Indiana Health Information Exchange

January 6, 2010

David Blumenthal, M.D., M.P.P.
National Coordinator
Office of the National Coordinator for
Health Information Technology
U.S. Department of Health and Human Services
200 Independence Avenue, S.W.
Washington, DC 20201

Dear Dr. Blumenthal,

Through the attached letter of intent, the Indiana Health Information Exchange is expressing its plans for submitting a proposal to the Beacon Community Agreement Program. This funding opportunity is directly aligned with IHIE's mission, which is: To use information technology and shared clinical information to: (i) improve the quality, safety, and efficiency of health care; (ii) create unparalleled research capabilities for health researchers; and (iii) exhibit a successful model of health information exchange for the rest of the country. Thank you for the opportunity to submit our proposal to the Beacon Community Agreement Program.

Sincerely,

J Marc Overhage MD PhD

J. Marc Overhage, M.D., Ph.D.
President and CEO

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Letter of Intent: Beacon Community Agreement Program

Submitted by: The Indiana Health Information Exchange

The following Letter of Intent provides an overview of key elements of the Indiana Health Information Exchange's proposed Beacon Community Program, including: organizational capacity, health improvement goals, geographic service area, and plans for leveraging existing resources.

Organizational Mission, Capability, and Experience

Table 1: Organizational Capacity of Beacon Community Partners

	Services Offered by Applying Consortium?	Which Partner?	# of dedicated FTE staff	# of practices and providers served 7/1/08-6/30/09
EHR adoption and meaningful use assistance	Yes	Regional Extension Center*	53	N/A - ONC funding decision still pending
Functional, Standards-based Health Information Exchange	Yes	• IHIE • Regenstrief Institute	• 42 • 125	13,000 Physicians in 4,300 practices
Technical Assistance around Federal and State Privacy and Security requirements	Yes	Regional Extension Center*	53	N/A – ONC funding decision still pending

* Purdue Technical Assistance Program (TAP), pending approval

IHIE is a tax-exempt, nonprofit corporation founded in 2004 by a unique collaboration of 13 institutions representing Indiana hospitals, healthcare providers, researchers, public health organizations, and economic development groups. Now the largest health information exchange in the nation, IHIE is a leading provider of scalable health information exchange services with demonstrated and sustainable technologies and processes. One of IHIE's key collaborators is the Regenstrief Institute, which is an international leader in the fields of health information technology and health information standards. Building upon this collaboration, IHIE has developed and implemented many innovative programs:

- DOCS4DOCS ® Service (D4D), a self-sustaining, community-wide clinical messaging service being used by over 13,000 physicians in Indiana within a network of 33 hospitals and other healthcare organizations, delivering over 5 million messages per month. This provides a single source for clinical results including laboratory, radiology reports, transcriptions, pathology and admission, discharge and transfer information.
- The Indiana Network for Patient Care (INPC), the nation's largest inter-organizational clinical data repository is currently in use at over 130 sites in Indiana, storing data on over 6 million patients and

utilized by approximately 15,000 active users. Each data source organization maintains control over its own data while IHIE and its technology partner, Regenstrief Institute, manages and administrates the databases.

- Quality Health First ® Program (QHF), which provides robust quality reporting to nearly 1,000 physicians about their patients, focuses on chronic disease management and screening. QHF uses medical claims and enrollment information from participating commercial insurers, third party administrators, Medicare and Medicaid, point of care data from physicians aggregated with real-time clinical data from hospitals and labs to produce monthly, patient specific reports. In addition, QHF provides reports to payers on the quality of care provided by each participating medical group and physician, across all participating populations. The payers use these multi-payer, all-population reports to provide financial incentives to physicians for quality improvement.

Health Improvement Goals

IHIE's vision for its proposed Beacon Community Program is: *To improve healthcare quality, efficiency and population health in Hospital Referral Region 183 using health information technology strategies that can be replicated in other communities throughout the nation.* This vision will be achieved by working toward the following goals and metrics:

Improving Quality - The Beacon Community will improve the quality of healthcare by expanding and amplifying a model program that will make significant improvements in treating the five chronic conditions that underlie about 70% of our nation's health expenditures.[1] IHIE's proposed Beacon Community Program will focus upon directly improving diabetes care in our service area, but with the ultimate aim of developing a replicable model that applies to all chronic conditions and can be transported to other communities and states. IHIE's Beacon Community Program's goals for improving quality are to:

- Improve by 10 percent[2] the proportion of diabetic patients under control, as evidenced by HbA1c levels below 9 percent;
- Improve by 10 percent[3] the proportion of diabetic patients whose cholesterol is controlled, as evidenced by achieving risk-adjusted LDL targets.

Improving Efficiency - IHIE's Beacon Community Program will measure aspects of utilization that are known to vary among care systems and provide this information to participating physicians. The programs goals to improve efficiency are to:

- Reduce ambulatory care sensitive (ACS) admissions and ED visits by approximately 3%;
- Reduce ACS readmissions by approximately 10%;
- Reduce inappropriate and redundant radiologic studies by approximately 10%.

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[1] diabetes, congestive heart failure, coronary artery disease, asthma and depression - See Halvorson, *Health Care Reform Now*

[2] relative to current performance on this measure

[3] relative to current performance on this measure

Enhancing Population Health - IHIE's goal will be to demonstrate meaningful change in measureable aspects of population health, including:

- Increase colorectal and cervical cancer screening by approximately 5%;
- Increase adult immunizations by approximately 5%.

Geographic Service Area

IHIE's QHF service is currently focused in nine counties within the central Indiana / Indianapolis area. Through the proposed Beacon Community program, IHIE will actively focus on the Indiana counties defined in the Dartmouth Hospital Referral Area 183. The proposed region encompasses all or part of 41 counties, which includes approximately 2.7 million people – equaling about 43% of Indiana's 6.3 million population base. IHIE proposes to initially focus upon serving primary care providers in the Dartmouth hospital referral region, then expanding to other physician specialties.

Ability to Leverage Existing Programs and Resources

IHIE was developed as a part of a highly effective collaboration of 13 healthcare, business and public health organizations. As a result, IHIE has the resources and experience needed to fully leverage opportunities offered by working closely with other ONC/federal grant-funded programs. IHIE collaborated with Purdue University's Technical Assistance Program during its Regional Extension Center submission and, if funded, will continue this effective partnership through the Beacon Community Program. As shown by Table 2, IHIE also will work with key collaborators such as: the quality improvement organization Healthcare Excel; the state's Medicaid Office; CMS (in conjunction with its section 646 Medicare Health Care Quality demonstration program); the Indiana Hospital Association and the in-area hospitals; St. Vincent Health's Rural Health and Service Administration Grant Program; Community health centers and medical groups; professional societies; employers; and the state's HIT Coordinator.

In addition, IHIE and several collaborators have submitted a proposal to the Robert Wood Johnson Foundation to participate in a three-year Aligning Forces for Quality program. Assuming approval, IHIE will be a key partner in the Central Indiana Alliance for Health collaborative and, consequently, will leverage stakeholders and work completed in that Program to support the Beacon Communities Program. IHIE will develop a governing body representing all stakeholders in the Beacon Communities program and charter that group to provide overall

direction to the program. Established forums like the CIA4H, the QHF management committees and the IHIE Board of Directors will also be utilized to share resources and current initiatives.

Table 2: Anticipated Community Partners for IHIE's Beacon Community Program

Type of Organization	Planned Community Partner
State Primary Care Association(s)	• Indiana Primary Health Care Association
Health Professional Societies	• Indiana Hospital Association • Indiana Rural Healthcare Association • Indiana State Medical Association • Indianapolis Coalition for Patient Safety • Indiana Patient Safety Center • American Academy of Pediatrics • American Academy of Family Practice • American College of Physicians
Health Center Controlled Networks	• N/A (None in Indiana)
Health Plans	• WellPoint • United • Cigna
Hospital Systems	• Clarian Health Partners • St. Vincent Health (Ascension) • Sisters of St. Francis Health Systems • Wishard Health Services • Community Health Network • Roudebush Veterans Administration Medical Center
Local and State Public Health Departments	• Marion County Health Dept. • Indiana State Dept. of Health
Academic Institutions	• Indiana University School of Medicine
Charitable Foundations	• Fairbanks Foundation; • Regenstrief Foundation; • Lilly Endowment
Quality Improvement Organizations	• HealthCare Excel
Physician Groups	• American Health Network • Community Physicians of Indiana • Indiana Clinic • St. Francis Hospital and Health Centers • St. Vincent's Physicians
State Government and Quasi-Government organizations	• Indiana Health Informatics Corporation • Medicaid • State HIT Coordinator
Employers	• Employers Forum
Regional Extension Center	• Purdue Tech. Assist. Program (Pending approval)

Central Indiana Beacon Community Program

Service Area: 41 Central Indiana Counties (473 zip codes, listed in Appendices)
Applicant Name: Indiana Health Information Exchange (IHIE)
Address: 846 N. Senate Ave. Suite 300 Indianapolis, IN 46202
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Abstract

The state of Indiana boasts one of the strongest community-level health information technology (HIT) and evaluation, performance monitoring and feedback implementations in the United States, driven by an innovative private sector collaboration and groundbreaking research by the Regenstrief Institute at Indiana University. This collaborative effort has led to the development of the largest health information exchange in the nation, the Indiana Health Information Exchange (IHIE). IHIE facilitates the Indiana Network for Patient Care (INPC), which is the nation's largest inter-organizational clinical data repository; and the Quality Health First® (QHF) Program, which uses real-time clinical and administrative data to produce monthly, patient-specific and provider-level summary quality reports for use by clinicians and payers. Our community is poised to continue building upon this success. Strengthened by more than 10 partner organizations serving a 41-county region, the Program's vision is: *To improve healthcare quality, efficiency and population health in Hospital Referral Region 183 (HRR 183) by implementing health information technology-enabled strategies that can be replicated in other communities throughout the nation.*

The Beacon Community Program will achieve this vision by pursuing four objectives within three thrust areas. In Thrust I: Health IT and Exchange Infrastructure, the Program will focus upon connecting, accessing, or capturing additional clinical data sources. In Thrust II: Evaluation, Performance Monitoring and Feedback, the Program will broaden and deepen the Quality Health First Program by adding new measures and functionality and broadening provider participation in order to more fully address the challenges of efficiency, quality and public health. Finally, in Thrust III: Integration of Health Information Technology into Care Delivery, the Program will devise and implement initiatives aimed at advancing care processes toward best practice, with the aim of achieving EHR adoption and meaningful use among at least 60% of the region's primary care providers.

The overarching outcome of the proposed Beacon Community Program will be a health information infrastructure that fosters broad improvements in healthcare quality, efficiency and population health throughout the nation. To advance healthcare quality, the Program will improve the proportion of diabetic patients whose blood sugar or cholesterol is controlled by 10%. To advance efficiency, the Program will reduce the number of ambulatory care sensitive (ACS) hospital admissions and emergency visits by 3%, reduce the number of ACS readmissions by 10%, and reduce the number of redundant radiologic studies by 10%. Finally, to advance population health, the Program will increase the proportion of patients screened for colorectal and cervical cancer by 5%; and increase the data available for adult immunizations by 5%.

Although these goals are significant, the true power behind the Program's 36-month strategy is the creation of a properly incentivized and informed healthcare system. Such a system of motivated hospitals, providers, payers and other stakeholders will launch its own effective actions to generate a sustainable national model of a community of meaningful users of health IT that achieves measureable improvements in quality, safety and efficiency.

A. Current State and Gap Analysis of EHR Adoption and Meaningful Use

Quality improvement has always been part of a health care provider's obligation and normal healthcare operations and most providers are committed to providing high quality care. Nonetheless, providers tend to react with skepticism to changes that directly affect the way they practice. For example, when practice guidelines were introduced, many providers resisted adopting them. The same impediments that affected the adoption of practice guideline (increased costs, poorly aligned incentives, and insufficient staff support) stand in the way of providers' adoption of Quality Improvement (QI) methods. Some have even suggested that the medical profession has failed to actively engage in QI because quality problems lack public visibility.

Thirty percent of U.S. healthcare providers are in solo practice or in groups of three or less.[1] Sixty percent are in groups of six or less and are often the only source of medical care in rural areas and small cities. In these settings, healthcare providers may have little or no opportunity for consultation, supervision, or observer/peer pressure. By nature, the medical profession relies upon individual judgment, resulting in a wide variability of practices and quality.

