluation. As such, we anticipated that there would be some THQIT PIs who themselves would not have prior grantee experience but who would gather an appropriately trained and experienced interdisciplinary research team.

The ASQ FOAs (HS-07-007, HS-07-006, HS-07-002, HS-08-002) also specified particular health care setting requirements. However, they did not target applicant institutions that may have been less likely to have grantee experience, as was expected for some applicants and awardees of the THQIT grants.

Table 4: The Distribution of First-Time Grant Principal Investigators by Funding Opportunity Announcement[15]

Transforming Healthcare Quality Through Health IT (THQIT) FOAs:	
44% (7/16)	RFA-HS-05-013 Limited Competition for AHRQ THQIT Implementation
78% (15/19)	RFA-HS-04-011 THQIT Implementation
35% (7/20)	RFA-HS-05-012 Demonstrating the Value of Health Information Technology [THQIT]
Ambulatory Safety and Quality (ASQ) FOAs:	
44% (7/16)	RFA-HS-07-007 ASQ Enabling Patient-Centered Care through Health IT
25% (6/24)	RFA-HS-07-006 ASQ Improving Quality through Clinician Use of Health IT
24% (4/17)	RFA-HS-07-002 ASQ Enabling Quality Measure through Health IT
0% (0/12)	RFA-HS-08-002 ASQ Improving Management of Individuals with Complex Healthcare Needs through Health IT

It is not surprising that the rates of first-time grantees were high for the THQIT Value PIs (HS-05-012) and the initial THQIT Implementation PIs (HS-04-011) at 35 percent and 78 percent, respectively. At first glance, one may wonder why the number of first-time PIs for the Limited Competition THQIT Implementation grants (HS-05-013) was as high as 44 percent since that RFA was restricted to recipients of one-year THQIT Planning Grants (HS-04-010). Yet, since grants are awarded to the institution and not the PI, it is not illogical that seven of the 16 PIs for the Limited Competition THQIT Implementation grants were first-time PIs.

[15] The Department of Health and Human Services (DHHS) IMPAC II database tracks research funding for several grant programs among various DHHS, including AHRQ, the 27 institutes at the National Institutes of Health, Health Resource Services Administration, National Institute for Occupational Safety and Health, etc.

Moreover, the first-time PIs for the Limited Competition THQIT Implementation grants (HS-05-013) had played an important role in the conduct of their predecessor THQIT Planning Grant (HS-04-010).

The percentage of first-time grantees across the ASQ FOAs varied quite a bit. Of note is the fact that each of the 12 PIs for grants to the Improving Management of Individuals with Complex Healthcare Needs through Health IT (HS-08-002) had previous experience serving as a PI. Five of these PIs had at least one predecessor grant to enhance their research abilities; however, none of these predecessor grants were funded by AHRQ.

v. Pursuing Completion of Specific Aims of Grants

Thirty-eight of the 124 health IT-sponsored grants that were active in 2008 ended in 2008. Each of these 38 grants had been issued through one of the THQIT RFAs. Through the process of developing the grantee-specific summaries of these 38 grants, we began to see a few patterns emerging:

- Ninety-five percent (36/38) of these grants received no-cost extensions, generally for 1 year.
- Twelve of the PIs for those 36 grants indicated, on their own initiative, that after receiving a no-cost extension and at the end of the AHRQ-sponsored project period, there were ongoing or upcoming efforts to pursue the completion of at least one of the specific aims of the project using other funding resources. These 12 completed projects were associated with the following FOAs:
    - 50 percent (2/4) of the Limited Competition AHRQ THQIT Implementation grants (HS-05-013).
    - 28 percent (5/18) of the Initial THQIT Implementation grants (HS-04-011).
    - 31 percent (5/16) of the Demonstrating the Value of Health Information Technology (THQIT) grants (HS-05-012).

The implications to the PI and the portfolio at large are quite different, depending on which of the following scenarios is implied by the use of the term “ongoing” pursuit of specific aims of a concluded grant:

- Are there common problems that have inhibited the meeting of certain milestones across these grantees? If so, AHRQ could provide technical assistance to groups of grantees on how to handle such issues.
- Perhaps some grantees propose overly ambitious research projects. If this is a problem, is there a way that the Health IT Portfolio can modulate the process for allocating grants so that the expectations from both recipients and the awarding institution are more realistic?
- Another possible interpretation of ongoing or upcoming efforts among these concluded grants is that the PI is indicating that the health IT system initially implemented and evaluated through the grant is now being used in a sustained fashion through other funding. In this case, the perseverance should be viewed as a sign of success.

The Health IT Portfolio will continue to investigate the duration of and extent to which no-cost extensions are used among health IT grantees and the necessity, frequency, duration, and magnitude of supplemental support for grantees whose AHRQ grant funding has ended before all the objectives (specific aims) of the project have been met.

C. Contracts

The Health IT Portfolio had 26 active contracts in 2008 with cumulative AHRQ lifetime support of $70 million. Twenty-five of these contracts are for robust individual projects to address a defined, pre-determined need. Each of those contracts was assigned one of three Health IT Portfolio strategic goals and one of three AHRQ business goals. Their cumulative AHRQ lifetime budget equals $47.6 million. Yet the large, multi-purpose, 5-year contract begun in 2004 to support AHRQ's NRC is involved in so many disparate activities that all three Health IT Portfolio strategic goals and all three health IT business goals are ascribed to it.

Initial project duration is specified in each contract. Some contracts have a provision to support additional option years, to be executed at AHRQ's discretion. The start dates and duration of the 25 project-specific contracts active in 2008 are quite varied:

- Five 5-year contracts for State and Regional Demonstration (SRD) Projects for HIE began in 2004 and are scheduled to conclude in 2009.
- One 5-year contract for SRD Projects for HIE began in 2005 and is scheduled to conclude in 2010.
- Of the 10 contracts begun in 2007, one concluded in 2008, and nine are scheduled to end in 2009.
- Of the nine contracts begun in 2008, one concluded in 2008, three are scheduled to conclude in 2009, and five are scheduled to conclude in 2010.

As illustrated in Table 5, more contracts (n=13) and contract funding ($33.1 million) is associated with the Health IT Portfolio strategic goal of PCC or HIE than the other two strategic goal categories combined (n=12 and $14.5 million). Together, the six SRDs for HIE have an AHRQ lifetime budget of $30 million; each of the SRDs has the strategic goal of PCC or HIE.

There were 10 contracts with a Health IT Portfolio strategic aim of Improved Decisionmaking. Both of the 2-year, $5 million-contract projects for CDS had an AHRQ business goal of Knowledge Creation.

Health IT Portfolio support for Medication Management is lower than other categories. The portfolio did provide $1.5 million in support for a CMS-led IAA addressing medication management issues.

Excluding the larger contracts for SRD and CDS, AHRQ lifetime funding ranged from $250,000 to $1 million for the remaining 17 contracts.

Table 5: Counts and Lifetime AHRQ Funding for Health IT Contracts[16] as of 2008, by Health IT Portfolio Strategic Goal and AHRQ Business Goal

	Medication Management		Patient-Centered Care or Health Information Exchange		Improved Decisionmaking		Total	
AHRQ Business Goal	n (%)	AHRQ Funding* (%)	n (%)	AHRQ Funding* (%)	n (%)	AHRQ Funding* (%)	**N (%)**	**Total AHRQ Funding* (%)**
Implementation and Use	1	$1.0	8	$31.5	4	$1.5	**13 (52%)**	**$34.0 (71%)**
Knowledge Creation	1	$0.4	2	$0.9	2	$10	**5 (20%)**	**$11.2 (24%)**
Synthesis and Dissemination	0	$0.0	3	$0.8	4	$1.5	**7 (28%)**	**$2.3 (5%)**
Total[17]	**2 (8%)**	**$1.4 (3%)**	**13 (52%)**	**$33.1 (70%)**	**10 (40%)**	**$13.1 (28%)**	**25 (100%)**	**$47.6 (100%)**

*In millions of dollars

[16] Does not include the $22 million dollar contract to the NRC, which supports all three strategic and business goals.
[17] Totals may differ due to rounding.

AHRQ's NRC was begun in 2004 to provide direct support to AHRQ-funded health IT grants and some contracts and to provide an open-access, easy-to-use platform for disseminating findings from those research projects. Under the direction of AHRQ, the NRC is a critical and substantive component of the Health IT Portfolio. The NRC is the primary "public face" and dissemination workhorse of the Health IT Portfolio through its well-received and resource-rich Web site, www.healthIT.ahrq.gov, which went live in 2005. From 2004 through September 2009, the NRC has been primarily supported through a large multi-year contract with the National Opinion Research Center (NORC) at the University of Chicago. NORC serves as the prime contractor in partnership with other institutes, including the Regenstrief Institute, the Vanderbilt Center for Better Health, the Center for IT Leadership (CITL), and John Snow Incorporated. The NRC plays a pivotal role in supporting AHRQ's management of the Health IT Portfolio in various capacities including: quarterly telephone meetings with grantees; provision of technical assistance to grantees; generation and dissemination of synthesized reference documents, such as lessons learned and decisionmaker briefs; conducting a series of National Web conferences; organizing and posting numerous resources on the NRC Web site, etc. (For more information, see NORC's CY2008 contract-specific summary.)

V. Dissemination

A hallmark of AHRQ's Health IT Portfolio is its commitment to prompt and easy-to-use dissemination of information generated through its program, related partners, and other Federal programs. In order to fully characterize the breadth of synthesis and dissemination activities of the Health IT Portfolio, one has to include: presentations and outreach activities pursued by members of the Health IT Portfolio, the many activities led by staff of AHRQ's OCKT, and the numerous NRC-sponsored activities and Web-based postings.

There are four complementary, yet interrelated means for AHRQ-led dissemination of health IT information:

- Presentation by members of the Health IT Portfolio
- AHRQ's Office of Communications and Knowledge Transfer
- The NRC Web site
- AHRQ's Annual Meeting Conference

A. Presentations by Members of the Health IT Portfolio

Numerous presentations were made to various health IT stakeholder groups and venues, including: Healthcare Information and Management Systems Society (HIMSS); American Medical Informatics Association Conferences; and cosponsored meetings with other Federal agencies including CMS, NIH, the Department of Health and Human Services Office of the National Coordinator for Health IT (ONC), and HRSA.

B. AHRQ's Office for Communication and Knowledge Transfer (OCKT)

Staff in AHRQ's OCKT play a critical role in the synthesis and dissemination of findings from the Agency's health IT research. In addition to preparing and disseminating content-specific multi-media newscasts and press releases, OCKT staff engage in periodic systematic updates of various points-of-contact lists to ensure successful dissemination of materials as they are generated. For example, in calendar year 2008 (CY 2008), OCKT launched a new health IT e-mail list using a sophisticated e-mail subscription system. By the end of CY 2008, nearly 14,000 subscribers joined the health IT e-mail list.

To Sign Up to Receive AHRQ Health IT News and Information:

1. Go to AHRQ's homepage: www.ahrq.gov.
2. Select "E-mail Updates," located next to the red envelope on the upper right hand corner.
3. Enter your e-mail address.
4. Select "Health IT" under the "Quality & Patient Safety" heading.

Highlights from OCKT's media and marketing outreach efforts during CY 2008 are listed below:

- **Press releases:** OCKT issued five press releases on health IT research findings, tools, and other resources to various media outlets. Topics included AHRQ's study on how using electronic prescribing systems that allow doctors to select lower-cost or generic medications can lead to drug cost savings; how the implementation and evaluation of four computer-based decision-support tools can help clinicians and patients better use genetic tests to evaluate and treat breast cancer; and AHRQ's $5 million project on the development, adoption, implementation, and evaluation of best practices using CDS. Press releases are available through the press room option on the NRC Web site (www.healthit.ahrq.gov).
- **Marketing outreach:** OCKT conducted marketing outreach to key associations, Federal entities, advocacy groups, policy groups, and other stakeholders to promote relevant findings to the health IT industry. As a result, OCKT issued 15 brief e-mail announcements on important health IT findings and activities to these key audiences.

- **Media interviews and coverage:** OCKT conducted nearly 20 media interviews. There was strong media coverage by mainstream and trade publications including:
  - *iHealthBeat*
  - *Modern Healthcare's Health IT Strategist*
  - *Wall Street Journal's Market Watch*
  - *Healthcare IT News*
  - *Medical News Today*
  - *Earthtimes*
  - *Biloxi Sun Herald*
  - *Health Data Management*
  - *Newswise*
  - *Yahoo!News*
  - *Health Day*
  - *Government Health IT*

- *PC Magazine*
- *Baltimore Business Journal*
- FierceHealthIT.com
- StreetInsider.com
- FindLaw.com

- **Manuscripts:** OCKT prepared approximately 30 health IT-oriented manuscripts in various formats, including Emerging Lessons and Health IT Implementation Stories, which are available on the NRC Web site (www.healthit.ahrq.gov) under AHRQ-funded projects.

- **Journal commentaries:** Health IT Portfolio Director, P. Jon White, M.D., and AHRQ Director, Carolyn M. Clancy, M.D., co-authored a commentary, titled "Community-Based Physicians Test Safety, Workflow Benefits of E-Prescribing," for the January/February issue of *Patient Safety and Quality Healthcare* (source: http://www.psqh.com/janfeb08/ahrq.html).

- **Meeting exhibits**: OCKT participated in 12 national conferences and meetings that were relevant to the health IT community and promoted AHRQ's products and resources from its Health IT Portfolio to participants at each event.

- **E-Newsletters and Research Activities:** About 46 articles and summaries on AHRQ's health IT programmatic and research activities were featured in three Agency electronic newsletters: AHRQ's weekly *Electronic Newsletter*, AHRQ's monthly *Patient Safety and Health Information Technology E-Newsletter*, and AHRQ's monthly *Research Activities*.

- **Podcasts**. AHRQ's Healthcare411 (http://www.healthcare411.org/) is a news series that features audio podcasts on consumer-oriented, timely topics on health care quality, safety, efficiency, and health IT. Weekly, 60-second radiocasts now air on almost 300 radio stations nationwide, and a 10-minute newscast produced by AHRQ on a bi-weekly basis is shared with more than 500 professional organizations. OCKT issued seven newscasts that are relevant to the health IT community. Links to the newscasts, which include topics such as care transitions, EHRs, and telemedicine, are below:
    - Health IT – Using Technology to Improve Transitional Care
    - Implementing an Electronic Health Record System
    - A New Web Site Helps Consumers Navigate the Health Care System
    - Comparing Hospitals to Get Quality Care
    - Research News: AHRQ Unveils a New Forum for Exchanging Innovative Health Care Ideas
    - Telemedicine Project Links Rural Care Clinicians with their Counterparts in the City
    - Health Literacy Limited For Many Americans

This report briefly highlights the impact that results from AHRQ's continued efforts to market and disseminate findings from its Health IT Portfolio.

C. National Resource Center for Health IT Web Site (www.healthit.ahrq.gov)

i. NRC Web Site Content

The NRC Web site (www.healthIT.ahrq.gov) is a sentinel vehicle for the dissemination of findings across projects in AHRQ's health IT program. It is equally a platform to support outreach and conveyance of information from AHRQ and to share expertise across the multidisplinary fields that are engaged in critical aspects of health IT implementation and use in order to improve the quality and safety of health care.

Most notably, the NRC Web site is a contemporary gateway and historical repository of AHRQ's Health IT Portfolio. It is a comprehensive repository for myriad resources including AHRQ-sponsored reports and press releases, multimedia information telecasts and podcasts, funding opportunities, educational meetings—such as the periodic National Web Teleconferences—and summaries and insights of recipients of AHRQ-sponsored funding. The vast majority of material posted on the NRC Web site was generated by Health IT Portfolio-sponsored grantees or contractors. As of 2008, through the NRC Web site, information was continuously updated and organized by categories of information types, which include but are not limited to:

- **Events:** Series of both past and upcoming events related to health IT are listed with links to resources, such as meeting agendas and presentations. The list includes activities sponsored by AHRQ, such as the well-attended Web-based National Web Teleconferences featuring interactive presentations by noted experts in a particular field of health IT, and other important health IT activities such as those sponsored by the ONC. The list of upcoming events is proactively assembled and includes important professional meetings up to 1 year in advance. Special events such as the AHRQ Annual Meeting were featured with an eye-catching button on the NRC homepage.
- **AHRQ-Funded Projects:** Through this tool, one can identify groups of health IT-funded projects by health care setting, type of health IT technology, PI, State of organization conducting the research, and community type.
- **Health IT Tools:** AHRQ and its community of contractors and grantees have developed tools to help health care organizations plan for, implement, and evaluate health IT. These tools describe and recommend strategies for addressing some of the common challenges organizations encounter when working with health IT systems. The tools are freely available, but proper citation should be used when referenced on the Web or in print.
- **Knowledge Library:** The Knowledge Library contains both evidenced-based and theoretical content gathered by health IT experts. The content is organized into two categories: Core Collection and Partner Contributions. The Core Collection contains items found by AHRQ NRC experts to be of exceptional quality and central to the health IT discipline. Partner Contributions include content provided by professional societies and nonprofit organizations experienced in health IT.
- **Funding Opportunities:** This Web site lists all of AHRQ's open FOAs for health IT and provides links to other Federal grant programs such as NIH, the Department of Defense, the National Science Foundation, HRSA, and the White House Official Grant Catalog, as

well as foundation funding Web sites for the Robert Wood Johnson Foundation, California Healthcare Foundation, and the Commonwealth Fund.

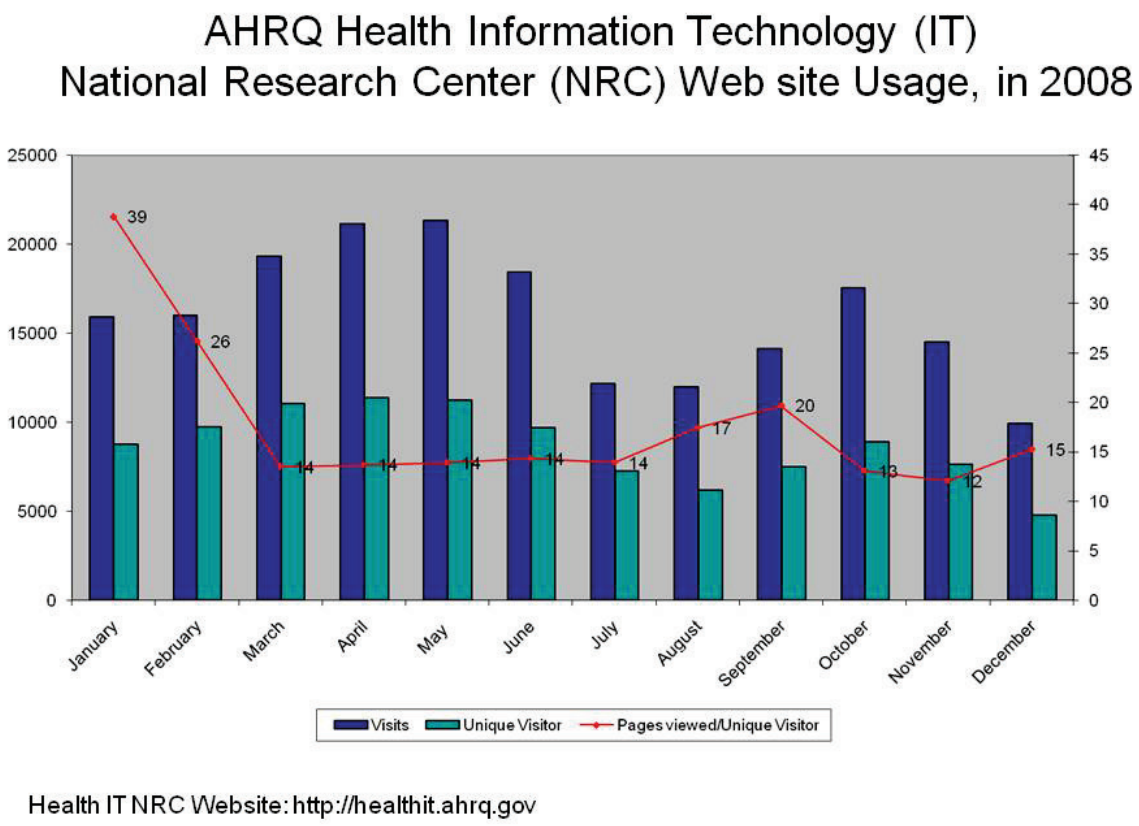
ii. Key Performance Indicators

In 2008, the NRC increased its monitoring of NRC Web site usage. The NRC monitored key performance indicators of visits to and information sought from the NRC Web site, including unique visitors, visits, and pages viewed per unique visitor by month. The NRC uses the AWStats Web usage reporting tool. It defines a unique visitor to be someone who has made at least one hit on one page of the host's Web site during a month. If the user makes several visits during a month, it is counted only once. Most of these hits are tracked using the Internet protocol (IP) of devices participating in a computer network. However, many users surf the Web using proxy servers (e.g., AOL, Comcast), and these proxies use banks of servers to hit the same page to speed surfing. AWStats has a method for resolving proxy usage and avoids over-reporting of unique visitors.

Figure 7 shows the monthly values for number of visits, unique visitors, and average page views per unique visitor. The monthly key performance indicators for visits to the NRC Web site were:

- Mean number of visitors per month in 2008 was 16,034. The lowest number of visitors was in December (9,913), and the highest number of visitors was in May (21,351).
- Mean number of unique visitors per month was 8,671. The lowest number of unique visitors was in December (4,764), and the highest number of visitors was in April (11,361).
- Mean average number of page views per unique visitors was 17.7. The lowest number of mean number of page views per unique visitor was in November (12.1), and the highest number of page views per unique visitor was in January (38.8).

Figure 7: AHRQ Health IT National Resource Center Web Site Usage, in 2008



It is not surprising that the lowest values for two of the key NRC Web usage indicators were in December 2008—mean number of visitors per month and mean number of unique visitors per month—given the fact that in 2008 there were no new AHRQ-sponsored health IT initiatives announced and the predilection for people to take vacations in December due to school closings and religious holidays. However, there are no definitive answers regarding relative increases observed among key usage indicators over time.

In January 2008, the NRC actively advertised the release of a Health IT Survey Compendium Tool in the NRC's Knowledge Library. Originally, the tool contained 48 surveys; subsequently during 2008, 11 additional surveys were added. The initial response to this resource was strong with more than 1,800 hits on the Health IT Survey Compendium Tool site in January. The number of hits dropped slightly in February and continued to fluctuate generally between 1,350 and 1,750 until July 2008. From July 2008 onward, despite the end of the marketing efforts, interest remained strong with more than 900 hits monthly. Although not verifiable, the spike in average number of pages viewed per unique visitor observed in January and February 2008 may be a result of the strong level of interest in the content of the Health IT Survey Compendium.

The key usage indicators were trending upward in September, which coincided with the Agency's publication of three new health IT-focused FOAs (HS-08-268, HS-08-269, HS-08-270) and the beginning of the school year. There was also a slight upward trend in number of pages viewed per unique visitor in December 2008, which coincided with the release of materials and registration for an upcoming Technical Assistance Presentation (that would be attended by more than 650 participants) to discuss the content and objectives of the three new health IT-directed FOAs.