As a nation, our perspective on how to meet the challenge of improving care has shifted from the individual provider to the entire system of care; however, the existing structural and process mechanisms in place for assessing, controlling, and assuring the quality of medical practice are heavily dependent upon the intelligence, education, skill, competence, honesty, integrity, and ethical behavior of individual healthcare providers. The existing control mechanisms include medical school admission and graduation criteria, testing by the National Board of Medical Examiners, state licensing agency functions, post-graduate education, board certification, professional associations, and professional liability legal actions in the courts. The

effectiveness of these controls for improving quality has been limited and it is now understood that solving today's complex medical problems require an effective, integrated system of care. It cannot be solved by individuals no matter how excellent they may be. There are a variety of factors that affect providers' ability or willingness to improve the quality of care they deliver, such as: (i) limited access to practice-level data and/or quality-of-care data; (ii) limited participation in quality improvement activities; (iii) lack of consensus regarding whether clinical performance should be shared with medical leadership and / or patients; and (iv) limited ability to participate in clinical redesign efforts, particularly among physicians in smaller practices[2].

No single "solution" will address the challenges confronting our health care system; it will require an information-rich environment, multiple activities and the coordinated efforts of all stakeholders to materially improve performance. In 2004, a unique collaboration of 13 institutions representing Indiana hospitals, healthcare providers, researchers, public health organizations, and business/economic development groups created the non-profit Indiana Health Information Exchange (IHIE). IHIE's goal is to support value-driven healthcare and to transform the healthcare industry with realistic solutions to help improve quality and lower costs. Its mission is to use information technology and shared clinical information to: (i) improve the quality, safety, and efficiency of health care; (ii) create unparalleled research capabilities for health researchers; and (iii) exhibit a successful model of health information exchange for the rest of the country.

Now the largest health information exchange in the nation, IHIE is a leading provider of scalable health information exchange services with demonstrated and sustainable technologies and processes. IHIE has three key services: the Indiana Network for Patient Care (INPC), which is the nation's largest inter-organizational clinical data repository; the Quality Health First®

(QHF) Program, which uses real-time clinical and administrative data to produce monthly, patient-specific and provider-level summary quality reports for use by clinicians and payers; and the DOCS4DOCS® clinical messaging service. IHIE's QHF service is most fully developed in nine counties within the central Indiana / Indianapolis area. The Beacon Community Program will enhance the resources provided to this area as well as expand its services within the Indiana counties defined in the Dartmouth Atlas Hospital Referral Region 183 (HRR 183). The 41-county area (Fig. 1) includes approximately 2.7 million people, about 43% of Indiana's 6.3 million population base. In the proposed Dartmouth Atlas Region, there are 57 hospitals and, of these: 34 are already INPC members; 18 are INPC live with mapped data; 25 are DOCS4DOCS customers; and 35 participate in the Public Health Emergency Surveillance System (PHESS). Among providers, 960 in the HRR 183 region are enrolled in Quality Health First.

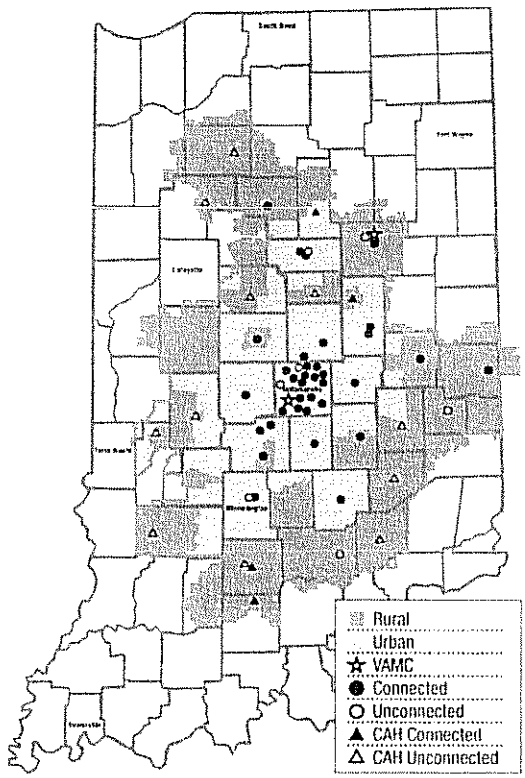


Fig. 1: Map of HRR 183 - The dark icons represent hospitals in HRR 183 connected to IHIE; the light icons represent hospitals not yet connected to IHIE.

In order to deliver results to providers, IHIE maintains a detailed, up-to-date directory of providers along with their demographics, identifiers, electronic addresses, which electronic medical records (EMR) they use and other relevant information cross indexed by their local institutional identifiers. Based on these data, **28% of healthcare providers in HRR 183 are**

currently using an EMR. As is seen in other markets, penetration is higher in larger groups and lower in smaller groups. Different from other markets however, even those providers without an office EMR have: (i) access to a rich longitudinal view of patient data including diagnosis or problem lists, data on medication dispensing events, allergies, demographics, laboratory and radiology results through the nearly ubiquitous DOCS4DOCS® system; (ii) the ability to generate lists of patients for quality improvement and to report quality metrics to CMS as well as to receive alerts and reminders through the innovative Quality Health First Program®; (iii) the ability to exchange data with other providers in a number of formats (including CCD) as well as with other regions, including through a National Health Information Network gateway [3]; and (iv) capacity to submit data for syndromic surveillance and electronic laboratory reporting as well as to receive messages and alerts from public health agencies through the PHESS services. With the exception of provider order entry, this collection of EMR components offers most of what providers will

Table 1: Data Summary of HRR 183

HRR 183 Provider Information
Total Physician Population – Approx. 7,600 **Estimated total of PCPs:** 2,300[i] **PCPs Targeted for Direct Assistance:** 200 • **Proportion of total PCPs[ii]:** 8.7%
Demographics of HRR 183
Population Total: Estimated 2.7 million **Uninsured:** 12.13% **Underinsured:** 8.22% **Medically Underserved:** 25.21%[iii] **Minority Individuals:** 15.04% • Black and Hispanic Population Total: 406,000 • Black: 288,800 • Hispanic: 117,300
FQHCs and CAHs in HRR 183
Federally Qualified Health Centers: 17 **Critical Access Hospitals:** 14 • All 14 CAHs have outpatient primary care capabilities; • All 17 FQHCs have outpatient primary care capabilities; • Currently IHIE has 100% of the CAHs participating[iv] and 94% of the FQHCs.

[i] Data based upon figures developed by Purdue Healthcare Technical Assistance Program for its 2009 Regional Extension Center Proposal

[ii] Bringing total to 60%

[iii] Calculated by multiplying the Indiana state population (6,376,792) by the HRR 183 population (2,700,000), then dividing that total into the number of Medically Underserved in Indiana (1,607,549)

[iv] "Participating" is defined as currently using an IHIE or Regenstrief Institute HIE service including electronic results delivery (DOCS4DOCS), INPC, or PHESS

need to become meaningful users of health information technology. Among the 2,300 primary care providers in the HRR 183 region, 960 are enrolled in Quality Health First.

Although the penetration of EMRs in Health Referral Region 183 is 28% and its level of established health information exchange infrastructure is unequaled, several gaps need to be filled in order to significantly affect efficiency, quality, and population health across the entire region. In order to provide the most robust, accurate and searchable information to providers and payers, IHIE must connect to more data sources to INPC after mapping their codes to national standards. Below, existing gaps in the connectivity of the key data source categories (hospitals, labs, health plans, and primary care physician practices) are characterized.

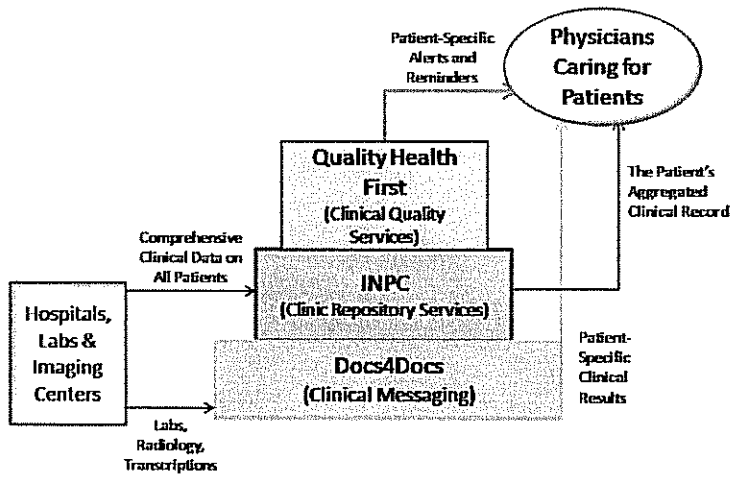
- Hospitals: Of the 57 hospitals inside the Dartmouth hospital referral region, 38 are connected with at least minimal data flowing. However, only 18 of those hospitals have robust, fully standardized data flowing to the INPC. Of the 19 hospitals remaining to be connected, 5 have already contracted with IHIE to be connected but the remainder have not. In addition, the concentration of connected hospitals drops off significantly outside the 9-county Indianapolis metropolitan area. 47% of the regions hospitals are outside the metro area and 44% of these remain to be connected to the HIE infrastructure.
- Free-standing and national labs: The INPC currently includes data from the regional subsidiary of Quest (Mid-America Clinical Labs). Interfaces exist or are being built with other labs including PA Labs (a subsidiary of LabCorp) and DCL. However, other non-hospital labs serving the defined region remain unconnected and data flowing from PA and DCL are either limited and/or not yet accessible via the INPC.
- Commercial Health Insurers: Anthem-Wellpoint and United Healthcare, the two largest commercial health insurance companies in Indiana, participate in QHF and share their data with the exchange. Other participants include Indiana Medicaid, Unified Group Services (a central Indiana-based third party administrator), and MDwise and Anthem Medicaid (both Medicaid-managed care organizations). However, to further strengthen the data available to support the calculation of measures and the economic incentives behind QHF, data and participation is needed from other payers. Target organizations include CIGNA, Humana, Aetna, and additional third party administrators representing self-insured employers (see also Aim 3b).
- Primary Care Physician Practices: Currently, 915 of the approximate 1,200 primary care providers (PCPs) representing 45 physician groups in the Indianapolis area are contributing point of care and reconciliation data to the INPC through the QHF program. Since many physicians do not have an EMR or the necessary level of information technology (IT) support to build interfaces, IHIE has devised less automated but functional means (such as fax-back forms). The degree to which addition data from physician practices is needed and the means

to capture that data will need to be determined in the context and the specific measures targeted and the strategies and tactics ultimately employed to achieve the Program's goals.

As detailed in the Proposed Strategy, the Beacon Community Program emphasizes the acquisition of more complete information. If providers and payers are to use information produced through the Beacon Community Program to improve quality and lower cost, they must trust that information. If significant gaps exist, the Program risks losing support. Consequently, the initial steps are critical. As healthcare providers participate in quality improvement activities, they deepen their understanding of the processes they rely upon and discover ways to improve those processes. Over time, quality improvement changes the culture as well as the processes so that quality improvement becomes an intrinsic part of the practice, the system of care and the community.

B. Goals and Objectives

Our vision for the Central Indiana Beacon Community Program is: *To improve healthcare quality, efficiency and population health in Hospital Referral Region 183 (HRR 183) by implementing health information technology-enabled strategies that can be replicated in other communities throughout the nation.* We will advance this vision by expanding participation in our federated, community-wide health information repository, INPC; expanding the Quality Health First program from the nine-county



Building Upon the HIE Infrastructure:
Building or "layering" services on top of each other squeezes more value from existing investments. QHF builds upon and utilizes the data of the INPC; the INPC builds upon and utilizes the interface that makes Docs4Docs possible.

Fig. 2: Overview of HIE Infrastructure

Indianapolis region to the a total of 41 counties in HRR 183; adding significant new features to QHF; and developing other information technology-enabled initiatives.

By using this expanded network of information, the Beacon Community Program will strive to develop a program that improves care, aligns incentives, is sustainable and can be duplicated in other communities. Each of the Beacon Community Program's goals was selected because it offers significant opportunity for rapid, meaningful improvement in a financially feasible manner while addressing the target areas of quality, efficiency and population health.

These goals are highlighted in the following shaded boxes, followed by the rationales explaining the team's decision to select these goals.

Improve Quality

- Improve by 10%[i] the proportion of diabetic patients whose blood sugar is under control, as evidenced by HbA1c levels below 9%;
- Improve by 10%[ii] the proportion of diabetic patients whose cholesterol is controlled, as evidenced by achieving risk-adjusted LDL targets.

Rationale: Five chronic conditions (diabetes, congestive heart failure, coronary artery disease, asthma and depression) account for 70% of our nation's health expenditures[4]. The Beacon Community Program will initially focus on diabetes because, in Indiana's HRR 183, an estimated 156,000 patients have been diagnosed with diabetes, generating an annual cost of care of $1.1 billion[5][iii]. To achieve improvements in control for the two selected measures, the Beacon Community collaborative will provide primary care providers throughout HRR 183 with comparative performance measures and individual patient reminders and alerts related to HbA1c and LDL levels for their diabetic patients and work with payers to target these measures for aligned incentives and developed other collaborative interventions (detailed in Objective 4).

[i] relative to current performance on this measure
[ii] relative to current performance on this measure
[iii] The costs estimated above are for the additional health-only costs due to diabetes, not all costs for these patients.