In 2008, the NRC Web site did prompt some users to evaluate the utility of the NRC Web site through a Web-based customer service evaluation. To date, the number of visitors who have completed the customer-service evaluation form has been so low that it is difficult to interpret the findings. The frequency with which users were prompted to provide customer feedback was limited to avoid irritating regular visitors to the NRC Web site. However, in 2009, AHRQ is considering modifications to this customer-service feedback mechanism by not repeatedly targeting customers for the same type of feedback. Also in 2009, AHRQ is planning to evaluate more carefully which of the resources on the NRC Web site receive the most hits and are downloaded most often.

iii. AHRQ Annual Conference, 2008

The 2008 AHRQ Annual Conference, "*Promoting Quality...Partnering for Change,"* was held September 7-10, 2008, at the Bethesda North Marriott Hotel in Bethesda, Maryland. This was AHRQ's second annual agency-wide conference. Across the 4-day meeting, there were 100 interactive in-person sessions, scores of posters, and numerous manned support booths at the m*AHRQ*et Place Café. The free 4-day meeting was well attended by 1,405 registered participants. Eight hundred and fifty people attended the AHRQ Director Dr. Carolyn M. Clancy's keynote plenary session on September 8, 2008.

The conference program was organized around the six AHRQ portfolios for 2008:

- Comparative Effectiveness
- Health Information Technology (IT)
- Innovations/Emerging Issues
- Patient Safety
- Prevention and Care Management
- Value

Approximately one-fifth of the sessions (n=17) were dedicated to discourse and dissemination about Health IT Portfolio-funded projects. AHRQ's recognition of the importance of health IT grantees' participation in this meeting was emphasized by the fact that funding was provided through their grants for the required participation of the PI and one other key personnel.

1. **Sessions on Health IT.** The 17 health IT sessions addressed a variety of health IT topics (see Table 6). Approximately four dozen Health IT Portfolio-sponsored projects were represented. All of the public sessions were well attended with 30 to 76 confirmed attendees. Nine of the public session had more than 50 attendees. Five of the most highly attended health IT sessions (more than 70 attendees per session) included sessions from the three health IT strategic

research areas (Medication Management, PCC or HIE, Improved Decisionmaking). The PowerPoint presentations for these 17 health IT sessions and other portfolios presentations from this meeting can be found at http://www.ahrq.gov/about/annualmtg08/.

Table 6: Health IT Portfolio-Sponsored Sessions at AHRQ's Annual Meeting, September 2008

Sessions on Health IT	Attendees
Monday, September 8, 2008	
Considerations for Health Information Exchange (HIE) Implementation	33
Medicaid and Health IT	44
ePrescribing: Enabling Change and Measuring Impact	46
Clinical Decision Support Tools for Ambulatory Settings	52
Improving Quality of Care for Vulnerable Populations Through Health IT	55
Using Health IT to Improve Medication Management	66
Clinical Decision Support to Improve Quality	72
Enabling Quality Measurement Through Health IT	76
Tuesday, September 9, 2008	
Improving Patient-Clinician Communication Through Consumer Health IT	30
Considerations in Design of Health IT for In-Home Use	31
Stakeholder Involvement in HIE	34
Innovative Telehealth Applications to Support High Quality Care From a Distance	38
Measuring the Quality of Health Across Populations	44
Design of Patient-Centered Care (PCC) Health IT	61
Enabling Transitions in Care Through Health IT	72
Electronic Healthcare Record (EHR) Implementation and Adoption	72
Enabling Chronic Disease Care Through Health IT	75
NOTE: Persons indicating interest in attending the meeting were polled regarding interest in attending individual public sessions. Closed sessions were not polled.	

2. Health IT Grantee Meetings. It was AHRQ's intent and grantees' request that AHRQ facilitate grantees meeting one another in order to make connections and share information amongst themselves both at the meeting and afterward. As such, there was one

session for the 16 PCC grantees (HS-07-007), and another session for the 24 IQHIT grantees (HS-07-007) and 17 EQM grantees (HS-07-002) in combination. The NRC staff served as networking facilitators and unobtrusive notetakers. Given the intended informal, free-flowing atmosphere of the breakout groups and the larger number of conversations compared to the number of NRC health IT scribes who recorded them, the scribes' written account reflects a nonscientific sampling of the issues raised both within and across the PCC, IQHIT, and EQM initiatives.

Grantees indicated the desire to have similar forums via technical assistance teleconferences and national Web conferences to discuss their projects with fellow grantees. This feedback was incorporated into plans for technical assistance venues.

3. mAHRQet Place Café. The health IT booth at the m*AHRQ*et Place Café was staffed by health IT staff from the NRC, who provided 2 full days of demonstrations on how to use and search the NRC Web site (www.healthit.ahrq.gov); answered questions; and distributed 150 Health IT Portfolio folders containing 12 AHRQ publications, which provided overview and summary materials for various health IT-sponsored programs (see Table 7).

Table 7: Contents of the Health IT Folder of Information Distributed at the 2008 AHRQ Annual Meeting

Publication Title	Publication Number/Link
Health IT Brochure	(08-M064)
AHRQ NRC Web card	(06-M024)
AHRQ NRC One-Pager	(06-M023)[18]
Health IT Decisionmaker Briefs on:	
Computerized Provider Order Entry	(08-0093)
Bar Coded Medication Administration	(08-0085)
Chronic Disease Management	(08-0084)
Telehealth	(08-0045)
Patient safety/Health IT E-newsletter Card	(08-M059)
Health IT Overview Program Brief	(07-P006)
Ambulatory Safety and Quality Program Brief	(07-P014)
e-Prescribing Program Brief	(08-PFS015)
Health IT: State and Regional Demo (SRD) Projects	(07-P005)

[18] This publication is no longer available on the Web site.

VI. Conclusion

In 2008, the Health IT Portfolio provided funding to numerous organizations and individuals through various mechanisms: organizations in 39 States and the District of Columbia had active Health IT-sponsored projects, and there were 116 unique grant PIs among the 124 grants active. At the close of its fifth year, 2008, the Health IT Portfolio entered a phase of supporting projects that evaluate factors associated with successful implementation and utilization of health IT in order to improve the quality, safety, effectiveness, and efficiency of health care.

There were beginnings as well as endings in 2008. Thirteen grants and nine contracts were begun. Thirty-eight grants and two contracts, including one begun in 2008, ended. Three new grant PAs and a Special Emphasis Notice (NOT-HS-08-014) were issued to support research that examines how health IT can be used to improve health care quality in a progressively more complex fashion and to support career development, respectively. These PAs are open through November 2011. Each provides several opportunities for applicants to submit different types of grant proposals regarding the use of health IT to improve health care outcomes through small research grants (HS-08-268 [R-03]), exploratory and developmental grants (HS-08-269 [R-21]), research and demonstration grants (HS-008-270 [R18]), and career development (K-awards) and dissertation grants (R-36). With the release of these new Health IT Portfolio-sponsored Program Announcements in 2008, AHRQ expects continued and expanded work across the Health IT strategic goals and the AHRQ business goals for years to come.

The Health IT Portfolio grants active in 2008 were funded through two now-closed grant initiatives: 1) Transforming Healthcare Quality Through Information Technology (THQIT), which focused on use of health IT in rural hospitals and community health centers, and 2) Ambulatory Safety and Quality (ASQ) initiative which focused on health IT use impacting outcomes in ambulatory care settings, emergency departments, and transitions in care.

Fifty-five of the 118 grants that had been funded through the THQIT initiative were still active in 2008. Of those 55 active THQIT grants, 38 ended in 2008, leaving 17 of the THQIT grants (1 HS-04-011, 4 HS-004-012, and 12 HS-05-013) to continue their respective no-cost extension periods and conclude in fall 2009. In 2009, through an NRC Task Order award, the Health IT Portfolio will synthesize and evaluate the THQIT initiative in terms of the barriers, facilitators, and incentives for the timely completion of those grants, and the extent to which various types of health IT systems implemented through these grants have been sustained or modified, as well as other factors. The in-depth grant-specific summaries for the 55 THQIT grants active in 2008 will be an important resource to inform the conduct of that synthesis and dissemination contract.

Through its THQIT initiative, AHRQ proactively focused on health IT implementation among rural hospitals and community-based health care settings, many of which had little or no prior experience in preparing for and implementing health IT systems. During the first few years of these grants (2005-2006), through the NRC, grantees were provided myriad opportunities for one-on-one and group technical assistance on various topics including: governance; getting started and grant writing; research design and evaluation; Health IT procurement, connectivity,

privacy, security, and standards; and synthesizing, disseminating, and publishing findings. Both first-time and experienced grantees engaged in these activities and displayed a commitment toward honing new skills and building integrated communities that support health IT implementation and use.

The summaries for several THQIT grantees revealed clear and sustained dividends of AHRQ's commitment to nurture these communities and research topics in terms of the awardees' perseverance to engage communities despite travails in technology, divergent opinions, governance challenges, changing administrations within institutions, privacy and security, and other challenges. Of note were the 12 THQIT PIs who demonstrated passion and perseverance and report that they have continued to build on their research project after the completion of their grants, garnering additional resources to pursue sustainable use of health IT in their organizations. Seven of those PIs were first-time PIs.

The majority of the Health IT Portfolio's active grants in 2008 (56 percent; 69/124) were funded through one of the four RFAs of the ASQ initiative. As of the end of 2008, 57 of the 69 ASQ grants entered their second year and began to report challenges and triumphs as discussed in their individual project summaries:

- Each of the 17 Enabling Quality Measurement Through Health IT (HS-07-002) grants had concluded the first 12-15 months of their scheduled 2-year project funding periods.
- Each of the 16 grants funded through Enabling Patient-Centered Care Through Health IT (HS-07-007) had concluded their first 15 months of their scheduled 3-year project funding periods.
- Each of the 24 Improving Quality Through Clinician Use of Health IT (HS-07-006) had concluded their first 15 months of their scheduled 3-year project funding periods.
- Each of the 12 Improving Management of Individuals with Complex Healthcare Needs Through Health IT grants had concluded the first 3 months of their 3-year project funding periods.

Among the Health IT Portfolio contracts active in 2008, nine contracts across three program areas accounted for 90 percent of the Health IT Portfolio's contract funding:

- Five-year contract to support the National Research Center (NRC) for Health IT, 2004-2009. Their AHRQ lifetime funding is $22.4 million.
- Six 5-year contracts to support a State and Regional Demonstration Project for Health Information Exchange, beginning in 2004 and 2005. Their AHRQ lifetime funding is $30 million.
- Two CDS Services contracts begun in 2008 currently have AHRQ lifetime funding of $10 million with additional option years.

The remaining 17 contracts had AHRQ lifetime funding ranging from $250,000 to $1 million and typically had 2-year project periods. Individually and collectively, these projects serve to generate and disseminate much-needed insight. Moving forward in 2009, the Health IT Portfolio will pursue various new contracts to address knowledge gaps. For example, in 2009, the Health IT Portfolio will conduct three comprehensive and systematic reviews of the scientific literature to address each of the Health IT Portfolio's strategic goals.

In 2008, across the Health IT Portfolio, projects with PCC or HIE as a strategic goal dominated at 46 percent (69/149), followed by Improved Decisionmaking at 32 percent (47/149) and Medication Management at 22 percent (33/149). Fifty-eight percent (86/149) of Health IT Portfolio projects had an AHRQ business goal of Implementation and Use, followed by Knowledge Creation at 29 percent (43/149), and Synthesis and Dissemination at 13 percent (20/149). However, this one-dimensional system of characterizing projects, especially in terms of Synthesis and Dissemination, can be misleading if taken out of context. In order to characterize the breadth of synthesis and dissemination activities supported through the Health IT Portfolio one needs to consider the $22.3 million-dollar 5-year NRC contract, which addresses all three Health IT Portfolio strategic goals and AHRQ business goals, and the synthesis and dissemination efforts led by OCKT.

On average, there were 8,671 unique visitors each month to the NRC Web site (www.healthit.ahrq.gov). The series of National Web Teleconferences administered by the NRC are an example of extremely well-attended (several hundred participants per event) dissemination activities conducted by the NRC. AHRQ's OCKT was actively engaged in synthesis and dissemination of Health IT Portfolio including press releases; media interviews; and drafting and dissemination of manuscripts, including Emerging Lessons, and Health IT Implementation Stories.

Early in 2009, AHRQ's Health IT Portfolio set forth its plan to aggregate extant information in order for NRC staff, with the assistance of AHRQ staff, to develop robust and comprehensive project-specific summaries. This project has provided the Health IT Portfolio with a better understanding of the potential power of concise, but informative, project reporting that provides contextual explanations of triumphs and travails of health IT implementation and use. For example, grantees are asked to self-identify the extent to which project milestones and spending are on track on a quarterly basis using categorical values. Forty-eight percent of grantees (60/124) reported spending roughly on target. Sixteen percent (20/124) were significantly under spent by more than 20 percent, and 30 percent (37/124) were somewhat under spent by approximately 5-20 percent. Forty-one percent (41/69) of the grants reporting under spending were relatively new grants, having completed only 15 months of a 3-year project period or only 3 months of a 3-year project period. Several of these grantees explained in their 2008 summary that under spending was the result of delays in implementation of the project early on. AHRQ will continue to explore these project summaries in order to identify technical assistance guidance. Through this feedback loop of informed guidance to grantees, benefits of reporting may be better realized as compared to the inconvenience of reporting.

With the assistance of contractors and grantees, the NRC has generated 150 candid and pragmatic Health IT resources. AHRQ intends for the summaries to be informative references for implementers of health IT, prospective research applicants, and others interested in the challenges and successes of health IT implementation and use in terms of research and practical application. We encourage would-be grantees to carefully peruse project-specific summaries in their fields of interest to learn more about characteristics of successful research projects and adaptability of PIs to adjust and persevere through real world challenges and setbacks encountered in health IT implementation, use, and evaluation.

The project summaries are available on the NRC Web site (www.healthIT.ahrq.gov). Leveraging the lessons learned from this inaugural project, AHRQ hopes to provide 2009 updates of all continuing and new projects sponsored by the Health IT Portfolio in 2010.

There are large and diversified groups of stakeholders committed to successful health IT implementation in order to achieve measurable and sustained improvement in the quality and safety of health care. AHRQ encourages you to explore the NRC Web site and sign up for the AHRQ Health IT Portfolio Listserve to receive updates on research findings and funding opportunities (see instructions in Section V. b. OCKT). AHRQ looks forward to enhanced and expanded participation by many in AHRQ's Health IT Portfolio activities during this defining moment in the evolution of health IT.

VII. Grant-Specific Summaries

This section contains project tables for the 124 AHRQ-funded grants active in calendar year 2008.

Grants are organized by one of three Health IT Portfolio strategic goals, which are as follows:

1. **Medication Management:** To develop and disseminate health IT evidence and evidence-based tools to improve the quality and safety of medication management via the integration and utilization of medication management systems and technologies.

2. **Patient-Centered Care (PCC) or Health Information Exchange (HIE):** To develop and disseminate health IT evidence and evidence-based tools to support patient-centered care, the coordination of care across transitions in care settings, and the use of electronic exchange of health information to improve quality of care.

3. **Improved Decisionmaking:** To develop and disseminate health IT evidence and evidence-based tools to improve health care decisionmaking through the use of integrated data and knowledge management.

Within each strategic goal section, grants are organized by AHRQ business goal, which include: Implementation and Use, Knowledge Creation, and Synthesis and Dissemination. Grants that were complete as of December 2008 are listed first, followed by those grants that continue into calendar year 2009. Grants within these categories are organized by PI's last name, first name. The following Project Tables provide information on the Project Title, Principal Investigator, and Funding Opportunity Announcement, as well as listing whether the grant was completed in 2008.

Every grant has a unique project-specific summary, which contains relevant information about the grant. These summaries can be found on the AHRQ NRC Web site(www.healthit.ahrq.gov). Each project-specific summary uses headers to display basic project information, including the Project Title, Principal Investigator, Organization, Grant Number, Mechanism, Project Period, and AHRQ Funding Amount. The header also indicates

whether the summary represents the project's status as of December 2008 or as of the conclusion of the grant. The text of the summary contains information on the Health IT Portfolio strategic and AHRQ business goals addressed by the project, as well as a project summary. Additional headers are used to frame other elements of the project summary including: Specific Aims and the status of progress in achieving those aims, 2008 Activities, Preliminary Impact and Findings, and Selected Outputs. In addition, each grantee's project-specific summary includes information on their most recent self-reported status from the ARRS system, which provides a snapshot of the grant's progress toward project milestones and the status of their spending for CY 2008.

To find project-specific summaries on AHRQ's National Resource Center for Health IT Web site (www.healthit.ahrq.gov), select "AHRQ-Funded Projects" or the United States map, then follow the instructions and make selections on the AHRQ-Funded Projects page.

Table 8: Grants (Medication Management)

HEALTH IT PORTFOLIO STRATEGIC GOAL:

Develop and disseminate health IT evidence and evidence-based tools to improve the quality and safety of medication management via the integration and utilization of medication management systems and technologies (Medication Management).

AHRQ BUSINESS GOAL: IMPLEMENTATION AND USE			
Completed in 2008	**Principal Investigator**	**Project Title**	**Funding Opportunity Announcement**
Yes	Brown, C Andrew, MD, MPH	Detecting Med (Medication) Errors in Rural Hospitals Using Technology	HS04-011
Yes	Davison, Rod	Tulare District Hospital Rural Health Electronic Medical Record Consortium	HS04-011
Yes	Gurwitz, Jerry, MD	Health Information Technology in the Nursing Home	HS04-012
Yes	Jose, James, MD	Comprehensive Information Technology (IT) Solution for Quality and Patient Safety	HS04-011
No	Carrow, Grant, PhD	Enabling Electronic Prescribing and Enhanced Management of Controlled Medications	HS07-006
No	Gardner, William, PhD	Pharmaceutical Safety Tracking (PhaST): Managing Medications for Patient Safety	HS07-006
No	Gorman, Paul, MD	RxSafe: Shared Medication Management and Decision Support for Rural Clinicians	HS07-006
No	Gurwitz, Jerry, MD	Improving Post-Hospital Medication Management of Older Adults with Health Information Technology	HS07-006
No	Kaushal, Rainu, MD	Electronic Prescribing and Electronic Transmission of Discharge Medication Lists	HS07-006
No	Lapane, Kate, PhD	Optimizing Medication History Value in Clinical Encounters with Elderly Patients	HS07-006
No	Lobach, David, MD, PhD, MS	Improving Quality through Decision Support for Evidence-Based Pharmacotherapy	HS07-006
No	Nebeker, Jonathan, MD	Veterans Administration (VA) Integrated Medication Manager	HS07-006
No	Ornstein, Steven, MD	Medication Safety in Primary Care Practice - Translating Research into Practice	HS07-006
No	Trivedi, Madhukar, MD	Using Information Technology to Provide Measurement Based Care for Chronic Illness	HS07-006
AHRQ BUSINESS GOAL: KNOWLEDGE CREATION			
Completed in 2008	**Principal Investigator**	**Project Title**	**Funding Opportunity Announcement**
Yes	Arora, Sanjeev, MD	Project ECHO: Extension for Community Healthcare Outcomes	HS04-011
Yes	Bates, David W, MD MSc	Statewide Implementation of Electronic Health Records	HS04-011

Yes	Ferranti, Jeffrey, MD, MS	Automated Adverse Drug Event Detection and Intervention	HS04-011
Yes	Gandhi, Tejal K, MD, MPH	Improving Safety and Quality with Outpatient Order Entry	HS04-012
Yes	Gazelle, G Scott, MD, MPH, PhD	Value of Imaging-Related Information Technology	HS04-012
Yes	Hayden, Avis, PhD	Improving Healthcare Quality via Information Technology	HS04-011
Yes	Koss, Richard, MA	Toward An Optimal Patient Safety Information System	HS04-012
Yes	Reiling, John G, MHA, MBA, PhD	Improving Patient Safety/Quality with Health Information Technology Implementation	HS04-011
Yes	Schadow, Gunther, MD, PhD	Value of New Drug Labeling Knowledge for e-Prescribing	HS04-012
Yes	Thomas, Eric J, MD, MPH	Measuring the Value of Remote Intensive Care Unit (ICU) Monitoring	HS04-012
Yes	Ward, Marcia M, PhD	Health Information Technology Value in Rural Hospitals	HS04-012
No	Carayon, Pascale, PhD	Computer-Based Provider Order Entry (CPOE) Implementation in Intensive Care Units (ICUs)	HS04-012
AHRQ BUSINESS GOAL: SYNTHESIS AND DISSEMINATION			
Completed in 2008	**Principal Investigator**	**Project Title**	**Funding Opportunity Announcement**
Yes	Gorman, Paul N, MD	Using Information Technology (IT) to Improve Medication Safety for Rural Elders	HS04-011
No	Fischer, Michael, MD	Impact of Office-based e-Prescribing on Prescribing Processes and Outcomes	HS07-006
No	Johnson, Kevin, MD, MS	Safety Through Enhanced E-PreScribing Tools (STEPStools): Developing Web Services for Safe Pediatric Dosing	HS07-006
No	Schwarz, Eleanor, MD	Harnessing Health Information Technology to Prevent Medication-Induced Birth Defects	HS07-006
No	Singh, Gurdev, PhD, MsC	A Systems Engineering Approach: Improving Medication Safety	HS07-006

Table 9: Grants (PCC HIE)

HEALTH IT PORTFOLIO STRATEGIC GOAL:

Develop and disseminate health IT evidence and evidence-based tools to support patient-centered care (PCC), the coordination of care across transitions in care settings, and the use of electronic exchange of health information (HIE) to improve quality of care (PCC HIE).

AHRQ BUSINESS GOAL: IMPLEMENTATION AND USE			
Completed in 2008	**Principal Investigator**	**Project Title**	**Funding Opportunity Announcement**
Yes	Huck, Jacqueline, RN, MPH	A Rural Healthcare Information Technology Cooperative to Promote Clinical Improvement	HS04-012
Yes	Jones, Mark H, MS, MBA	Implementation of a Health Improvement Collaboration in Cherokee County, Oklahoma	HS05-013
Yes	Mathews, Craig Alonzo	Service Integration	HS05-013
Yes	Samore, Matthew H, MD	Rural Trial of Clinic Order Entry with Decision Support	HS04-012
No	Adams, William, MD	Conversational Information Technology (IT) for Better, Safer Pediatric Primary Care	HS07-007
No	Baker, Wende M, Med	Chronic Mental Health: Improving Outcomes through Ambulatory Care Coordination	HS08-002
No	Bergner, Gregory W, MD, FAAFP	El Dorado County Safety Net Technology Project / Access El Dorado (ACCEL)	HS05-013
No	Bove, Alfred, MD	Using a Telemedicine System to Promote Patient Care Among Underserved Individuals	HS07-007
No	Burns, Edith, MD	Enhancing self-management of T2DM with an Automated Reminder and Feedback System	HS07-007
No	Chrischilles, Elizabeth, PhD	Personal Health Records and Elder Medication Use Quality	HS07-007
No	Chueh, Henry, MD	Ambulatory Care Compact to Organize Risk and Decisionmaking (ACCORD)	HS07-007
No	Ciemins, Elizabeth, PhD	Evaluation of Effectiveness of an Health Information Technology-based Care Transition Information Transfer System	HS08-002
No	Druss, Benjamin, MD, MPH	An Electronic Personal Health Record for Mental Health Consumers	HS08-002