Improve Efficiency

- Reduce hospital admissions and emergency department (ED) visits due to ambulatory care sensitive (ACS) conditions by approximately 3% with resultant cost savings;
- Reduce ACS readmissions by approximately 10% with resultant cost savings;
- Reduce redundant radiologic studies by approximately 10% with resultant cost savings.

Rationale: Hospital admissions for ambulatory care sensitive (ACS) conditions are those that could have been avoided through better access to or higher quality outpatient care[6]. One study, using an average cost of $5,300 per admission, estimated that a 5% decrease in ACS hospitalizations would save the United States more than $1.3 billion in inpatient costs; this translates to $11 million in savings for HRR 183[7]. Our Beacon Community Program will achieve the savings proposed by:

- Providing population level information in the form of comparative ACS admissions, readmissions and emergency department (ED) visit utilization reports by system of care (also known as accountable care organizations) whether they are formal or informal across all populations;
- Leveraging the health IT infrastructure to ensure that individual patient data are readily available to providers at the point of care;
- Using the health IT infrastructure to develop an electronic home monitoring system for patients with selected chronic conditions, starting upon discharge and continuing for 45 days;
- Facilitating collaboration and process redesign across organizations within the informal systems of care;
- Aligning incentives by incorporating these measures into IHIE's Medicare demonstration program's pay-for-performance system and encouraging other payers to do the same; and
- Working with the Indiana Hospital Association to develop and disseminate programs designed to reduce admissions and readmissions for selected ASC conditions.

Radiology costs in the U.S. exceed $100 billion and diagnostic imaging is among the fastest growing expenses for health plans[8]. A major contributor to this expense is redundant images, which are often performed because healthcare providers are unaware of, or unable to access the results of, previous clinically equivalent exams[8]. IHIE proposes to identify an HRR 183-specific baseline within the first four months of funding and then:

- Provide population level information in the form of comparative radiology utilization by system of care across all populations;

- Leverage the health IT infrastructure to expand availability of radiographic images and reports to providers at the point of care;
- Collaborate with hospitals and imaging centers to design processes to alert providers and service providers about potentially redundant imaging studies; and
- Align incentives by incorporating these measures into IHIE's Medicare demonstration program's pay-for-performance system and encourage other payers to do the same.

Enhance Population Health

- Increase colorectal and cervical cancer screening by approximately 5%;
- Increase data available for adult immunizations by approximately 5%.

Rationale: Cervix and colorectal cancers have a much better prognosis if the cancers are identified during the earliest stages[9, 10]. As detailed in the Proposed Strategy, the Beacon Community Program will increase these screenings by measuring healthcare provider performance, reporting performance in comparison to peers, promoting collaboration to identify and resolve barriers such as co-pays, and relying on payer financial incentives to foster change.

Adult vaccinations also offer a significant opportunity for improved population health within the Program's proposed 36 month timeframe. Flu shots are recommended for all adults aged 50 and over, pregnant women, people with chronic diseases and those who come in contact with people at high risk for flu complications. The CDC recommends Pneumococcal vaccination for adults over the age of 65 years. The Indiana State Health Department reported that, in 2006 (most recent year for which data were available) 31% of adults over the age of 65 received influenza vaccinations and 54% of adults over the age of 65 obtained the pneumococcal vaccinations[11]. The Beacon Community will aggregate clinical data with public and private payer data to align incentives and community campaign efforts to improve population adult vaccine rates.

C. Proposed Strategy

Thrust I: Health Information Technology and Exchange Infrastructure

Obj. 1: Connect, access, or capture additional clinical data sources – Although electronic medical record (EMR) penetration in HRR 183 is significant and the level of established HIE infrastructure is unparalleled, there are still additional data sources that should be incorporated. Data from additional sources will expand the completeness of available patient data, enabling strategies for improving diabetes care, reducing ACS admissions and ED visits, and increasing cancer screenings and data available for adult immunizations. This will be accomplished through the following aims and tasks:

Aim 1A: Collect clinical information from additional hospitals, independent laboratories and imaging centers - In order to create an effective program to improve quality, efficiency, and population health measures, the preponderance of relevant data must be captured within the INPC and semantically normalized to HHS recognized standards (i.e., mapped). Three specific tactics are needed to connect additional data sources and make the needed data available to support the Beacon Community Program:

Task 1A.1 – Bring new customers into our HIE - This task includes attracting health systems, free-standing or national labs as well as radiology centers, into participation in the INPC. This will involve: (i) educating community leadership and organizational decision-makers, (ii) providing estimation of costs and efforts to connect, (iii) conveying a compelling value proposition to decision-makers, and (iv) obtaining legal support for contract signing.

Task 1A.2 – Accelerate the capture of data by expanding the capacity to build interfaces and normalize data. This task will help connect organizations already signed contracts joining the INPC (but not yet connected) as well as those who will join during the Beacon Community

Program. This will involve: (i) formalizing a dedicated interface team; (ii) recruiting and training additional interface and normalization team-members; (iii) refining existing and acquiring or building new software tools to automate certain tasks within the interfacing and normalization processes; and (iv) re-engineering the current interface and normalization processes for greater efficiency.

Aim 1B: Address high value data element gaps by capturing point-of-care data such as vital signs, in-physician-office orders and labs - Data elements not currently captured will need to be accessed and analyzed to calculate progress within IHIE's proposed quality, efficiency, and population health measures. Primary among these are three patient vital signs: blood pressure, height, and weight. Industry-wide, these data have proven to be difficult to capture comprehensively. While IHIE will eventually be able to capture these data from most providers through an interface to their EMR, it is critical that more immediate, alternate processes be created to advance our goals. Even among healthcare providers using EMRs, these three vital signs are often not consistently recorded as structured data so the Beacon Community Program will improve these processes as well. Innovative methods of capturing these vital signs, in addition to EMRs, must be devised, developed, and deployed in order to measure the Beacon Community Program's chosen efficiency, quality, and population health targets. IHIE proposes achieving this by employing seven specific tactics:

- Determine what vital signs data is currently being captured in the INPC from hospitals or claims and consider the implications of those findings in the tactics below;
- Analyze the profile of physician practices within the target region and determine which are capable of and willing to provide data via electronic interfaces (currently in use in QHF with specific physician groups);
- According to the profile above, implement interfaces and batch load processes where appropriate;
- Devise and implement "low tech" mechanisms such as direct data entry via an interactive website and fax-back forms (such tactics are currently used successfully within the current QHF program);

- Create a "roadmap" for providers summarizing the highest priority data as well as add quality measures that require these data to qualify for payer incentives;
- Investigate innovative tactics for capturing data via other means (e.g., direct from patients) to fill in gaps left by healthcare provider practices not providing data; and
- Normalize the data received to conform to HHS terminology standards.

Aim 1C: Partner with Surescripts to standardize the exchange of key data between commercially available EMRs and IHIE – In order to lower the technical and economic barriers to connecting physician practice EMRs to the HIE infrastructure, the Beacon Program will work in partnership with Surescripts to standardize the exchange of key data between commercially available EMRs commonly used in physician practices and IHIE. Surescripts is the major electronic broker of ePrescribing transactions nationally and the undisputed leader in electronically connecting physician practice EMRs to pharmacies. Because of their dominance in this niche, EMR software vendors make sure their software includes the ability to send ePrescriptions that conform to the Surescripts standard. In fact, Surescripts certifies EMR software so that physicians can buy it with confidence knowing their software will "plug-and-play" and they will be able to send electronic prescriptions. The concept behind partnering with Surescripts for Beacon is that they have agreed to bring this same approach to a broader set of transactions. As stated in the attached letter of commitment, Surescripts will work with the EMR vendors to persuade them to put into their software the capability to exchange certain key types of data electronically with IHIE. Once practices using the vendor's software upgrade to the newest version, there will be a basic "plug-and-play" connection to IHIE. This is significant because creating and maintaining a large number of custom interfaces to physician practices is very costly and, therefore, difficult to economically sustain. However, with Surescripts EMR vendor relationships, process, experience, and market influence, this a promising approach to demonstrate how an important problem can be solved for HIE nationally.

Table 2: Timeline, Goals & Partners for Obj. 1														
Lead Personnel: J.Kansky														
QUARTERS:	1	2	3	4	5	6	7	8	9	10	11	12	**Goals Advanced by Aim**	**Community Partners**
3A. Collect clinical information from additional hospitals, independent laboratories and imaging centers													Improve the comprehensiveness and accuracy of individual patient data to arm physicians with information to improve **QUALITY, EFFICIENCY AND POPULATION HEALTH**	Indiana Hospital Association (IHA), Indiana Rural Healthcare Association (IRHA)
3B. Address high value data element gaps by capturing point-of-care data such as vital signs, in-physician-office orders and labs													Enhance QHF's breadth of **QUALITY** indicators by capturing the most economically and clinically important individual patient data not currently captured	Regional Extension Center (PU), Indiana Primary Health Care Assoc (IPHCA)
3C: Partner with Surescripts to standardize the exchange of key data between commercially available EMRs and IHIE													Improve the comprehensiveness and accuracy of individual patient data to arm physicians with information to improve **QUALITY, EFFICIENCY AND POPULATION HEALTH**	Surescripts, Regenstrief Institute

Thrust 1.5 Evaluation, Performance Monitoring and Feedback

Obj. 2: Broaden and deepen the QHF Program by adding new measures and functionality to more fully address challenges regarding efficiency, quality and public health - As a part of the Beacon Community Cooperative Agreement Program, IHIE proposes to add the following significant features to its QHF:

Aim 2A: Measure important aspects of affordability and incorporate these measures into the QHF Program's healthcare provider reporting and incentive system - The QHF Program does not currently report measures designed to affect utilization or efficiency. However, healthcare provider leaders who participate on the QHF Measures Committee understand that the durability of the quality-based rewards depends upon improving affordability. This proposition is

explicit in IHIE's Medicare demonstration program[i]. IHIE is entitled to 50% of any savings it generates for CMS.[ii] To address the issue of affordability, the Beacon Community program will:

Task 2A.1: Incorporate affordability-related measures into the QHF reporting program - The measures will include:

- *Ambulatory Care Sensitive Admission Rates* - There are 14 Prevention Quality Indicators measures[12]. The Beacon Community Program will report all measures but focus our collaborative interventions on six. The Indiana Hospital Association has identified a subset of these ACS measures for multi-stakeholder intervention: (i) Diabetes Short Term Complications; (ii) Diabetes Long Term Complications; (iii) COPD; (iv) Congestive Heart Failure; (v) Diabetes Uncontrolled; and (vi) Lower Extremity Amputation. These six represent over 50% of ambulatory care sensitive admissions.
- *Ambulatory Care Sensitive ED visit rates* - Same list as above.
- *Readmission Rates for preventable conditions* - During the first year, the focus will be on heart failure, COPD, Pneumonia, AMI, CABG, PTCA and other vascular. These seven areas represent over 30% of Medicare readmissions[13].
- *Redundant Imaging* - These conditions are defined differently by different organizations, beginning by reporting testing rates in the following categories[14][iii]: (i) X-ray; (ii) Mammography; (iii) Ultrasound; (iv) MRI (including CNS, Spine, Extremity, Abdomen, and all other); and CT (including abdomen, CNS, spine, chest and all others).

In order to produce these reports, IHIE will use the QHF Program's algorithmic assignment process to identify the primary care provider (PCP) for each patient. The number of patients in each cohort must be large to provide reasonably stable utilization measures. This has two implications: (i) IHIE will assign PCPs and their patients to hospital-associated cohorts by identifying the hospital where most of the PCP's patients are admitted. This produces a cohort akin to an "accountable care organization" or ACO. (ii) IHIE will produce measures for all populations (commercial, Medicaid and Medicare) while adjusting cohort comparisons for the relative number of patients in each population, as IHIE does for the QHF Program's quality measures. IHIE estimates that the above four areas bulleted above constitute about 45% of

[i] http://www.cms.hhs.gov/DemoProjectsEvalRpts/downloads/MMA646_IHIE_Fact_Sheet.pdf
[ii] Savings are computed by comparing IHIE's trend with the average trend for equivalent populations in three comparison communities – Louisville, Columbus (OH), and Milwaukee.
[iii] For a discussion of the breakout, see Rising Use of Diagnostic Medical Imaging In A Large Integrated Health System. The breakouts for CT and MRs represent the fastest growing images within these test types.

Medicare A&B spending in our community. To improve affordability, IHIE will:

- Provide comparative reports on the above affordability measures to participating healthcare providers. Based upon our experience with other measures, simply providing information leads to improvement;
- Align the incentives of providers with payers by using all-population efficiency measures in IHIE's Medicare demonstration incentive program and working with other payers to do the same; and
- Work in collaboration with the Indiana Hospital Association and providers to develop hospital-specific interventions in the six ACS conditions selected above.

This reporting is possible because IHIE has the claims, enrollment and clinical information for these patients.