No	Feldman, Penny, PhD	Improving Medication Management Practices and Care Transitions through Technology	HS08-002
No	Field, Terry, DSc	Using Health Information Technology to Improve Transitions of Complex Elderly Patients from Skilled Nursing Facilities (SNF) to Home	HS08-002
No	Forrest, Christopher, MD	Improving Otitis Media Care with Electronic Health Record (EHR)-based Clinical Decision Support and Feedback	HS07-006
No	Friedman, Robert, MD	A Longitudinal Telephone and Multiple Disease Management System to Improve Ambulatory Care	HS08-002
No	Garber, Lawrence D, MD	Secure Architecture For Exchanging Health Information (SAFEHealth)	HS04-011
No	Hahn, Elizabeth, MA	Implementing a low-literacy, multimedia Information Technology (IT) system to enhance patient-centered cancer care	HS07-007
No	Jack, Brian, MD	Virtual Patient Advocate to Reduce Ambulatory Adverse Drug Events	HS07-007
No	Kahn, James, MD	Randomized Controlled Trial Embedded in an Electronic Health Record	HS08-002
No	Krist, Alexander, MD	An Interactive Preventive Health Record (IPHR) to Promote Patient-Centered Care	HS07-007
No	Lapane, Kate, PhD	Tailored DVD to Improve Medication Management for Low Literate Elderly Patients	HS07-007
No	Lewis, Thomas L, MD	Metro DC Health Information Exchange (MeDHIX)	HS05-013
No	Lobach, David, MD, PhD, MS	Improving Care Transitions for Complex Patients through Decision Support	HS08-002
No	Mehr, David, MD, MS	Using Health Information Technology to Improve Ambulatory Chronic Disease Care	HS07-006
No	Mertens, Ann, PhD	Improving Pediatric Cancer Survivorship Care Through SurvivorLink	HS08-002
No	Mold, James, MD	Impact of a Wellness Portal on the Delivery of Patient-Centered Prospective Care	HS07-007
No	Nashan, Georges	The Chronic Care Technology Project	HS05-013
No	Richards, Francis M, CASCP	Regional Approach for Transforming Healthcare Quality through Information Technology (THQIT) in Rural Settings	HS05-013
No	Ritchie, Christine, MD, MSPH	E-Coaching: Interactive Voice Response (IVR)-Enhanced Care Transition Support for Complex Patients	HS08-002
No	Samore, Matthew, MD	Patient-Centered Informatics System to Enhance Health Care in Rural Communities	HS07-007

No	Schillinger, Dean, MD	Harnessing Health Information Technology for Self-Management Support and Medication Activation in a Medicaid Health Plan	HS07-007
No	Sequist, Thomas, MD, MPH	Can Risk Score Alerts Improve Office Care for Chest Pain?	HS07-006
No	Shank, Nancy C, MBA	Health Information Exchange: A Frontier Model	HS05-013
No	Singh, Hardeep, MD, MPH	Using Electronic Data to Improve Care of Patients with Known or Suspected Cancer	HS08-002
No	Sodomka, Patricia, MHA, FACHE	Using An Electronic Personal Health Record To Empower Patient With Hypertension	HS07-007
No	Stepnowsky, Carl, PhD	Enabling Sleep Apnea Patient-Centered Care Via an Internet Intervention	HS07-007
No	Tang, Paul, MD	Patient-Centered Online Disease Management Using a Personal Health Record System	HS07-007
No	Veline, James, MS, MA	Electronic Prescribing and Decision Support to Improve Rural Primary Care Quality	HS07-006
No	Wolf, Michael, PhD	Using Information Technology for Patient-Centered Communication and Decisionmaking about Medications	HS07-007
AHRQ BUSINESS GOAL: KNOWLEDGE CREATION			
Completed in 2008	**Principal Investigator**	**Project Title**	**Funding Opportunity Announcement**
Yes	Blair, A John, MD	Taconic Health Information Network and Community (THINC)	HS04-011
Yes	Lobach, David F, MD, PhD, MS	Showing Health Information Value in a Community Network	HS04-012
Yes	McConnochie, Kenneth M, MD, MPH	Valuation of Primary Care-Integrated Telehealth	HS04-012
Yes	Sims, Thomas R, MS	Improving Rural Healthcare: Implementing Innovative Integration Solutions	HS05-013
No	Deluca, Michael, MBA, MS	Ambulatory Electronic Medical Record and Shared Access	HS05-013
No	Lozzio, Carmen B, MD, FACMG	Improving Quality Care for Children with Special Needs	HS05-013
No	Middleton, Blackford, MD, MPH, MSc	Evaluating Smart Forms and Quality Dashboards in an Electronic Health Record (EHR)	HS04-012
No	Overhage, Joseph Marcus, MD	Value of Health Information Exchange in Ambulatory Care	HS04-012

No	Rachal, Valerie, RN, PhD	Creating Online Newborn Intensive Care Unit (NICU) Networks to Educate, Consult & Team	HS05-013
AHRQ BUSINESS GOAL: SYNTHESIS AND DISSEMINATION			
Completed in 2008	**Principal Investigator**	**Project Title**	**Funding Opportunity Announcement**
No	Simon, Steven, MD, MPH	Improving Laboratory Monitoring in Community Practices: A Randomized Trial	HS07-006
Yes	Goldberg, Lee Richard, MD, MPH	Home Heart Failure (HF) Care: Comparing Patient-Driven Technology Models	HS04-012
Yes	Gunter, Margaret J, PhD	New Mexico Health Information Collaborative (NMHIC)	HS04-011
No	Connelly, Donald Patrick, MD, PhD	A Community-shared Clinical Abstract to Improve Care	HS05-013
No	Guise, Jeanne-Marie M, MD	Improving Safety and Quality with Integrated Technology	HS04-012

Table 10: Grants (Improved Descisionmaking)

HEALTH IT PORTFOLIO STRATEGIC GOAL:

Develop and disseminate health IT evidence and evidence-based tools to improve health care decisionmaking through the use of integrated data and knowledge management (Improved Decisionmaking).

AHRQ BUSINESS GOAL: IMPLEMENTATION AND USE			
Completed in 2008	**Principal Investigator**	**Project Title**	**Funding Opportunity Announcement**
Yes	Bentley, Polly M, RN, RHIT	Connecting Healthcare in Central Appalachia	HS04-011
Yes	Mingle, Daniel B, MD	Improving Health Information Technology Implementation in a Rural Health System	HS04-011
Yes	Mullen, R'nee	Rural Community Partnerships-Electronic Medical Record Implementation Project	HS04-011
Yes	O'Brien, John, MBA	Electronic Health Record Implementation for Continuum of Care in Rural Iowa	HS05-013
Yes	Waters, Teresa, PhD	Technology Exchange for Cancer Health Network (TECH-Net)	HS04-011
No	Baker, David, MD	Using Precision Performance Measurement to Conduct Focused Quality Improvement	HS07-006
No	Davidson, Arthur, MD	Colorado Associated Community Health Information Exchange (CACHIE)	HS07-002
No	Dorr, David, MD, MS	Enhancing Complex Care through an Integrated Care Coordination Information System	HS08-002
No	Fox, Karen, PhD	The Bettering Lives Utilizing Electronic Systems (BLUES) Project: Improving Diabetes Outcomes in Mississippi with Health Information Technology	HS07-006
No	Fricton, James, DDS, MS	eHealth Records to Improve Dental Care for Patients with Chronic Illnesses	HS07-006
No	Kopal, Helene, MPH, MPA	Evaluation of a Computerized Clinical Decision Support System and Electronic Health Record (EHR)-Linked Registry to Improve Management of Hypertension in Community-Based Health Centers	HS07-006
No	McColm, Denni, MBA	Standardization and Automatic Extraction of Quality Measures in an Ambulatory Electronic Medical Record	HS07-002
No	Mostashari, Farzad, MD	Bringing Measurement to the Point of Care	HS07-002

No	Nocella, Kiki Coyne, PhD, MHA	Accessing the Cutting Edge: Implementing Technology to Transform Quality in SE Kern	HS05-013
No	Pohl, Joanne, PhD	A Partnership for Clinician Electronic Health Record (EHR) Use and Quality of Care	HS07-006
No	Sakuda, Christine M, MBA	Holomua Project Improving Transitional Care in Hawaii	HS05-013
No	Wheeler, Donald A, MHA, FACHE	Critical Access Hospital Partnership Health Information Technology Implementation	HS05-013
AHRQ BUSINESS GOAL: KNOWLEDGE CREATION			
Completed in 2008	**Principal Investigator**	**Project Title**	**Funding Opportunity Announcement**
Yes	Bryant, Charles A, MD	INTEGRIS Telewoundcare Network	HS04-011
Yes	Cebul, Randall D, MD	Trial of Decision Support to Improve Diabetes Outcomes	HS04-012
Yes	Ferris, Timothy G, MD, MPH	Improving Pediatric Safety and Quality with Healthcare Information Technology	HS04-012
Yes	Hsu, John, MD, MBA, MSCE	Impact of Health Information Technology on Clinical Care	HS04-012
Yes	Keenan, Gail M, Phd, RN	Health Information Technology Support for Safe Nursing Care	HS04-012
Yes	Stuen, Cynthia, PhD, DSW	Creating an Evidence Base for Vision Rehabilitation	HS04-011
No	Berner, Eta, EdD	Closing the Feedback Loop to Improve Diagnostic Quality	HS07-002
No	Hazlehurst, Brian, MD	Automating Assessment of Asthma Care Quality	HS07-002
No	Kaushal, Rainu, MD	Developing and Using Valid Clinical Quality Metrics for Health Information Technology (Health IT) with Health Information Exchange (HIE)	HS07-002
No	Kilbridge, Peter, MD	Surveillance for Adverse Drug Events in Ambulatory Pediatrics	HS07-002
No	Kmetik, Karen, PhD	Cardio-Hit Phase II	HS07-002
No	Lazarus, Ross, MBBS, MPH, Mmed, GDCompSci	Electronic Support for Public Health - Vaccine Adverse Event Reporting System (ESP:VAERS)	HS07-002
No	Schneider, Eric, MD	Massachusetts Quality E-Measure Validation Study	HS07-002

No	Thomas, Eric, MD	Using Electronic Records to Detect and Learn from Ambulatory Diagnostic Errors	HS07-002
No	Turchin, Alexander, MD	Monitoring Intensification of Treatment for Hyperglycemia and Hyperlipidemia	HS07-002
No	Vogt, Thomas, MD	Using Information Technology (IT) to Improve the Quality of Cardiovascular Disease (CVD) Prevention and Management	HS07-002
No	Weiner, Mark, MD	Crossing the Quality Assessment Chasm: Aligning Measured and True Quality of Care	HS07-002
AHRQ BUSINESS GOAL: SYNTHESIS AND DISSEMINATION			
Completed in 2008	**Principal Investigator**	**Project Title**	**Funding Opportunity Announcement**
Yes	Horn, Susan D, PhD	Nursing Home Information Technology (IT): Optimal Medication and Care Delivery	HS04-011
No	Lehmann, Christoph, MD	Medication Monitoring for Vulnerable Populations via Information Technology (MMITI)	HS07-002
No	Logan, Judith, MD	Improving Quality In Cancer Screening: The Excellence Report For Colonoscopy	HS07-002
No	Selby, Joe, MD	Feedback of Treatment Intensification Data to Reduce Cardiovascular Disease Risk	HS07-002

VIII. Contract-Specific Summaries

This section contains project tables for the 26 AHRQ-funded contracts active in calendar year 2008.

Contracts are organized by one of three Health IT Portfolio strategic goals, which are as follows:

1. **Medication Management:** To develop and disseminate health IT evidence and evidence-based tools to improve the quality and safety of medication management via the integration and utilization of medication management systems and technologies.

2. **Patient-Centered Care (PCC) or Health Information Exchange (HIE):** To develop and disseminate health IT evidence and evidence-based tools to support patient-centered care, the coordination of care across transitions in care settings, and the use of electronic exchange of health information to improve quality of care.

3. **Improved Decisionmaking:** To develop and disseminate health IT evidence and evidence-based tools to improve health care decisionmaking through the use of integrated data and knowledge management.

Within each strategic goal section, contracts are organized by AHRQ business goal, which include: Implementation and Use, Knowledge Creation, and Synthesis and Dissemination. Contracts that were complete as of December 2008 are listed first, followed by those contracts that continue into calendar year 2009. Contracts within these categories are organized by PI's last name, first name. The following Project Tables provide information on the Project Title, Principal Investigator, and Contract Number, as well as listing whether the grant was completed in 2008.

Every contract has a unique project-specific summary, which contains relevant information about the contract. These summaries can be found on the AHRQ NRC Web site (www.healthit.ahrq.gov). Each project-specific summary uses headers to display basic project information including the Project Title, Principal Investigator, Organization, Contract Number, Project Period, and AHRQ Funding Amount. The header also indicates whether the summary represents the project's status as of December 2008 or as of the conclusion of the contract. The text of the summary contains information on the strategic and business goals addressed by the project, as well as a project summary. Other information that can be found in each summary includes: Specific Aims and the status of progress in achieving those aims, 2008 Activities, Preliminary Impact and Findings, and Selected Outputs.

To find project-specific summaries on AHRQ's National Resource Center for Health IT Web site (www.healthit.ahrq.gov), select "AHRQ-Funded Projects" or the United States map, then follow the instructions and make selections on the AHRQ-Funded Projects page.

Table 11: Contracts (Medication Management)

HEALTH IT PORTFOLIO STRATEGIC GOAL:

Develop and disseminate health IT evidence and evidence-based tools to improve the quality and safety of medication management via the integration and utilization of medication management systems and technologies (Medication Management).

AHRQ BUSINESS GOALS: IMPLEMENTATION AND USE, KNOWLEDGE CREATION, SYNTHESIS AND DISSEMINATION			
Completed in 2008	**Principal Investigator**	**Project Title**	**Contract Number**
No	Gaylin, Dan, MPA	National Resource Center for Health Information Technology (NRC)	290-04-0016
AHRQ BUSINESS GOAL: IMPLEMENTATION AND USE			
Completed in 2008	**Principal Investigator**	**Project Title**	**Contract Number**
No	Bell, Douglas, MD	Building an Implementation Toolset for E-Prescribing	290-06-0017-4
No	Davidson, Arthur, MD, MSPH	Colorado Connecting Communities – Health Information Collaborative State and Regional Demonstration Project (currently known as CORHIO)	290-04-0014
No	Frisse, Mark, MD	State and Regional Demonstrations in Health Information Technology (currently known as Mid-South eHealth Alliance – MSeHA)	290-04-0006
No	Overhage, Marc, MD, PhD	An Evolving Statewide Indiana Information Infrastructure State and Regional Demonstration Project (currently known as Indiana Network for Patient Care – INPC)	290-04-0015
No	Perez, Gina	Delaware Health Information Network (DHIN) State and Regional Demonstration Project	290-05-0012
No	Root, Jan, PhD	Improving Communications Between Health Care Providers via a Statewide Infrastructure: Utah Health Information Network (UHIN) Clinical State and Regional Demonstration Project (currently known as UHIN)	290-04-0002
No	Zimmerman, Amy, MPH	Rhode Island Statewide Health Information Exchange (HIE) State and Regional Demonstration Project (currently known as current*care*)	290-04-0007
AHRQ BUSINESS GOAL: KNOWLEDGE CREATION			
Completed in 2008	**Principal Investigator**	**Project Title**	**Contract Number**
No	Simonatitis, Linas, MD, MS	Improving Lab Follow-up by Delivering an Enhance Medication List to Outpatient Physician Practices	290-06-0013-2

Table 12: Contracts (PCC HIE)

HEALTH IT PORTFOLIO STRATEGIC GOAL:

Develop and disseminate health IT evidence and evidence-based tools to support patient-centered care (PCC), the coordination of care across transitions in care settings, and the use of electronic exchange of health information (HIE) to improve quality of care (PCC HIE).

AHRQ BUSINESS GOALS: IMPLEMENTATION AND USE, KNOWLEDGE CREATION, SYNTHESIS AND DISSEMINATION			
Completed in 2008	**Principal Investigator**	**Project Title**	**Contract Number**
No	Gaylin, Dan, MPA	National Resource Center for Health Information Technology (NRC)	290-04-0016
AHRQ BUSINESS GOAL: IMPLEMENTATION AND USE			
Completed in 2008	**Principal Investigator**	**Project Title**	**Contract Number**
No	Bell, Douglas, MD	Use of Electronic Referral System to Improve the Outpatient Primary Care-Specialty Care Interface	290-06-0017-3
No	Brottman, Gail, MD	Improving Asthma Care in an Integrated Safety Net through a Commercially Available Electronic Medical Record	290-06-0020-5
AHRQ BUSINESS GOAL: KNOWLEDGE CREATION			
Completed in 2008	**Principal Investigator**	**Project Title**	**Contract Number**
No	Kerwin, Jeffrey, PhD	Consumer Engagement in Developing Electronic Health Information Systems	PSC TO#07R000131
No	Spranca, Mark, PhD	Conducting Measurement Activities for Health Information Technology Initiative	PSC TO#07R000150
AHRQ BUSINESS GOAL: SYNTHESIS AND DISSEMINATION			
Completed in 2008	**Principal Investigator**	**Project Title**	**Contract Number**
No	Fontaine, Pat, MD	Participation by Primary Care Practices in Health Information Exchange in Minnesota	290-07-10010-2
No	Jimison, Holly B., PhD	Barriers and Drivers of Health Information Technology Use for the Elderly, Chronically Ill and Underserved	290-02-0024-9
No	West, David, PhD	Participation by Primary Care Practices in Health Information Exchange in Colorado	290-07-10008-3

Table 13: Contracts (Improved Decisionmaking)

HEALTH IT PORTFOLIO STRATEGIC GOAL:

Develop and disseminate health IT evidence and evidence-based tools to improve health care decisionmaking through the use of integrated data and knowledge management (Improved Decisionmaking).

AHRQ BUSINESS GOALS: IMPLEMENTATION AND USE, KNOWLEDGE CREATION, SYNTHESIS AND DISSEMINATION			
Completed in 2008	**Principal Investigator**	**Project Title**	**Contract Number**
No	Gaylin, Dan, MPA	National Resource Center for Health Information Technology (NRC)	290-04-0016
AHRQ BUSINESS GOAL: IMPLEMENTATION AND USE			
Completed in 2008	**Principal Investigator**	**Project Title**	**Contract Number**
No	Doebbeling, Bradley, MD, MSc, FACP	Implementing and Improving the Integration of Decision Support into Outpatient Clinical Workflow	290-06-0013-3
No	Hsiao, Allen, MD, FAAP	Secure Messaging in a Pediatric Respiratory Medicine Setting	290-06-0015-2
No	McDonell, Cheryl J, PhD	Use of Dense Display of Data and Information Design Principles in Primary Care Healthcare Information Technology Systems	290-07-10073-1
No	Nemeth, Lynne, PhD, RN	Implementation and Evaluation of Standing Orders Using Health Information Technology	290-07-10015-2
AHRQ BUSINESS GOAL: KNOWLEDGE CREATION			
Completed in 2008	**Principal Investigator**	**Project Title**	**Contract Number**
No	Middleton, Blackford, MD, MPH, MSc	Clinical Decision Support Consortium	290-08-10010
No	Shiffman, Rick, MD, MCIS	Guidelines into Decision Support (GLIDES)	290-08-10011
AHRQ BUSINESS GOAL: SYNTHESIS AND DISSEMINATION			
Completed in 2008	**Principal Investigator**	**Project Title**	**Contract Number**
Yes	Black, Shirley	Patient Safety Electronic Health Records Meeting	290-08-10019
No	Fischer, Henry, MD	Assessing the Impact of a Dynamic Chronic Care Registry on Quality of Care	290-06-0020-6
No	Hasnain-Wynia, Romana, PhD	Improving Quality through Health Information Technology: Testing the Feasibility and Assessing the Impact of Using Existing Health Information Technology Infrastructure for Better Care Delivery	290-06-0022-3
No	Rosenthal, Daniel	Health Information Technology Enablement of Quality Measurement: Health Information Technology Expert Panel	290-07-10017-3

IX. References

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Appendix A: Index of Principal Investigators' Projects

Table 14: Grants and Contracts by Principal Investigator Last Name, First Name

Principal Investigator	Project Title
Adams, William, MD	Conversational Informational Technology (IT) for Better, Safer Pediatric Primary Care
Arora, Sanjeev, MD	Project ECHO: Extension for Community Healthcare Outcomes
Baker, David, MD	Using Precision Performance Measurement to Conduct Focused Quality Improvement
Baker, Wende M, MEd	Chronic Mental Health: Improving Outcomes through Ambulatory Care Coordination
Bates, David W, MD MSc	Statewide Implementation of Electronic Health Records
Bell, Douglas, MD	Building an Implementation Toolset for E-Prescribing
Bell, Douglas, MD	Use of Electronic Referral System to Improve the Outpatient Primary Care-Specialty Care Interface
Bentley, Polly M, RN, RHIT	Connecting Healthcare in Central Appalachia
Bergner, Gregory W, MD, FAAFP	El Dorado County Safety Net Technology Project/Access El Dorado (ACCEL)
Berner, Eta, EdD	Closing the Feedback Loop to Improve Diagnostic Quality
Black, Shirley	Patient Safety Electronic Health Records Meeting
Blair, A John, MD	Taconic Health Information Network and Community (THINC)
Bove, Alfred, MD	Using a Telemedicine System to Promote Patient Care Among Underserved Individuals
Brottman, Gail, MD	Improving Asthma Care in an Integrated Safety Net through a Commercially Available Electronic Medical Record
Brown, C Andrew, MD, MPH	Detecting Med (Medication) Errors in Rural Hospitals Using Technology
Bryant, Charles A, MD	INTEGRIS Telewoundcare network
Burns, Edith, MD	Enhancing Self-Management of T2DM with an Automated Reminder and Feedback System
Carayon, Pascale, PhD	Computer-Based Provider Order Entry (CPOE) Implementation in Intensive Care Units (ICUs)
Carrow, Grant, PhD	Enabling Electronic Prescribing and Enhanced Management of Controlled Medications
Cebul, Randall D, MD	Trial of Decision Support to Improve Diabetes Outcomes
Chrischilles, Elizabeth, PhD	Personal Health Records and Elder Medication Use Quality
Chueh, Henry, MD	Ambulatory Care Compact to Organize Risk and Decision-making (ACCORD)
Ciemins, Elizabeth, PhD	Evaluation of Effectiveness of an Health Information Technology-based Care Transition Information Transfer System
Connelly, Donald Patrick,	A Community-shared Clinical Abstract to Improve Care

Principal Investigator	Project Title
MD, PhD	
Davidson, Arthur, MD, MSPH	Colorado Associated Community Health Information Exchange (CACHIE)
Davidson, Arthur, MD, MSPH	Colorado Connecting Communities – Health Information Collaborative State and Regional Demonstration Project (currently known as CORHIO)
Davison, Rod	Tulare District Hospital Rural Health Electronic Medical Record Consortium
Deluca, Michael, MBA, MS	Ambulatory Electronic Medical Record and Shared Access
Doebbeling, Bradley, MD, MS	Implementing and Improving the Integration of Decision Support into Outpatient Clinical Workflow
Dorr, David, MD, MS	Enhancing Complex Care through an Integrated Care Coordination Information System
Druss, Benjamin, MD, MPH	An Electronic Personal Health Record for Mental Health Consumers
Feldman, Penny, PhD	Improving Medication Management Practices and Care Transitions through Technology
Ferranti, Jeffrey, MD, MS	Automated Adverse Drug Event Detection and Intervention
Ferris, Timothy G, MD, MPH	Improving Pediatric Safety and Quality with Healthcare Information Technology
Field, Terry, DSc	Using Health Information Technology to Improve Transitions of Complex Elderly Patients from Skilled Nursing Facilities (SNF) to Home
Fischer, Henry, MD	Assessing the Impact of a Dynamic Chronic Care Registry on Quality of Care
Fischer, Michael, MD	Impact of Office-Based e-Prescribing on Prescribing Processes and Outcomes
Fontaine, Pat, MD	Participation by Primary Care Practices in Health Information Exchange in Minnesota
Forrest, Christopher, MD	Improving Otitis Media Care with Electronic Health Record (EHR)-based Clinical Decision Support and Feedback
Fox, Karen, PhD	The Bettering Lives Utilizing Electronic Systems (BLUES) Project: Improving Diabetes Outcomes in Mississippi with Health Information Technology
Fricton, James, DDS, MS	eHealth Records to Improve Dental Care for Patients with Chronic Illnesses
Friedman, Robert, MD	A Longitudinal Telephone and Multiple Disease Management System to Improve Ambulatory Care
Frisse, Mark, MD, MS, MBA	State and Regional Demonstrations in Health Information Technology (currently known as Mid-South eHealth Alliance – MSeHA)
Gandhi, Tejal K, MD, MPH	Improving Safety and Quality with Outpatient Order Entry
Garber, Lawrence D, MD	Secure Architecture For Exchanging Health Information (SAFEHealth)
Gardner, William, PhD	Pharmaceutical Safety Tracking (PhaST): Managing Medications for Patient Safety
Gaylin, Dan, MPA	National Resource Center for Health Information Technology (NRC)
Gazelle, G Scott, MD, MPH, PhD	Value of Imaging-Related Information Technology
Goldberg, Lee Richard, MD, MPH	Home Heart Failure (HF) Care: Comparing Patient-Driven Technology Models
Gorman, Paul, MD	Using Information Technology (IT) to Improve Medication Safety for Rural Elders