Task 2A.2: Develop additional tools and information for participating healthcare providers and payers that address affordability by Year 3 - The objective is to extend the comparative utilization information to as many other aspects of care as possible. The Beacon Community Program is proposing a two-step process. First, introduce a limited number of clinically-related items (detailed in Aim 2A.1) early in the program, then convene a permanent panel of healthcare providers, payers, hospitals and other stakeholders to review and evaluate the current efficiency measures and expand them over time. The Beacon Community Program proposes a community-level practice redesign and care coordination process (see Objective 4 for details), rather than an explicit path, for three reasons:

- *Avoiding information overload.* There is a limit to the amount of information that healthcare providers will read and react to, excepting clinical information for immediate use.
- *Promoting collaboration.* Healthcare provider (and payer) support is earned by seeking input rather than prescribing a conclusion.
- *IHIE receives reimbursement information for Medicare and Medicaid.* IHIE does not currently request reimbursement information from commercial carriers. Some high value approaches (such as episode profiling) require reimbursement information. IHIE must earn payers' trust if they are to provide what they consider to be proprietary information.

Aim 2B: Incorporate information about race and ethnicity disparities into our existing community-level evaluation, performance monitoring and feedback - In conjunction

with other stakeholders, IHIE has established a group (Central Indiana Alliance for Health – CIA4H), to engage providers, research experts, and community members in dialogue about disparities in care and access to care. Initial studies by CIA4H indicate that there are material disparities in care and access to care based on Race, Ethnicity and Language (REL) factors. The coalition[i] has determined that REL data is not collected in many environments; furthermore, when it is collected, it is not collected consistently nor in common terms that would make it useful in evaluating care throughout the community. Standard data definitions and consistent collection processes need to be developed and implemented. The CIA4H proposes to evaluate the best methods to collect, monitor, and report data related to REL. The CIA4H has identified the Indiana Minority Health Coalition (IMHC), in collaboration with the QIO (Health Care Excel or HCE) and the Indiana University Bowen Research Center, as the entities to lead the efforts of this coalition.

This improved data on REL will be captured in source clinical systems such as registration systems and integrated into the Indiana Network for Patient Care (INPC). The data will be incorporated into the QHF Program's patient care reports that are provided to healthcare providers on a monthly basis. REL data will also be available at both the community and medical group level and, at some point (see Aim 2C), will be publicly reported. Funding from the Beacon Community cooperative agreement and from a Robert Wood Johnson Foundation grant (Aligning Forces for Quality) will be used to implement this program. With the CIA4H group, the Beacon Community Program will:

- Conduct a comprehensive survey of central Indiana area hospitals, ambulatory providers, and health plans to determine their existing REL data collection practices: The team will then: (i) Synthesize data and generate a report of findings and recommendations to be presented to key stakeholders; and (ii) Establish a standardized data collection and reporting method on

[i] As described below, this coalition was formed around a Robert Wood Johnson Foundation grant applications called "Aligning Forces for Quality." A decision to fund this request has not been made.

REL of patients using the findings from the assessment and strategies provided in the Health Research and Educational Trust Disparities Toolkit[15].

- Develop a Pilot Standardized Data Collection Strategy: IHIE will conduct a pilot program to implement the newly established standardized methods for data collection and reporting on REL with health care systems that agree to participate. In addition, IHIE will: (i) Work with the information technology department(s) at the organizations to incorporate the standardized data collection fields into their data collection systems; (ii) Educate health system personnel on the importance of collecting and reporting demographics, as well as specifically how the leadership team determined the patient REL characteristics should be gathered; (iii) Train the hospital staff in the data collection protocol, and employ the data collection strategy; (iv) Evaluate the pilot project by assessing perceived barriers, ease of use, and successes; and (v) Generate a report of findings and recommendations to be presented to key stakeholders.

- Develop a surveillance system for monitoring and reporting data from pilot and additional sites that may opt to participate later. IHIE will use REL groupings to conduct surveillance of diabetes burden, self-management, and diabetes risk factors among central Indiana residents.

- Provide REL Community Reporting: IHIE will provide community care quality reporting that can be acted on by the CIA4H and other community entities. IHIE will also provide REL reporting to healthcare provider groups at the physician level – not necessarily for public reporting, but to assist physicians in improving care.

The purpose of measuring and reporting REL information is to assist in developing plans to move care toward best practice, as discussed in Objective 4.

Aim 2C: Begin to publicly report quality results from the QHF Program designed for consumer use – Although IHIE does not currently produce public quality reports, we believe that public reporting by physician group creates a level of transparency that will motivate providers to improve their performance.

The QHF Program currently produces provider-specific ambulatory quality reports and is committed to publicly reporting quality performance results at the medical group level. All of the current quality measures are evidence-based, endorsed by the National Quality Forum and selected by local healthcare providers. IHIE has established a collaborative process for selecting ambulatory measures for public reporting and designing these reports. The process starts with a Consumer Participation Group. Recommendations from this group go to the Measures

Committee for review and then to the Administrative Committee for final action. The first reports are slated to be designed and published by late 2010, with subsequent reports published approximately every six months, with a goal to integrate REL data by September, 2011.

Ambulatory survey measures on access to care and satisfaction will also be publicly reported after these surveys are completed. It is our intention to start publicly reporting inpatient measures in late 2010 using existing Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) information, expanding to other performance measures in 2011. Additional inpatient performance measures will be incorporated after review and endorsement by the hospital leaders and coordinated with the RWJ Leadership Team and the Beacon Executive Steering Committee. For example, measures to assess quality improvement related to diabetes care across the continuum and involving nursing and front-line staff will be selected based on nationally endorsed measures. The AHRQ Prevention, Quality, and Patient Safety Indicators, along with measures for HCAHPS, the CMS 2010 payment update and hospital-acquired conditions will be evaluated for inclusion in the measure set for public reporting.

Table 3: Timeline and Summary of Goals for Obj. 2														
Lead Personnel: D. Kelleher														
Quarter:	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**Goals Advanced by Aim**	**Community Partners**
1A: Incorporate affordability measures into QHF's physician reporting and incentive system													**EFFICIENCY** – ACS Admissions; Readmissions; ED; Radiological Imaging	CPI; St. Vincent; IHA; United Healthcare
1B: integrate race and ethnicity disparity reports into QHF reports													**QUALITY** – Diabetic A1C; Diabetic LDL; Colorectal & Cervical Cancer Screening	IU Bowen Center; IHA; Health Care Excel (RWJ Initiative)
1C: Begin to publicly report quality results from the QHF Program designed for consumer use													**PUBLIC HEALTH** - Colorectal & Cervical Cancer; Adult Immunization; EMR Meaningful Use	Selected members of Consumer Committee
Work Distribution Key:	**Preparation**				**Low Intensity**					**High Intensity**				

Thrust III: Integration of Health Information Technology into Care Delivery

Obj. 3: Expand QHF-participating providers and payers across HRR 183 - IHIE's initial aim for the QHF Program was to develop, implement and prove that the program is feasible and adds value to physicians, payers and communities. Consequently, the QHF Program focused upon primary care providers (PCPs) in the nine-county, central Indiana area that includes and surrounds Indianapolis. The Program has since been proven effective. Currently, 915 of approximately 1,200 PCPs in this nine-county area participate in the QHF Program, and nearly 1,000 PCPs participate statewide. The QHF Program offers the following features that address important criticisms of quality measurement and P4P programs voiced in other markets. The QHF Program:

- Is managed by an independent non-profit organization (IHIE);
- Integrates hospital and lab clinical data with data from multiple health plans and payers to assure the provider's reports represent a significant portion of his/her patients;
- Allows physicians to reconcile reports and submit "point of care" data;
- Proactively improves individual patient care, while providing a "performance measuring program;"
- Offers measures that are selected by community physicians; and
- Provides one report card and one set of measures covering all payers; payers are required to use this report for at least 50% of their quality incentive measures. This addresses physicians' objections to receiving different "report cards" from different payers, each containing different measures for a thin slice of their patients.

Recently, the QHF Program began expanding outside the nine-county area in response to inquiries from employer and physician groups. This piece-meal expansion is not efficient and does not serve the needs of participating payers who must have a unified reimbursement/incentive system at least at the community level. Through the Beacon Community Program, IHIE will launch a systematic geographical expansion that will help the QHF Program to: (i) become self sustaining; (ii) provide maximum value to payers: (iii) extend the measure set; (iv) extend provider participation to other specialties; and (v) expand the

program's payer base. IHIE will expand QHF-participating providers and payers across HRR 183 through the following aims:

Aim 3A: Enroll additional physicians by identifying and reaching out to primary care and specialty providers throughout HRR 183 - IHIE will develop a coordinated plan to present to all physicians. This effort will begin by identifying all PCPs, practices and provider groups by zip code and county. IHIE will coordinate the QHF Program effort with initial letters from the payers indicating that QHF is the payer's one-and-only pay-for-performance (P4P) program. (This approach was very effective when implemented by Anthem Wellpoint in the northern part of the state.) In addition, IHIE will:

- Expand IHIE's capacity to educate and enroll large numbers of new PCPs by augmenting its Physician-Liaison staff to be able to solicit physicians, make presentations, and follow up with the administrative follow-on tasks. This will include hiring additional staff as well as soliciting help from participating health plans, hospital and physician groups already participating in QHF.
- Use Web-based instruction scenarios to identify the most effective ongoing physician office implementation and maintenance support opportunities. This will be done through development of web based instruction scenarios with use of payer-provider representatives to assist.
- Develop a "Physician Solicitation" questionnaire to gather intelligence information during the enrollment process that will be useful in later phases of the implementation. (For instance to identify EMR names and versions, vendors to develop point of care data extract interfaces, to determine the amount of EMR technical training needed, to determine whether or not the practice is downloading data electronically from national labs, hospitals and other critical sources.).
- Repeat all the above to add specialties such as Cardiology (planned for mid-2010), oncology & endocrinology (planned for 2011).

Aim 3B: Develop and implement marketing plan to enroll insurance carriers, third party administrators, Medicaid managed care organizations, and employers in the HRR 183 not currently participating in QHF – IHIE will use Beacon Community cooperative agreement funds to hire a marketing director, develop more "proof of value" points (e.g., showing quality improvement and cost reduction over time) and implement a marketing plan

targeted at insurers, self funded employers, Medicaid plans, TPAs and other organizations representing payers. To effectively increase the number of payers in the QHF Program, it is critical that IHIE demonstrate the Program's positive impact upon both the payers' investment and the patients' health.

In the QHF Program, Payers provide medical claims data and enrollment information, beginning with 24 to 36 months of historical data followed by monthly updates. Payers also financially underwrite program costs by paying a fee based upon the number of covered lives they represent in the QHF measurement areas. Given a large enough population, these funds will sustain the program. Payers are also required to administer (and fund) a P4P incentive program for QHF providers. IHIE must demonstrate a return on investment to the payers – both in terms of money and in improvements in health. A marketing plan must include studies and return-on-investment results addressing both dimensions. To illustrate the Program's positive impact upon patients' health, IHIE will continue to build upon the following preliminary findings from the QHF Program. These data compare the performance of physicians participating in QHF vs. non-participating physicians, and are only suggestive and not conclusive because participation by physicians is voluntary:

- For diabetes measures, 76% of the diabetic patients of QHF physicians received appropriate testing and evaluations while only 61% did so in the non-QHF cohort of physicians. From this, IHIE can predict that diabetics within QHF cost significantly less than non participating patients.[16]
- Preliminary results from QHF comparisons in LDL, Cervical Cancer, Breast Cancer and Chlamydia screening as well as Well Child visits show similar differences between physicians participating in QHF versus those not participating.

As part of the Beacon Community Program, IHIE will develop more conclusive "proof of value" points that reflect its quality improvement and cost reduction capabilities. This information will be central to the Beacon community's proposed marketing plan targeted at insurers, self-funded

employers, Medicaid plans, TPAs and other organizations representing payers.

Table 4: Timeline and Summary of Goals for Obj. 3														
Lead Personnel: C. Schultz														
	1	2	3	4	5	6	7	8	9	10	11	12	**Goals Advanced by Aim**	**Community Partners**
3A: Enroll additional healthcare providers by reaching out to Primary Care Providers in HRR 183;													**QUALITY, EFFICIENCY, PUBLIC HEALTH:** Extend program to a larger population	Anthem, United Healthcare, IMA, ISMA, Currently-enrolled QHF Groups
3B: Enroll additional Payer-organizations in HRR 183													**QUALITY, EFFICIENCY, PUBLIC HEALTH:** Improve info base for all goals; Enhance visibility of HIE-based programs	MDwise, Managed Health Services; CIGNA; Aetna; Humana
Work Distribution Key:	**Preparation**				**Low Intensity**				**High Intensity**					

Obj. 4: Devise and implement initiatives aimed at advancing care processes toward best practice - The health outcome policy priorities identified in the Medicare and Medicaid EHR Incentive Programs proposed rule are: "improving quality, safety, efficiency, and reducing health disparities; engage patients and families in their health care; improve care coordination; improve population and public health; and ensure adequate privacy and security protections for personal health information." A sound foundation exists for improving the quality and safety of care in central Indiana and IHIE has begun to align incentives, improve care coordination and population and public health. Current efforts, however, fall short with respect to fully achieving these health outcome priorities. No single "solution" exists to the challenges confronting our health care system, so it will take multiple activities and the coordinated efforts of all stakeholders to improve value. As healthcare costs climb, addressing these challenges with an integrated series of programs is essential. Developing them in concert with a community-wide

collaboration that promotes communication and involvement will ensure development of the programs that properly articulate a cohesive plan to promote system-wide excellence.

As one example of successful community-level practice redesign and care coordination IHIE participated in an Employers' Forum-led, multi-stakeholder initiative to promote the adoption and use of electronic prescribing (eRx) in central Indiana. This initiative (along with Medicare and health plan incentives) resulted in a substantial increase in the use of electronic prescribing. The number of providers using eRx more than doubled while the number of prescriptions transmitted electronically

Table 5: Summary of Objective 4 Aims

Synopsis of Objective 4 Aims						
	Summary of Obj. 4 Aims	Develop/ acquire New Information	Analysis and Goal Setting	New Function-ality	Multi-stakeholder involvement	Sustainable
Aim A	Improvement Goals	System of care: Utilization and Quality	Identify unwarranted variation by system	Utilization reporting	Insurers, hospitals, physicians, Employers, public	Payer support of QHF, if measurable change
Aim B	Medication Adherence	Medications Not filled	Comparisons by provider	Yes	Insurers, hospitals, physicians, Employers	Payer support of QHF, if measurable change
Aim C	Value-based Benefit Design	tracking changes in affected measures	Goal setting important	No	Insurers, physicians, Employers	Low cost added value
Aim D	Electronic Admisson Notification	No	Timeliness of information	Transmitting information to carriers	Carriers, hospitals	Evaluation by carriers, fee-based service
Aim E	Home Monitoring	Yes, real time vital signs, lab values	Significant declines in readmits and ED visits	Yes, monitoring equipment, flow and care management	Hospitals, carriers, physicians	Sustainable if either hospitals or carriers agree to fund
Aim F	Coordination of Care	Using existing information organized by care system	Dependent on variation discovered	No, learning environment, dissemination	Insurers, hospitals, physicians, Employers	Will continue among participants that find benefit
Aim G	Meaningful Use	EMR offering linked to INPC	Adoption and use	Yes, EMR solution	Insurers, hospitals, physicians, Employers	Adoption rate
Aim H	Clinical Decision Support	Clinical decision support software developed and disseminated	Adopton of EMRs with CDSS or use via D4D	Yes, 5 vendors with CMS-recommended standards	Physicians	Adoption of EMRs with decision support or use of D4D CDSS

increased by a factor of five (Table 5).

Therefore, the Beacon Community Program plans to expand our existing platform by developing a series of initiatives and capabilities in cooperation with multiple community stakeholders. Objective 4 (summarized in Table 5 and detailed in the following aims) describes a series of eight actions intended to improve quality, reduce the cost of care, and/or improve population health by advancing care toward best practices. Many of the interventions require new functionality or the acquisition and use of new information. As a result, these efforts will be supported by a multi-disciplinary team including an analytic group, a "lean" team and an EHR implementation group. All of these endeavors will be developed with the active engagement of stakeholder advisory committees. Some will be led by external stakeholders who are contributing their time to lead certain projects. Success in any area can't be guaranteed but the criteria for success, the improvements expected and the parties that will potentially fund continuation will be identified early in the stakeholder engagement process.

Aim 4A: Establish community-wide goals for care improvement - As in most communities, HRR 183 lacks a forum for clearly identifying and articulating healthcare improvement goals. Although the Indiana State Department of Health periodically creates and disseminates a statewide assessment of health needs[i] it has not served as a focal point for change. A Robert Wood Johnson Foundation Aligning Forces for Quality grant in 2009 catalyzed development of measureable goals for quality, efficiency and population health improvement. The Beacon Community Program plans to build upon the momentum created by this ambitious effort.

[i] *http://www.in.gov/isdh/files/state_health_needs_2007.pdf* (accessed January 24, 2010)

The QHF Program supports providers' efforts to improve quality of care by providing them with information about their performance on selected quality measures in comparison to their peers (along with individual patient level reminders and alerts). There is much more that can be done, however, to support practice redesign and care coordination. Richer, more sophisticated analyses can provide additional insights. As described in Objective 3A, the Beacon Community Program plans to model these patient flows with the goal of identifying the functional systems of care. Once identified, these systems of care will become the focus for efforts to improve coordination of care, quality, and efficiency.

Individual primary care groups, specialty groups and hospitals often struggle to make meaningful progress because they fail to take into account these systems of care. A hospital focusing on coordination of care at discharge that targets its own healthcare providers only, for example, may make improvements but only for a modest portion of the patients they discharge since so many will be followed after discharge by healthcare providers that practice outside of the hospital system. Developing a functional system of care or "accountable care organization" definition based upon the actual patterns of care observed is a necessary first step to measuring differences within communities in ambulatory care sensitive admissions, readmission, ED visits and redundant imaging. This segmentation of the population can then be used to provide comparative quality, affordability and population health reports at the level of the care system.

Aim 4B: Incorporate medication adherence and other medication related outcomes into the QHF Program. At present, healthcare providers often do not know which of their patients are not adhering to their medication regimens. IHIE proposes to establish a program that informs healthcare providers when important prescriptions are not filled by their patients. The program will be integrated with the QHF Program. The medical groups must: (a) be participating

in Quality Health First and (b) have adopted and be using electronic prescribing.[i] IHIE anticipates that this initiative will involve the following elements:

- Providing a list of all of patients who were issued prescriptions - The medical group (and/or its eRx solution provider) will provide to IHIE, on a quarterly basis, a list of all of patients who were issued prescriptions since the last report along with the medications prescribed.
- Identifying a subset of patients using specific chronic pharmacologic therapies: IHIE will use this information, in concert with QHF information, to identify a subset of patients maintained on the following chronic pharmacologic therapies: (i) Asthma; (ii) Depression; (iii) Diabetes; (iv) Heart disease; (v) Hypertension; (vi) Hyperlipidemia; and (vii) Anticoagulation therapy;
    - *IHIE will first compare this list with the pharmacy claims information it obtains directly from participating payers.* It will develop a list of patients/prescriptions that have not been found in the payer claims information and send this (hopefully small) list of patients to the medical group and request that the medical group seek medication histories for these patients through Surescripts and provide these histories to IHIE;
    - *IHIE will then compare prescriptions written for these patients with the medication histories and identify which new and refill prescriptions were NOT received by the patient.* This information will be made available to the prescribing healthcare provider via the QHF quality reporting system.

This effort will start with a subset of patients and prescriptions for a number of reasons. First, performance with respect to most of the illnesses/pharmacologic treatments identified above is being measured and used in pay-for-performance awards. The Beacon Community Program expects healthcare providers to actively use information that can improve quality and boost their financial rewards. This will lead to improvements in the clinical measures targeted in this application (diabetic A1c control levels and LDL targets) and ACS admissions, readmissions and ED visits. Second, to avoid "alert fatigue" by initially concentrating on a subset of conditions, QHF limits the scope of alerts and reminders - especially those delivered in batches. Third, a focus on a subset will reduce the number of histories the medical group seeks from Surescripts (so the program can be more efficient).

As the number of alerts for the initial cohort of conditions decline, the program can expand the illnesses/prescriptions covered and the number and specialties of healthcare providers

[i] Certified as Surescripts Solution Providers

participating can also increase. One of the first high-priority additions will be to develop reports that identify prescriptions that should not be prescribed to the elderly either because they should generally be avoided by persons over 65 or the medications should not be used in older persons known to have specific medical conditions.[17] As described more fully at the end of the objective section, this program will be developed with the support of an analytic team and in concert with a multi-stakeholder advisory group.

Aim 4C: Facilitate a multi-stakeholder discussion among provider, carriers, employers and other payers to promote value-based benefit design. Provider feedback suggests that a significant number of patients do not comply with medical advice because of the design of their benefits. An initial focus for this discussion may be on which prescriptions are *not* filled. One local health system has demonstrated dramatic reductions in hospitalizations and ED visits for diabetic patients when all co-pays for diabetic medications were eliminated.[i] In order to replicate this experience at a community level, the Beacon Community Program will need to convince multiple payers to make this benefit change. Benefit design might encourage the use of services when the clinical benefits exceed the cost; similarly, it might discourage use of services when the benefits do not justify the cost.

IHIE's initial focus will be upon clinical outcomes for patients with chronic illnesses – including hypertension, heart disease, diabetes, depression and asthma. IHIE will start with medication adherence for a number of reasons. A substantial body of work exists to inform these discussions. Readily adoptable tools exist to increase adherence by patients with chronic illnesses. For example, diabetic patients are sensitive to the cost of medications and supplies, and the cost of care for diabetic patients is inversely related to medication compliance.[18] The

[i] Personal communications Jon Raman, MD, CMO, St. Vincent Health

Beacon Community Program will have a reporting system in place to measure results – both intermediate (i.e., is compliance increasing?) and longer term (i.e., are lab values improving?)

It is our belief that targeted changes in benefit design can measurably improve clinical results (e.g., A1c and LDL control levels) and cost of care (ACS condition admissions, readmissions and ED visits). After Year 1, IHIE will broaden the analytics and discussion to include benefit design for other aspects of care (e.g., imaging) and to include additional elements of payment reform (e.g., episode based payment structures). As with medication compliance, IHIE will measure the results of any interventions that result from these community-wide discussions.

Aim 4D: Develop an electronic admissions notification program for inpatient and ED admissions for participating health plans. The care managers of health plans believe that they can better support the patient, and reduce costs, if they are involved early in the care process. To better arm care managers of health plans to support the care of patients and reduce costs, the Beacon Community Program will produce a pilot program that has been running for almost a year with MDWise, a Medicaid MCO. This system electronically notifies the care managers *in near real-time* when one of their members visits an emergency department or is admitted to a hospital.

This electronic admissions notification program for participating health plans is possible because IHIE is in the stream of admissions / discharge / transfer (ADT) data from all hospitals that participate in the INPC. When a patient has been admitted or has presented to an emergency department at any connected hospital, the electronic message received by the INPC can be matched with the patient's insurance eligibility and trigger a notification to the care management function at the corresponding health plan. Beyond notification, this service could deliver (or open access to) relevant clinical data about the patient to the care manager. The service could

focus on specific conditions such as ambulatory care sensitive conditions, and leverage effective and efficient communications with providers through IHIE's pervasive DOCS4DOCS clinical messaging service. A logical extension may be to provide notification at discharge to facilitate core coordination in that critical period. We anticipate that this process will reduce hospital admissions or length of stay because care managers are involved earlier. However, given that other initiatives also aim at reduce admissions, the primary indication of success for this program is the health insurance carriers' willingness to fund the program at the conclusion of the cooperative agreement.

Aim 4E: Home monitoring of patients discharged with ambulatory care sensitive conditions. The goal of this initiative is to improve care, and to reduce readmissions and emergency department visits for patients with chronic illnesses. This program will:

- Establish a consumer portal that allows the patient to upload information directly from blood glucose meters, blood pressure cuffs, weight scales and activity monitors;
- Develop algorithms that flag patients and protocols for treating those patients that are at especially high risk and which will generate alerts which trigger an intervention;
- Develop contracts with technology vendors to obtain best prices for the above equipment and for distribution, patient training and maintenance of the equipment. The Program also will provide this equipment to qualifying patients; and
- Develop a clinical care team, or contract with an existing organization, that will monitor patients, receive any alerts and coordinate necessary interventions with the patient's medical home. The Program will pay for this service for qualifying patients for a defined period of time.

The Beacon Community Program will collaborate with the hospitals in HRR 183 to identify patients who will be discharged with an ambulatory care sensitive admission and who qualify for this program. For those hospitals participating in the INPC, automatic notifications will be generated for patients being discharged with a diagnosis indicating that intervention is appropriate. Upon discharge, collaborating hospitals will explain the program to the patient,

enroll patients in the program, arrange for the appropriate equipment to be provided to the patient and schedule training for the patient and others who support the patient at home.

This objective will be evaluated primarily upon its success in reducing readmissions and ED visits for enrolled members so the program will produce quarterly reports of readmissions and ED visits in comparison to pre-intervention levels. Over the course of the Beacon Community Program cycle, IHIE will work with a standing committee that includes payers, hospitals and healthcare provider groups to determine the value of the program to each party and how it can be sustained without cooperative agreement funds, or potentially expanded to a broader population.