Principal Investigator	Project Title
Gorman, Paul, MD	RxSafe: Shared Medication Management and Decision Support for Rural Clinicians
Guise, Jeanne-Marie M, MD	Improving Safety and Quality with Integrated Technology
Gunter, Margaret J, PhD	New Mexico Health Information Collaborative
Gurwitz, Jerry, MD	Health Information Technology in the Nursing Home
Gurwitz, Jerry, MD	Improving Post-Hospital Medication Management of Older Adults with Health Information Technology
Hahn, Elizabeth, MA	Implementing a Low-Literacy, Multimedia Information Technology (IT) System to Enhance Patient-Centered Cancer Care
Hasnain-Wynia, Romana, PhD	Improving Quality through Health Information Technology: Testing the Feasibility and Assessing the Impact of Using Existing Health It Infrastructure for Better Care Delivery
Hayden, Avis, PhD	Improving Healthcare Quality via Information Technology
Hazlehurst, Brian, MD	Automating Assessment of Asthma Care Quality
Horn, Susan D, PhD	Nursing Home Information Technology (IT): Optimal Medication and Care Delivery
Hsiao, Allen, MD, FAAP	Secure Messaging in a Pediatric Respiratory Medicine Setting
Hsu, John, MD, MBA, MSCE	Impact of Health Information Technology on Clinical Care
Huck, Jacqueline, RN, MPH	A Rural Healthcare Information Technology Cooperative to Promote Clinical Improvement
Jack, Brian, MD	Virtual Patient Advocate to Reduce Ambulatory Adverse Drug Events
Jimison, Holly B, PhD	Barriers and Drivers of Health Information Technology Use for the Elderly, Chronically Ill and Underserved
Johnson, Kevin, MD, MS	Safety Through Enhanced E-PreScribing Tools (STEPStools): Developing Web Services for Safe Pediatric Dosing
Jones, Mark H, MS, MBA	Implementation of Health Improvement Collaboration in Cherokee County, Oklahoma
Jose, James, MD	Comprehensive Information Technology (IT) Solution for Quality and Patient Safety
Kahn, James, MD	Randomized Controlled Trial Embedded in an Electronic Health Record
Kaushal, Rainu, MD	Developing and Using Valid Clinical Quality Metrics for Health Information Technology (Health IT) with Health Information Exchange (HIE)
Kaushal, Rainu, MD	Electronic Prescribing and Electronic Transmission of Discharge Medication Lists
Keenan, Gail M, PhD, RN	Health Information Technology Support for Safe Nursing Care
Kerwin, Jeffrey, PhD	Consumer Engagement in Developing Electronic Health Information Systems
Kilbridge, Peter, MD	Surveillance for Adverse Drug Events in Ambulatory Pediatrics
Kmetik, Karen, PhD	Cardio-Hit Phase II
Kopal, Helene, MPH, MPA	Evaluation of a Computerized Clinical Decision Support System and Electronic Health Record (EHR)-Linked Registry to Improve Management of Hypertension in Community-Based Health Centers
Koss, Richard, MA	Toward An Optimal Patient Safety Information System
Krist, Alexander, MD	An Interactive Preventive Health Record (IPHR) to Promote Patient-Centered Care

Principal Investigator	Project Title
Lapane, Kate, PhD	Optimizing Medication History Value in Clinical Encounters with Elderly Patients
Lapane, Kate, PhD	Tailored DVD to Improve Medication Management for Low Literate Elderly Patients
Lazarus, Ross, MBBS, MPH, Mmed, GDCompSci	Electronic Support for Public Health - Vaccine Adverse Event Reporting System (ESP:VAERS)
Lehmann, Christoph, MD	Medication Monitoring for Vulnerable Populations via Information Technology (MMITI)
Lewis, Thomas L, MD	Metro DC Health Information Exchange (MeDHIX)
Lobach, David, MD, PhD, MS	Showing Health Information Value in a Community Network
Lobach, David, MD, PhD, MS	Improving Quality through Decision Support for Evidence-Based Pharmacotherapy
Lobach, David, MD, PhD, MS	Improving Care Transitions for Complex Patients through Decision Support
Logan, Judith, MD	Improving Quality In Cancer Screening: The Excellence Report For Colonoscopy
Lozzio, Carmen B, MD, FACMG	Improving Quality Care for Children with Special Needs
Mathews, Craig Alonzo	Service Integration
McColm, Denni, MBA	Standardization and Automatic Extraction of Quality Measures in an Ambulatory Electronic Medical Record (EMR)
McConnochie, Kenneth M, MD, MPH	Valuation of Primary Care-Integrated Telehealth
McDonell, Cheryl J, PhD	Use of Dense Display of Data and Information Design Principles in Primary Care Health Information Technology Systems
Mehr, David, MD, MS	Using Health Information Technology to Improve Ambulatory Chronic Disease Care
Mertens, Ann, PhD	Improving Pediatric Cancer Survivorship Care Through SurvivorLink
Middleton, Blackford, MD, MPH, MSc	Evaluating Smart Forms and Quality Dashboards in an Electronic Health Record
Middleton, Blackford, MD, MPH, MSc	Clinical Decision Support Consortium
Mingle, Daniel B, MD	Improving Health Information Technology Implementation in a Rural Health System
Mold, James, MD	Impact of a Wellness Portal on the Delivery of Patient-Centered Prospective Care
Mostashari, Farzad, MD	Bringing Measurement to the Point of Care
Mullen, R'nee	Rural Community Partnerships-Electronic Medical Record (EMR) Implementation Project
Nashan, Georges, RN, MS, CPHQ	The Chronic Care Technology Project
Nebeker, Jonathan, MD	Veterans Administration (VA) Integrated Medication Manager
Nemeth, Lynne, PhD, RN	Implementation and Evaluation of Standing Orders Using Health Information Technology
Nocella, Kiki Coyne, PhD, MHA	Accessing the Cutting Edge: Implementing Technology to Transform Quality in SE Kern
O'Brien, John, MBA	Electronic Health Record Implementation for Continuum Care in Rural Iowa

Principal Investigator	Project Title
Ornstein, Steven, MD	Medication Safety in Primary Care Practice - Translating Research into Practice
Overhage, Joseph Marcus, MD	Value of Health Information Exchange in Ambulatory Care
Overhage, Marc, MD, PhD	An Evolving Statewide Indiana Information Infrastructure State and Regional Demonstration Project (currently known as Indiana Network for Patient Care – INPC)
Perez, Gina, MPA	Delaware Health Information Network (DHIN) State and Regional Demonstration Project
Pohl, Joanne, PhD	A Partnership for Clinician Electronic Health Record (EHR) Use and Quality of Care
Rachal, Valerie, RN, PhD	Creating Online Newborn Intensive Care Unit (NICU) Networks to Educate, Consult & Team
Reiling, John G, MHA, MBA, PhD	Improving Patient Safety/Quality with Health Information Technology Implementation
Richards, Francis M, CASCP	Regional Approach for Transforming Healthcare Quality through Information Technology (THQIT) in Rural Settings
Ritchie, Christine, MD, MSPH	E-Coaching: Interactive Voice Response (IVR)-Enhanced Care Transition Support for Complex Patients
Root, Jan, PhD	Improving Communications Between Health Care Providers via a Statewide Infrastructure: Utah Health Information Network (UHIN) Clinical State and Regional Demonstration Project (currently known as UHIN)
Rosenthal, Daniel	Health Information Technology Enablement of Quality Measurement: Health Information Technology Expert Panel
Sakuda, Christine M, MBA	Holomua Project Improving Transitional Care in Hawaii
Samore, Matthew, MD	Rural Trial of Clinic Order Entry with Decision Support
Samore, Matthew, MD	Patient-Centered Informatics System to Enhance Health Care in Rural Communities
Schadow, Gunther, MD, PhD	Value of New Drug Labeling Knowledge for e-Prescribing
Schillinger, Dean, MD	Harnessing Health Information Technology for Self-Management Support and Medication Activation in a Medicaid Health Plan
Schneider, Eric, MD	Massachusetts Quality E-Measure Validation Study
Schwarz, Eleanor, MD	Harnessing Health Information Technology to Prevent Medication-Induced Birth Defects
Selby, Joe, MD	Feedback of Treatment Intensification Data to Reduce Cardiovascular Disease Risk
Sequist, Thomas, MD, MPH	Can Risk Score Alerts Improve Office Care for Chest Pain?
Shank, Nancy C, MBA	Health Information Exchange: A Frontier Model
Shiffman, Rick, MD, MCIS	Guidelines into Decision Support (GLIDES)
Simon, Steven, MD, MPH	Improving Laboratory Monitoring in Community Practices: A Randomized Trial
Simonatitis, Linas, MD, MS	Improving Lab Follow-up by Delivering an Enhance Medication List to Outpatient Physician Practices
Sims, Thomas R, MS	Improving Rural Healthcare: Implementing Innovative Integration Solutions
Singh, Gurdev, PhD, MsC	A Systems Engineering Approach: Improving Medication Safety

Principal Investigator	Project Title
Singh, Hardeep, MD, MPH	Using Electronic Data to Improve Care of Patients with Known or Suspected Cancer
Sodomka, Patricia, MHA, FACHE	Using An Electronic Personal Health Record To Empower Patient With Hypertension
Spranca, Mark, PhD	Conducting Measurement Activities for Health IT Initiative
Stepnowsky, Carl, PhD	Enabling Sleep Apnea Patient-Centered Care Via an Internet Intervention
Stuen, Cynthia, PhD, DSW	Creating an Evidence Base for Vision Rehabilitation
Tang, Paul, MD	Patient-Centered Online Disease Management Using a Personal Health Record System
Thomas, Eric, MD, MPH	Measuring the Value of Remote Intensive Care Unit (ICU) Monitoring
Thomas, Eric, MD, MPH	Using Electronic Records to Detect and Learn from Ambulatory Diagnostic Errors
Trivedi, Madhukar, MD	Using Information Technology to Provide Measurement Based Care for Chronic Illness
Turchin, Alexander, MD	Monitoring Intensification of Treatment for Hyperglycemia and Hyperlipidemia
Veline, James, MS, MA	Electronic Prescribing and Decision Support to Improve Rural Primary Care Quality
Vogt, Thomas, MD	Using Information Technology to Improve the Quality of Cardiovascular Disease (CVD) Prevention & Management
Ward, Marcia M, PhD	Health Information Technology Value in Rural Hospitals
Waters, Teresa, PhD	Technology Exchange for Cancer Health Network (TECH-Net)
Weiner, Mark, MD	Crossing the Quality Assessment Chasm: Aligning Measured and True Quality of Care
West, David, PhD	Participation by Primary Care Practices in Health Information Exchange (HIE) in Colorado
Wheeler, Donald A, MHA, FACHE	Critical Access Hospital Partnership Health Information Technology Implementation
Wolf, Michael, PhD	Using Information Technology for Patient-Centered Communication and Decision Making about Medications
Zimmerman, Amy, MPH	Rhode Island Statewide Health Information Exchange (HIE) State and Regional Demonstration Project (currently known as currentcare)

Appendix B. Process for Preparing Grantee-Specific Summary

1. **List of Grantees:** From January-February 2009, the Health IT Portfolio staff and NRC synchronized lists of grants, PIs, institutions, duration of grant, total AHRQ budget for grant, active status of grant, and whether or not grant received a no-cost extension, for those grants sponsored by Health IT Portfolio that were active during at least part of CY 2008. Discrepancies were resolved. The final list served as both the data set and list of 124 grants that were active for some part of 2008.