Aim 4F: Increase the coordination of care – The Beacon Community Program will facilitate the collaborative environment necessary to increase the coordination of care within HRR 183. This will include: (i) Facilitating focused, multi-stakeholder discussions within the identified systems of care to identify opportunities for improvement; (ii) Creating multidisciplinary teams to facilitate change across organizations; (iii) Creating and monitoring measures of coordination of care and reporting them to the community; (iv) Facilitating new functions, services and enabling technologies to facilitate care.

In addition, the Beacon Community Program will work with payers to determine if new payment methods can be developed to support care coordination. For example, the region's largest safety net hospital, Wishard Health Services, is preparing to use ACS utilization rates as well as QHF quality measures as a basis for providing incentives for healthcare providers treating indigent patients. The Beacon Community Program will also use IHIE's 646 Demonstration to support care coordination.

Aim 4G: Increase the number of providers who achieve meaningful use of EHR in their practice - In collaboration with the relevant Regional Extension Center and hospital systems, the

Beacon Community Program will assist clinicians to become meaningful users of health information technology. The Beacon Community Program will focus our efforts on providing education and specific logic to enable clinical decision support and health information exchange functionality to facilitate coordination of care and ensuring that appropriate data are available to the provider.

Particularly in small practices, the Beacon Community Program anticipates that a hosted EMR solution or software-as-service will provide the most efficient and effective approach for them to become meaningful users. With the support of the Beacon Community cooperative agreement, the Beacon Community Program will provide an EMR offering for providers that is linked to the HIE and provides the functionality for results review, data, problem and note entry, order entry, clinical decision support and is linked to quality measurement and reporting and population health management EHR modules. This approach will allow providers to adopt an EMR in a more incremental fashion and avoid many of the implementation hurdles and operational barriers to becoming meaningful users. Specifically, the Program will: (i) Provide a hosted EMR option for practices at a modest fee; and (ii) Augment the resources available for implementation assistance available from the health systems and the REC to support enough providers with enough depth for 60% of primary care providers to become meaningful users by the end of the cooperative agreement.

Aim 4H: Increase the clinical-decision support available to providers – Many providers, including those who have EMRs, often do not have access to the clinical-decision support needed. The Beacon Community Program will strive to develop a clinical-decision-support system knowledge base (CDSS) utilizing ONC-adopted standards (for example, prescription drugs identified by their RxNorm unique identifiers to support our targeted outcomes and

Table 6: Timeline, Goals & Partners for Obj. 4														
Lead Personnel: J.M. Overhage														
QUARTERS:	1	2	3	4	5	6	7	8	9	10	11	12	**Goals Advanced by Aim**	**Community Partners**
4A: Establish community-wide goals for care improvement													**QUALITY, EFFICIENCY & POPULATION HEALTH**	Comm of Health, County Health Officer , QHF Measures Committee, hospitals, IHA
4B: Acquire and incorporate medication-possession information into the QHF Program's physician reporting process.													**QUALITY** (e.g., A1c and LDL for diabetics); & **EFFICIENCY** (e.g., lower admissions, readmissions and ED visits)	Purdue Center for Medication Safety; Pharma companies SureScripts, Anthem, United
4C: Begin a multi-stakeholder discussion among carriers, employers and other payers to promote value-based benefit design													**QUALITY & EFFICIENCY** by promoting compliance with medical advice	Self funded employers, medical groups, Brokers, Benefit Plan Consultants, carriers
4D: Develop an electronic admissions notification program for inpatient and ED admissions for participating health plans.													**EFFICIENCY** -lower utilization for preventable admissions. Promote relationships with payers that sustain the HIE.	Regenstrief Institute, MDwise, United Healthcare, Humana, IHA
4E: Home monitoring program for patients discharged with chronic conditions													**EFFICIENCY** -lower utilization for preventable admissions; **QUALITY** – improved care for diabetic patients.	St. Vincent (Dr. Snell), IHA, Carriers
4F: Increase the coordination of care													**QUALITY** and **EFFICIENCY** through development and dissemination of "best practices"	Indiana Hosp Association, Wishard Health Services, Measures Committee, Carrier
4G: Increase the number of providers who achieve meaningful use of EHR in their practice													**QUALITY** by providing more complete information at the point of care	Indiana Hospital Association; Regional Extension Program
4H: Increase the clinical-decision support available to providers													**QUALITY** by providing support for "best practice" decisions in the physician's office	Indiana Hospital Association; Regional Extension Program, Regenstrief Institute
Work Distribution Key:	**Preparation**												**Low Intensity**	**High Intensity**

meaningful use measures). The Beacon Community Program will work with the five EMR vendors who have the largest penetration in HR 183 to implement this CDSS in their systems and roll these out to physician practices that use those systems. In addition, this CDSS will be integrated into the HIE infrastructure so that providers using DOCS4DOCS or other tools will have access as well.

There are many opportunities to improve care that don't require a provider to use an EMR but achieving the highest levels of quality, safety and efficiency will require that they use EMR components. For example, assuming that our analyses are consistent with Partner's Healthcare findings that CT, MRI and US account for the majority of opportunities in radiological imaging, there are a variety of approaches that IHIE could take to reducing redundant utilization. Working with payers, for example, the Beacon Community Program could develop reimbursement models that support appropriate utilization and reward (rather than penalize) providers for higher levels of appropriate utilization. Alternatively, the Beacon Community Program could use scheduling information from radiologic service providers and data from the health information exchange to provide feedback to providers on the appropriateness of the studies they have ordered following the model that Partners Healthcare adopted. Of course, this feedback would be more effective if delivered at the time the study was ordered, which requires that the provider be using an EMR for order entry. Many EMRs lack the functionality or the data to deliver decision support around radiologic study ordering, but IHIE can provide this level of clinical decision support and provide feedback to the provider in less than one second.

D. Populations with Specific Needs

The coalition of stakeholders represented by this application includes many representatives of populations with specific needs: safety net hospitals, community health centers, minority

coalitions, primary care providers, the state's largest mental health center,[i] our QIO, public health authorities, Medicaid managed care organizations and disease-specific advocacy groups. As a part of this Beacon Community program (see Aim 2B), IHIE is will acquire race, ethnicity and language (REL) information and use this information to improve care for patients that are shown to be disadvantaged. IHIE plans to:

- Determine what REL information is being collected today by hospitals, health centers and other outpatient providers and health plans;
- Pilot a standardized data collection strategy;
- Develop a system for monitoring and reporting these data; and
- Integrate REL information into the QHF reporting system so that providers understand how quality measures differ along these dimensions.

The proposed Beacon Community Program is a "lift-all-boats" effort. It is not just for those with public or private insurance. QHF, for example, reports quality metrics by population (participating commercially insured, Medicare, Medicaid and other) and then a global comparison "score" for each measure that is adjusted for the differences in a healthcare provider's panel of patients. These include well-child, maternal health and two mental health measures.

Payers use these all-population composite scores, not just the performance on their own members, when rewarding performance. The adjustment process is designed to ensure that providers serving special (harder to manage) populations are not disadvantaged with respect to quality-related financial incentives and the use of the global scores in each payer's incentive system is designed to encourage providers to raise quality for all patients, regardless of payment source.

The program provides healthcare providers with alerts and reminders with respect to the care of all patients for which it has information. This includes uninsured patients as well as those

[i] Midtown Mental Health Center experienced over 750,000 encounters last year.

insured by payers not participating in QHF. For the initial nine-county QHF area, IHIE has relevant information on the overwhelming majority of residents. As the INPC and QHF programs expand, clinical and REL information for more residents will be incorporated into the quality reports and patient-level alerts and reminders will cover the majority of citizens in HRR 183.

E. Project Management

Building a coalition of collaborating community groups is "standard operating procedure" for IHIE, and will translate directly to providing efficient and informed oversight of the Beacon Community Program's efforts. Existing committees, coordinated by IHIE, represent diverse interests of healthcare in our community. They include:

- QHF Measures Committee – is comprised of hospitals, health plans, education, physician practices, Medicaid, IN State government, with the role of selecting and approving QHF clinical changes and recommending committee membership;
- QHF Administrative Committee – is comprised of hospitals, health plans, employers, physician practices, Medicaid, IN State Government, with the executive role of participating in annual operational plan and long-term strategies for QHF and approving decisions from the Measures Committee; and
- INPC Management Committee – is comprised of INPC members, with the role of contributing to INPC strategy and approving new INPC participating facilities.

Business associate agreements are currently in place or can be executed as needed to support Beacon Community. An Executive Stakeholder Committee, comprised of representatives from these committees, will have input to and oversight of the Beacon Community Program. A Program Steering Committee (reporting to the Program Director and Program Manager) will approve the scope and monitor the execution of project plans in collaboration with existing work teams. Program progress will be tracked, documented, and reported on regular intervals to all program interested parties.

Roles and Responsibilities

- Program Director Marc Overhage, MD, PhD - will have overall responsibility for program execution and success. Responsibilities include: (i) Scope approval; (ii) Risk Management Oversight; (iii) Resource Allocation; and (iv) Chair Executive Stakeholder Committee.

- Program Manager David Kelleher – will have day to day responsibility for program execution and success. Responsibilities include: (i) Scope approval and management; (ii) Change Management Oversight; (iii) Issue Resolution; (iv) Risk Management; (v) Resource Allocation; (vi) Prepare and present program progress reporting package for program leadership; (v) Chair Executive Stakeholder Committee in the absence of the Program Director; (vi) Chair Program Steering Committee.

- Executive Stakeholder Committee – will be led by Program Director Marc Overhage, MD, PhD and will be comprised of representatives from contributing organizations listed in the organizational chart (Fig. 2), such as IHIE, RI, INPC Management Committee, QHF Measures and Administrative Committees, Health Plans, Hospital Systems, etc. Responsibilities will include: (i) high-level oversight and support for program effectiveness, progress, and health; (ii) receive and review monthly progress and health reports; (iii) allocation of resources; (iv) active participation in program report review and question process; (v) last resort only for issue resolution and risk management.

- Program Steering Committee – will be chaired by Program Manager. Members will include: Project manager(s), representatives from IHIE, Regenstrief Institute, Project committees, etc. Responsibilities will include: (i) day-to-day oversight and support for program effectiveness, progress, and health; (ii) meet monthly (or as needed) to review program health (status, scope, schedule, budget, issues, risks), resolve escalated issues, review risk

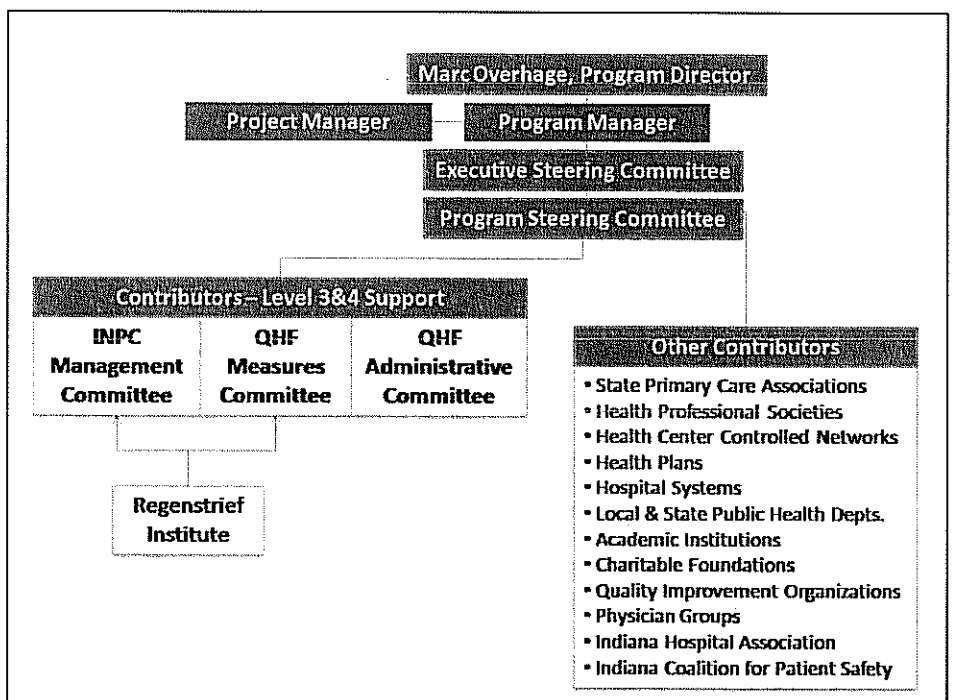


Fig. 2: Beacon Community Program Organizational Chart

and contingency plans; (iii) allocation of resources; (iv) review, advise, and approve all overall program plans (scope, schedule, budget, training-provider support, communication, etc); (v) develop and approve periodic reporting to Executive Stakeholder Committee and other interested parties; (vi) develop and approve periodic reporting for ONC, internal and external audit, other regulatory or governing organizations; and (vii) review and advise evaluation and metrics processes for best practice development.

- Project Manager – This position will be filled by a person with experience in project planning and execution, scope, schedule, issue, risk, budget management; project health reporting. Responsibilities will include: (i) day-to-day coordination, leadership and tracking for all program components; (ii) scope and change management process; (iii) issue management process – initial resolution or escalation; (iv) risk management process; (v) track and consolidate program schedule progress and reporting; (vi) coordinate budget tracking and reporting; (vii) facilitate and document meetings; and (viii) Chair Program Steering Committee in the absence of the Program Manager.

Accountability and Governance

The Beacon Community Program will fully leverage the governing structure that currently exists for QHF and INPC. This includes the **INPC Management Committee, the QHF Measures Committee** and the **QHF Administrative Committee**. These existing committees currently have a strong infrastructure for addressing many challenges that will face the Beacon Community. Regenstrief Institute will continue to provide resources, expertise, and guidance to INPC and QHF development and expansion.

For example, efforts to incorporate additional data sources in Obj. 1 will utilize the "INPC New Member Agreement" and the INPC Management Committee process to approve new member involvement. This committee is comprised of INPC member organizations and serves to govern new organization involvement and uses of the data.

The Beacon Communities' effort to expand the number of QHF participating providers, as detailed in Obj. 3, will be most effectively monitored and governed by the QHF Administrative Committee. This committee, formed over four years ago, governs all policy aspects of the QHF program. This committee is comprised of representatives from stakeholder

organizations (e.g., providers, payers and employers). Any proposed expansion is approved by this committee and will be incorporated into the Beacon Community expansion.

Identifying and implementing additional QHF quality measures, as detailed in Obj. 2, will be under the purview of the QHF Measures and Administrative Committees. The QHF Measures Committee was formed specifically to apply clinical knowledge toward appropriately evaluating the various aspects of quality measures. If a new QHF measure is proposed through the Beacon Community Program, it will be approved by the Measures Committee before it is implemented.

The utilization of these existing committees ensures the proposed Beacon Community Program will have experienced personnel in place to make appropriate decisions for efficient progress. Additional committees will be organized as needed to execute program schedules and complete program deliverables. Examples include training, communication, evaluation and metrics, technology planning, provider support and ONC reporting.

Communication

The **Program Director and Program Manager** will provide at regular intervals, overall Beacon Community Program documentation and reporting. Program documentation will be created and distributed in an accessible way so that stakeholders in other organizations can remain current with program progress. IHIE will use existing communication conduits that are familiar with these stakeholders as well as create new conduits as needed.

F. Core Performance Measures

While evaluation is essential for determining whether or not the Goals and Objectives have been met, the process to achieving these is also critical in something as complex as the Beacon Communities. Logic Models are built around the principles of breaking down the

component parts of any program for ease in assessing progress in the programmatic development. They are divided into the categories with definitions listed in Table 7.

The strategy for the Beacon Community program has three major thrusts: Health IT and Exchange Infrastructure; Evaluation, Performance Monitoring and Feedback; and Integration of Health Information Technology into Care Delivery. Within these thrusts are a total of four objectives, and the proposed logic models for each of the objectives are provided below. These will form the

basis of insuring that the core performance of the program is being accomplished by providing benchmarks for the activities designed to achieve the final outcomes and impacts. As the Assumptions have been stated with rationales in the proposed strategies section and the global assets of the organization have been listed in the current state and gap analysis of the EHR adoption section, these will not be detailed. However, sample metrics will be used to show how performance will be measured.

Table 7: Principles of Logic Models

Assumptions	Inputs	Activities	Outputs	Outcomes	Impacts
Hypotheses driving the objectives	Assets of the Organization	Actions taken to achieve a desired aim Multiple aims require many actions	Immediate and tangible results of those specific actions	Desired goal as a result of the outputs Can be short, intermediate or long-term	Long-term realization of the individual objectives

Obj. 1: Connect, access, or capture additional clinical data sources

Aim	Input	Activity	Output	Metric	Outcome	Impact
1A. Information from additional sources	**IHIE targeted staff**	Acquire new members; Accelerate data capture; Batch load data from non-members	New members; Increase in data capture; Batch load protocols and agreements	Number of new members; Percent increase over time; Percent increase in non-member data	Increase in usable information for quality reporting	**Improved quality of care within HRR 183**
1B. Fill data element gaps	**Gap identification; Physician**	Implement batch load process;	Increased data elements; Model of low-	Number of data elements added,	Increase in total data elements	**Improved quality of care within HRR**

at Point-of-Care	**Practice Profiles**	Create low-tech solutions for data capture; Encourage incentives from payers	tech solutions; Plan for payer incentives for data capture	stratified by sources; Increase in physician participation following payer incentives	collected at Point-of-Care	**183; Appropriate reimbursement for physician participation**
1C. Partner with Surescripts for E-Prescribing	**IHIE and Surescripts Data Sets**	Standardize key data elements for data exchange	Core standards for data exchange for E-Prescribing	Report that can set national standards for E-Prescribing data elements	Increase in numbers of physicians within HRR 183 using E-Prescribing	**Improved patient safety and quality of care through use of E-Prescribing**

Obj. 2: Broaden and deepen the QHF Program by adding new measures and functionality to more fully address the challenges of efficiency, quality and public health.

Aim	Input	Activity	Output	Metric	Outcome	Impact
2A. Measure affordability; Incorporate into QHF	**Measure ID QHF Algorithms**	Develop Tools	Tools Incorporating Affordability Measures	Completed by Year 3	Providing Information	**Increase in Participation**
2B. Measure Race and Ethnic Disparities	**CIA4H**	Develop data definitions; Incorporate into INPC; Use CIA4H for tasks to insure full compliance	Standard data for REL; REL data available in INPC; Survey, pilot strategy, surveillance	List of data definitions; Technical specifications; Survey, pilot strategy documents, and results of surveillance	Monthly reports for providers; monitoring reports on demand	**Awareness of Race and Ethnic Disparities leading to improved performance**
2C. Public Reporting		Develop public reports using HEDIS measures	Report specifications for public use	Completion of first reports by late 2010	Routine semi-annual publication of reports	**Informed Health Care Consumers**

Obj. 3: Expand QHF-participating providers and payers across HRR 183

Aim	Input	Activity	Output	Metric	Outcome	Impact
3A. Enroll additional healthcare providers	**HRR 183**	Augment Physician-Liaison staff; Develop Physician / Solicitation Survey	Increased staff; Survey	Actual numbers; Survey data and analysis	Increased physician participation	**Improved care through increased participation in HIE**
3B. Increase payer participation in QHF	**Strategic priorities**	Hire Marketing Director; Develop marketing plan	Appointment of Marketing Director; Marketing Plan	Person on payroll; Implemented Plan	Increase in number of payers participating in QHF	**Sustainability of Program**

Obj. 4: Devise and implement initiatives aimed at moving care processes toward best practice

Aim	Input	Activity	Output	Metric	Outcome	Impact
4A. Community wide goals for care improvement	**Key stakeholders**	Develop functional definitions	Understanding of systems of care	Measurement of community differences	Comparative quality, affordability, and population health reports	**Knowledge that can effect quality improve-ments**
4B. Medication fill information in QHF	**eRx**	Provide list of patients issued scripts;	List of patients; Develop subset of drugs for chronic illnesses	Distribution on quarterly basis; Incorporation of chronic disease drugs into QHF	Ability of physicians to counsel patients on importance of meds	**Better compliance and improved health care outcomes**
4C. Value-Based Benefit Design	**Key stakeholders**	Promote Value-Based Design	Agreement on changes in benefit plan	Measurement of results of interventions	New model for incentives	**Improved health care outcomes**
4D. Electronic admissions notification	**Care managers; Health plans**	Develop a health-plan based admission system	Care management predicated admissions notification	Cost reductions in admissions processes	Reduced costs; Better decisions; Reduced admissions	**Improved systems of care**
4E. Home Monitoring for ACS discharge	**Key stakeholders**	Develop patient portal; Develop high risk flags; Create clinical care team; Provide equip. to patients	Patient portal; Algorithm driven high risk flags; Clinical care team; Plan for equipment distribution to patients	Workable portal; report outlining flags to be incorporated into portal; Names of team, training documents; #s of monitoring equipment in homes	Better information supporting coordination of care activities	**Improved coordina-tion of care leading to better health care outcomes**
4F. Coordination of Care	**Key stakeholders**	Host meetings; Create measures; Align incentives	Meeting minutes; Measurement consensus; Incentive agreement	#s of meetings; Measurement plan; Incentive plan	Better information supporting coordination of care activities	**Coordina-tion of care leading to better health care outcomes**
4G. Meaningful use of EHRs	**Providers**	Increase #s of providers achieving meaningful use	Enhanced decision-support; Reduction in inappropriate utilization	Numbers of providers using decision support; Utilization comparisons	Cost-effective health care	**Improved health care through meaningful use of EHRs**
4H. Clinical decision support	**Extant knowledge base; CMS standards for decision support**	Develop CDSS using CMS standards	Implementation of CDSS in 5 EHR systems	Numbers of providers using CDSS	Improved outcomes and meaningful use measures	**Improved health care through meaningful use of EHRs**

While the above logic models demonstrate the method for insuring that the core performance measures will be met, they are a representation of the links between the work process and the goals of the Beacon Community program. Components of the models may be adjusted based on iterative findings as the program develops. The above logic models are not granular in that they do not include all of the identified tasks nor all of the possible metrics that may be used for reporting. They also do not attempt to look at the fiscal management of the development and implementation process, although this will be conveyed as part of the overall reporting. Performance measures for the goals and objectives are summarized in the last logic model and are detailed in the evaluation section.

G. Evaluation

This section focuses on the outcome goals pursuant to three target areas for the Beacon Community: Improve Quality, Improve Efficiency, and Enhance Population Health. The seven outcome goals are listed below in the shaded boxes.

Quality

- Improve by 10% the proportion of patients whose diabetes is under control, as evidenced by HbA1C levels below 9%[i]
- Improve by 10% the proportion of diabetic patients whose cholesterol is controlled, as evidenced by achieving risk-adjusted LDL targets[ii]

Baseline HbA1C levels and LDL risk-adjusted data for diabetic patients in HRR 183 will be identified within the first four months of the award. The QHF program, expanded to include all healthcare providers within HRR 183, will provide comparative performance measures as a form of academic detailing. This intervention with primary care providers should result in improved patient monitoring and targeted outcomes.

[i] Relative to current performance
[ii] Relative to current performance

Primary care providers enrolled in QHF within HRR183 will form the population. These QHF participating providers in the Beacon Community program will provide the diabetic patient cohort. The HbA1C levels and risk adjusted LDL targets of their diabetic patients at the point of enrollment will form the baseline.

During the 11th quarter of the cooperative agreement period, HbA1C levels and risk-adjusted LDL levels of the diabetic patient cohort will be compared to the initial baseline data of HRR 183 as well as the aggregate of the specific diabetic patient cohort to determine whether there is quality improvement. It is anticipated that the providers who receive information regarding their patient target levels will be influenced by this information and take appropriate steps to improve diabetic care in their own patients. Comparison with the diabetic patient population baseline data should show less improvement but still show a tendency towards improved quality.

Efficiency

- Reduce by 3% ambulatory care sensitive (ACS) admissions and ED visits with resultant cost savings;
- Reduce by 10% ACS readmissions with resultant cost savings.

The Beacon Community Program will focus on six of the 14 PQI measures that represent more than 50% of the ACS admissions: (i) Diabetes Short Term Complications; (ii) Diabetes Long Term Complications; (iii) COPD; (iv) Congestive Heart Failure; (v) Diabetes Uncontrolled; and (vi) Lower Extremity Amputation.

To measure these outcome goals, the Beacon Community Program will use the comparative databases (IHIE, hospitals, Medicare and Medicaid) to determine the baseline data for ACS admissions, readmissions, and ED visits for the above six PQI measures over a six month period for the patient population in HRR183. At the end of the cooperative agreement period, the Beacon Community Program will obtain the same data from a six month period covering the

10th and 11th quarters for comparison. A 3% reduction in ACS admissions and ED visit is anticipated as well as a 10% reduction in readmissions based on the proposed interventions.

Cost savings of these admissions and ED visits will be calculated based on Medicare reimbursement rates for the aggregate cost categories for the various PQI measures. This financial data should give a proxy measure for potential cost savings with widespread implementation. It could also be used as comparative data for the national evaluation.

Efficiency (cont.)

- Reduce by 10% redundant radiologic studies with resultant cost savings

Determination of redundant radiologic studies will be ascertained in two ways. Redundant radiologic studies are done when completed studies are not available to the provider because of lack of timeliness of results or because the initial studies are not known to the provider. To identify redundant studies, the Program will use payer data. Duplicate radiologic tests requested within a week will be flagged for further study. Obviously, films of plural effusions may require duplication. However, most radiologic studies do not. The number of these redundant studies will be identified for a six-month period prior to the initiation of the cooperative agreement for baseline data and compared against those studies done the 10th and 11th quarters of the cooperative agreement period. Cost savings will be determined by using Medicare reimbursement rates for the specific tests.