2. **Grantee-Specific Template:** In January 2009, the initial structure, a template, for grantee-specific summaries was developed by AHRQ staff in cooperation with NRC. The template was modestly enhanced by Health IT Portfolio staff in February and March. In April and May, AHRQ's OCKT staff provided further refinements to the format of the grantee-specific summaries to assure compliance with DHHS format requirements and to enhance readability of the documents. The summaries were to contain the following information:
    a. **Demographics (**information completed by NRC)
        i. Protect Title
        ii. Principal Investigator: name and degrees
        iii. Organization (receiving contract)
        iv. Mechanism: FOA: HS-##-###: Title of FOA
        v. Grant Number: R## HS###### (R##, may be replaced by UC1 or P20)
        vi. Project Period: mm/yyyy – mm/yyyy (indicated if a no-cost extension was granted, and if so, used the extended ending date)
        vii. AHRQ Funding Amount
        viii. Summary Status as of: (December 2008 or month grant concluded)

    b. **Health IT Strategic and AHRQ Business Goals** (information completed by NRC)
    c. **Summary** (drafted by NRC)
    d. **Specific Aims** (based on grant proposal and status of aims as reported in ARRS)
    e. **2008 Activities** (information provided by contractor)
    f. **Preliminary Impact and Findings** (as applicable for ongoing projects, information provided by PI)
    g. **Selected Outputs** (as applicable for ongoing projects, information provided by PI)

3. **Preliminary Sources of Information:** There were up to five primary sources for NRC to prepare its initial draft of grantee-specific summaries:
    a. **Grant Proposal**
    b. **Final Reports for Completed Grants**
        i. 38 THQIT grants ended during 2008.

ii. Health IT Portfolio staff solicited the Final Reports from the PIs and forwarded them to NRC. All were received from PIs and shared with NRC.

c. **Quarterly Reports Submitted through the Agency for Healthcare Research and Quality Research Reporting System (ARRS)**
   i. These were critical sources of information for all 124 grantees.
   ii. ARRS reports provided the grantees' self-reported status regarding overall progress on milestones for the project and spending to date. The aggregate results of these variables were reported to the Office of Management and Budget pursuant to the 2008 then-active Performance Assistant Rating Tool (PART) measures for the Health IT Portfolio.
   iii. Other information was gleaned from the ARRS reports including the status of specific aims (i.e., milestones):
      1. Upcoming,
      2. Ongoing,
      3. Achieved, or
      4. *Ongoing* or *Upcoming* (indicating that AHRQ's funding for that grant had concluded but that the grantee was pursuing completion of that specific aim through other means).

d. **NRC Quarterly Calls.** As part of its grantee programmatic activities, the NRC conducts quarterly calls with all grantees who are currently funded through any of the four Ambulatory Safety and Quality (ASQ) Funding Opportunity Announcements (FOAs) (HS-08-002, HS-07-002, HS-07-006, HS-07-000), known as ASQ grantees. Sixty-nine of the Health IT Portfolio's active grants.
   i. During spring 2009 (February-April) regularly scheduled quarterly calls with the ASQ grantees, additional information was collected about the project, including the vendor and version of the health IT application used in the research grant and whether or not those health IT applications had received certification via the Certification Commission for Health Information Technology (CCHIT). This information was collected in a narrative fashion.

e. **Redacted Elements of Non-Competing Continuation Reports.** For those grantees with poor quality reporting (at least 20 grantees), Health IT Portfolio staff vetted their annual non-competing continuation reports and abstracted information regarding milestones. However, the type of information that is expected in those documents is generally quite distinct from the programmatic information regarding challenges, barriers, mitigating factors, and preliminary findings and outputs sought for a grant-specific calendar-year report.

4. **Identifying Missing or Incomplete Information**
   a. From January through March, NRC staff prepared and reviewed initial hardcopies of the quarterly ARRS report. NRC provided Health IT Portfolio staff a list of those grantees for which ARRS quarterly reports were either not submitted or were incomplete. This was a serious source of delay in the drafting of scores of grantee-specific summaries, both in terms of the number of grantees who had not been providing informative quarterly reports on a regular basis and the poor

quality of some grantees' reporting. The ARRS system requires sequential reporting, whereby one cannot post a third-quarter report until the reports for earlier quarters have been posted.

5. **Tracking the Development and Finalization of Grant-Specific Summaries**
    a. Health IT Portfolio staff in cooperation with NRC staff developed a Microsoft Excel® spreadsheet for tracking development, distribution, review and approval of each grant-specific summary, from NRC development of the summaries to OCKT approval of the summaries, and NRC posting of the summaries on the NRC Web site (www.healthIT.ahrq.gov).
    b. NRC staff maintained the Excel spreadsheet.

6. **Stimulating ARRS Reporting**
    a. AHRQ staff and NRC representatives notified all grantees that a summary of their grant's progress as of the end of 2008 or the conclusion of their grant, if it ended in 2008, would be generated based on the information reported in the ARRS system as of April 15, 2009.
    b. In February 2009, Health IT Portfolio staff contacted Project Officers for those grants with incomplete reporting and advised them to instruct their grantees on the importance of submitting complete and timely quarterly reports through ARRS.
    c. ARRS reports for 2008 available as of April 15 were used to develop summaries.

7. **Principal Investigator (PI) Review of Grant-Specific Summary**
    a. NRC sent each grantee the draft grant-specific summary and welcomed additional information that the PI could provide.
    b. PIs were generally given 2 weeks to provide approval or comments on the grant-specific summary.
    c. For non-responders, additional reminders for approval or comments on the grant-specific summaries were sent to PIs.
    d. Health IT Portfolio staff prompted non-responders.
    e. When PIs failed to respond to either NRC or Health IT Portfolio staff, unedited drafts of grant-specific summaries were considered implicitly accepted by the PI, since no concerns or objections were raised by the PI. For 2008 grant-specific summaries, 81 percent (101/124) of the grant PIs provided explicit approval of their summaries.

8. **Health IT Portfolio Staff Review**
    a. Each of the draft grant-specific summaries was reviewed for content, tone, format, and completeness.
    b. These were returned to NRC.

9. **NRC Prepared Final Drafts of Grant-Specific Summaries**
    a. NRC consulted grantee documents or consulted grantees to address AHRQ-sought clarity, as appropriate.
    b. NRC conducted format editing of grant-specific summary and reformatted the document to be ready for posting to the Web site.

10. **AHRQ Staff from the Office of Communications and Knowledge Transfer (OCKT) Conducted Final Format and Content Edit of Grant-Specific Summaries**
    a. Using the Quality Assurance Check list developed by AHRQ Health IT Portfolio staff, and the spreadsheet of grantee information, OCKT editors conducted quality assurance of descriptors of each grant with particular care regarding the grantees' most recent self-reported quarterly status regarding milestones and budget.
    b. OCKT editors also conducted a careful edit check for compliance with OCKT format requirements and a logic check of content. OCKT made final changes to the grant-specific summaries and returned the documents to NRC.

11. **Posting to the NRC Web Site:** Grantee-specific summaries are available through the NRC Web site (www.healthIT.ahrq.gov) by clicking on the map displayed on the NRC landing page.
    a. NRC prepared 508-compliant HTML and PDF versions of the grant-specific summaries.
    b. These summaries are identified by grantee through the prompt: **View Calendar Year Update, 2008** (PDF, HTML).

Appendix C. Process for Preparing Contract-Specific Summary

1. **List of contracts:** In March 2009, the Health IT Portfolio staff generated a list of 26 Health IT Portfolio contracts and points of contact that were active for some or all of CY 2008. The Health IT Portfolio staff provided NRC with a list of contracts active during that year that specified PIs, institutions, duration of contract, total AHRQ budget for the contract, and paragraph summary of the contract.

2. **Contract-Specific Template:** In March 2009, a template for contract-specific summaries was developed by Health IT Portfolio staff, which was informed by the content of the grant-specific template, yet omitted information that was not applicable to contractors.
    a. **Demographics (**information completed by NRC)
        i. Protect Title
        ii. Principal Investigator: name and degrees
        iii. Organization (receiving contract)
        iv. Project Period
        v. AHRQ Funding Amount
        vi. Summary Status as of: (December 2008 or month contract concluded)
    b. **Health IT Strategic and AHRQ Business Goals** (information completed by NRC)
    c. **Summary** (drafted by NRC based on summary information provided by Task Order Officer)
    d. **Specific Aims** (delineated by NRC if information was provided)
    e. **2008 Activities** (information provided by contractor)
    f. **Preliminary Impact and Findings** (as applicable for ongoing contracts, information provided by PI)
    g. **Outputs** (as applicable for ongoing contracts, information provided by PI)

3. **Preliminary Sources of Information:** There were up to two primary sources for NRC to prepare its initial draft of contract-specific summaries:
    a. Synopses of contracts provided by Health IT Portfolio staff to NRC.
    b. Synopses from final reports when available.

4. **Tracking the Development and Finalization of Contract-Specific Summaries**
    a. Health IT Portfolio staff, in cooperation with NRC staff, developed an Excel spreadsheet for tracking development, distribution, review, and approval of each contract-specific summary, from development by NRC to approval by OCKT, and NRC's posting of the summaries on the NRC Web site (www.healthIT.ahrq.gov).
    b. NRC staff maintained the Excel spreadsheet.

5. **Principal Investigator's (PI) Review of Contract-Specific Summary**
    a. Health IT Portfolio staff notified contractors via e-mail of this initiative and respectfully requested that they participate in the development of contract-specific summaries.

b. NRC sent each contractor the draft contract-specific summary and welcomed additional information that the PI could provide.
c. PIs were generally given 2 weeks to provide approval or comments on the contract-specific summary.
d. For non-responders, additional reminders for approval or comments on the contract-specific summaries were sent to PIs.
e. Health IT Portfolio staff prompted non-responders.
f. When PIs failed to respond to either NRC or Health IT Portfolio staff, unedited drafts of contract-specific summaries were considered implicitly accepted by the PI, since no concerns or objections were raised. For 2008 contract summaries, 88 percent (23/26) of the contract PIs approved their summaries.

6. **Health IT Portfolio Staff Review**
   a. Each of the draft contract-specific summaries was reviewed for content, tone, format, and completeness.
   b. These were returned to NRC.

7. **NRC Prepared Final Drafts of Contract-Specific Summaries**
   a. NRC consulted contract documents and/or consulted contracts to address AHRQ-sought clarity, as appropriate.
   b. NRC conducted format editing of contract-specific summary and reformatted the document to be ready for posting to the Web site.

8. **AHRQ Staff from the Office of Communications and Knowledge Transfer (OCKT) Conduct Final Format and Content Edit of Contract-Specific Summaries**
   a. Using the quality assurance checklist developed by AHRQ Health IT Portfolio staff and the spreadsheet of contract information, OCKT staff reviewed the content of the summaries.
   b. OCKT also conducted careful edit checks for compliance with OCKT format requirements and a logic check of content. OCKT made final changes to the contract-specific summaries and returned the documents to NRC.

9. **Posting to the NRC Web Site:** Contract-specific summaries are available through the NRC Web site (www.healthIT.ahrq.gov) by clicking on the map displayed on the NRC landing page.
   a. NRC prepared 508-compliant HTML and PDF versions of the contract-specific summaries.
   b. These summaries are identified by project through the prompt: **View Calendar Year Update, 2008** (PDF, HTML).