Population Health

- Increase colorectal and cervical cancer screening by 5%
- Increase data available for adult immunizations by approximately 5%

Within four months of funding, the Beacon Community will identify the current data on colorectal and cervical cancer screening in HRR183 over a one year period. It is anticipated that there are approximately 2,000,000 screenings for each of these types of cancers annually. To

improve by 5%, we anticipate that there will be an additional 100,000 screening. Data will be collected and normalized from both payers and QHF to insure that all screenings are identified.

While there are a number of adult immunizations available, we will focus on the flu. Baseline data will be obtained from the Indiana State Department of Health and the Marion County Health Department for current levels of immunizations and levels compared to a comparable four-month period at the end of the funding period. The total immunization numbers will be adjusted for population change within HRR183. It is anticipated that data available for adult immunizations will increase by 5%.

IRB approvals will be requested for all aspects of the evaluation. When possible, aggregate data will be used. In those instances when cohorts of individual patients may need to be evaluated, the patient data will be de-identified and protected through encryption as appropriate. Because extant data will be used in most of the evaluation components, expedited review is anticipated. There is no risk to either providers participating in this evaluation or to patients who are part of an aggregate patient data group used for care improvement. The Logic Models used in the Core Performance Measures section detail process evaluation and do not need IRB approval.

H. Coordination and Continual Improvement

The Beacon Community Program will promote coordination and continual improvement by conducting extensive evaluation and dissemination. For continual improvement, The Beacon Community Program's internal evaluation will consist of two components: (i) quantitative assessment of measures relating to the seven defined quality, efficiency, and population health goals; and (ii) longitudinal monitoring of the core performance measures. The assessment of the seven defined goals will consist of a comparison between the baseline of data for new members joining the Quality Health First Program relative to the quality, efficiency and public health

measures and data assessed at defined intervals following the implementation. All of the Beacon Community data will be available for analysis through Quality Health First, enabling this data to serve as an extant means to generate reports and provide feedback to participants.

The Beacon Community Program will also promote continual improvement by coordinating efforts with national Beacon Community evaluation program. There are a large number of metrics that will be collected as part of the Beacon Community program. While only a few of these will be used as part of the evaluation of the seven outcome goals, the collected data will enable future research as part of the national evaluation program to evaluate potential improvements in care processes and outcome metrics. For instance, while the Beacon Community will only look at six of the 14 PQI measures hospital admissions for ACS conditions, data for all of the measures will be collected. Should the external evaluation determine that another of the measures is more relevant for a national comparison, then the data can be made readily available.

Dissemination and coordination is critical to insuring that the benefits of the Beacon Community program are widely recognized and that the principles are adopted for improved health care delivery. Dissemination will be done in a number of ways, including the development of local guides and technical reports for broader distribution, presentations at national meetings, and publication in both lay and peer-reviewed publications. The Beacon Community Program will also coordinate closely with HITRC, leveraging its relationship with Purdue University's proposed Regional Extension Center to actively disseminate its educational information and strategies.

Communications and dissemination activities will be an integral part of the Central Indiana Beacon Community Program. The objective of these activities will be: (i) to support the

achievement of the goals outlined in Section B; and (ii) effectively communicate results and best-practices to the community at the local, state and national levels. The Beacon Community Program will put together a "Learn From Our Experience" campaign with compelling case studies/visuals that can be presented or posted like a "Tool Kit" through various Central Indiana Beacon Community partner outlets (website, newsletter, social media outlets, etc.). A more detailed "Blueprint" will be produced for outcomes and successes that can be shared with the industry at large as a step-by-step starting point for any Health Care Organization or individual physician office that wants to participate. This could turn into simple videos on the website, newsletter and social media distribution.

I. Organizational Capability Statement

The Beacon Community Program's leadership roles and current job titles are summarized below, with much more detail provided in the attached resumes. Below this section is the organizational capability statement.

Key Personnel:

- **J. Marc Overhage, MD, PhD, FACP, FACMI, Project Director and Lead for Obj. 4** - Dr. Overhage is President and CEO of the Indiana Health Information Exchange, director of medical informatics at the Regenstrief Institute, Inc., and a professor of medicine at the Indiana University School of Medicine. He will serve as Project Director, as detailed in the Project Management Plan, as well as oversee Obj. 4, which focuses devising and implementing initiatives aimed at moving care processes toward best practice.
- **John Kansky, Lead for Objective 1** – Mr. Kansky serves as Vice President of Business Development for the Indiana Health Information Exchange. He has worked in the healthcare technology field for 22 years with experience in healthcare information technology, health information exchange, and biomedical technology. He will lead Objective 3, which focuses upon connecting, accessing, or capturing additional clinical data sources
- **Chris C. Schultz, Lead for Objective 2** - Mr. Schultz is Program Director of Clinical Quality Services for IHIE. He will lead Obj. 2, which focuses upon expanding QHF-participating providers and payers across HRR 183.
- **David E. Kelleher, Project Manager and Lead for Obj. 3** - Mr. Kelleher is the Executive Director of the Employer's Forum. He will serve as project manager, as detailed in the Project Management Section, and as Obj. 1 Leader, which focuses upon adding new measures and functionality to QHF.

- **Julie McGowan, Ph.D., FACMI, FMLA, Lead for Evaluation and Core Performance** – Dr. McGowan serves as Professor and Chair of the Department of Knowledge Informatics and Translation in the IU School of Medicine as well as a Professor of Pediatrics. She also holds adjunct appointments in the Schools of Informatics, Nursing, and Library and Information Sciences, and is an Affiliated Scientist in Medical Informatics at the Regenstrief Institute. She will serve as lead for Evaluation and Core Performance.
- **Tom Penno, Lead for Project Budget** – Mr. Penno is the Chief Operating Officer for the Indiana Health Information Exchange, Inc. (IHIE). He will oversee fiscal and reporting aspects of the project.
- **Greg Larkin, MD, FAAFP** - Dr. Larkin is the Chief Medical Officer for IHIE. He will lead significant portions of Objective 4. In particular, he will lead Aim 4A - Establish Community Wide Goals for Care Improvement, Aim 4F - Increase the coordination of Care and support Aim 4G - Increase the number of Providers who achieve meaningful use.

The proposed Central Indiana Beacon Community Program will build upon the state's strong foundation of improving healthcare through the collaborative use of health information technology and the Regenstrief Institute's 40 year history of research and development in this area. This approach resulted in 13 area healthcare providers, businesses and government agencies launching the not-for-profit Indiana Health Information Exchange (IHIE) in 2004. IHIE and Regenstrief support the largest health information exchange in the nation. As the lead organization for the Beacon Community Program, IHIE will continue to expand Indiana's robust foundation, creating a thoroughly evaluated model that can be replicated throughout the nation.

Table 8: Total Full-Time Employees by Category

Category	IHIE	Regenstrief Institute Medical Informatics
Executive and Managers	6	3
Marketing/Sales	2	1
Research and Development	→	49.75
Application Implementation & Support	10	11
Technical Implementation & Support	11	9
Customer Service	11	2
Administration / Clerical Support	2	22
Total Employees	**42**	**95.75**
Above employees with clinical background	11	35[i]

IHIE has demonstrated its ability to collaboratively develop community-wide, collaborative effort. Examples include the Quality Health First (QHF) program, the Central

[i] Regenstrief Institute is a supporting organization of Indiana University. In addition to the full- and part-time staff employed by the Institute, 35 research scientists (all with clinical backgrounds) are housed at Regenstrief Institute. These investigators are faculty (and employees) of Indiana University (mostly affiliated with the Indiana University School of Medicine).

Indiana Alliance for Health (CIA4H) and our Medicare Health Care Quality Demonstration Project under Section 646 of the MMA all of which require setting community goals and creating collaborative care improvement environments. The outcomes of these activities provide a foundation for the Beacon Community Cooperative Agreement program and demonstrate IHIE's ability to work collaboratively with disparate groups of key stakeholders to achieve standards driven health information exchange and its resultant improvements in quality of care.

In addition to building upon existing partnerships, the Beacon Community Program will create new, innovative avenues for collaboration. Surescripts, which operates the country's largest electronic prescribing network, has agreed to a partnership that will significantly enhance the sustainability of the Beacon Community Program. Surescripts will has agreed to actively encourage EMR vendors to incorporate IHIE-compatible tools into their updates, enabling providers to have a seamless connection for exchanging key types of health data with IHIE. This will enable the Beacon Community Program to become the first health information exchange to affordably create and sustain custom interfaces with physician practices.

IHIE and Regenstrief have operated collaboratively to develop and deliver services. Collectively, their revenues for 2009 were $27 million. For Regenstrief, the source of funding is approximately 60% federal and commercial contracts and 40% grants; For IHIE, the source of funding is 80% service revenues and 20% grants. IHIE and Regenstrief have the experience and resources to support the Beacon Communities Project. We maintain a state of the art, virtualized data center, operations and support staff, application training and support staff, and a 24-hour, 7-days-per-week call center. We maintain a comprehensive patient linkage system and provider registry and mapping to local identifiers for over 14,000 physicians. In addition, sophisticated algorithms allow us to attribute patients to specific providers. We have extensive experience with

health IT implementation ranging from our DOCS4DOCS system which we have implemented in approximately 2,500 practices accounting for over 14,000 physicians and the Medical Gopher used in 161 ambulatory locations by 2,369 providers to the Indiana Network for Patient Care used by over 15,000 providers throughout Indiana.

In addition to our experience with health IT implementation, we have extensive experience interfacing using the standards adopted by ONC in their IFR in January 2010. We have created and operate over 500 hundred interfaces to clinical systems. As one example, we have created interfaces to six different EMR systems in 277 practices serving 3,022 physicians. All of these interfaces standardize the local system terminologies and codes to standard codes. The Regenstrief Institute created the first clinical information standard (ASTM 1328), has been a major contributor to HL7 and particularly to development of the HL7 Reference Information Model, developed and maintain the LOINC terminology and as well as the Unified Codes for Units of Measures (UCUM). Regenstrief/IHIE has also implemented live, operational health information exchange in a nearby state. In addition, we have participated in both prototype and pilot implementations of the Nationwide Health Information Exchange, the CDC's Biosense and Situational Awareness information sharing projects. The QHF program supports over 1,000 primary care providers and their staff in 238 practices. Physician Liaisons (who are registered nurses) provide direct education, facilitate communications and work with providers to determine underlying issues in the quality measures whether related to data, process or awareness. "Building Bridges to Quality" is a project in which IHIE assists 36 small physician offices with 68 physicians to interpret measure reports and, where appropriate, assist them in modifying workflows, and/or processes and procedures to improve efficiency and quality of care.

THE CENTRAL INDIANA BEACON COMMUNITY PROGRAM SUSTAINABILITY PLAN

Applicant Name:
Indiana Health Information Exchange

Contact Information:
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The Central Indiana Beacon Community Program: Enhancing an Existing Sustainability Plan

I. Introduction

The Central Indiana Beacon Community Program is based upon an expansion and extension of two established services of the Indiana Health Information Exchange: the Indiana Network for Patient Care (INPC) and the Quality Health First Program®. The INPC and Quality Health First programs add value through increased quality and safety, but also deliver economic value to stakeholders in the healthcare system. In return, those stakeholders pay fees which cover the cost of operating those services. The effectiveness of this approach is evidenced by the fact that both INPC and Quality Health First have been nationally recognized as model HIE services. In addition, the plan for their economic sustainability was a published deliverable to CMS as part of the NHIN Trial Implementation contract awarded to Indiana University and the Regenstrief Institute in 2007. The proposed Central Indiana Beacon Community Program's sustainability plan will build upon this success.

While the services underlying the Central Indiana Beacon Community Program are currently along a sustainable trajectory, the Beacon Program investment will *enhance and accelerate* the sustainability of the services in three ways. The Beacon Program investment will:

- Spread the cost of operating the HIE - Currently, IHIE's services are concentrated in a region of nine counties in the Indianapolis area and taking root in urban centers in other parts of Indiana, outside HRR 183. Through the Beacon Community Program, the health information exchange services will be extended throughout the 41 counties of HRR 183. This geographic expansion will promote sustainability by spreading the cost of operating the health information exchange and the QHF program.

- Increase the services' value to customers – The Beacon Community Program will fill in the existing data gap by collecting clinical information from additional hospitals, independent laboratories and imaging centers. The Program will also address high-value data element gaps by capturing point-of-care data such as vital signs, in-physician-office orders and labs. This expansion of data will increase the effectiveness of the services and make them more valuable to customers.
- Fund the development of new sustainable value-added services – The new value-added services include programs such as a medication adherence reporting program, a payer electronic admission notification service, accountable care organization (ACO) utilization reporting and a patient home monitoring service. If proven to be viable, sustainable, and effective in positively impacting outcomes, these additional services will promote the Program's sustainability by improving the value of IHIE's profile of offerings to medical groups, hospitals and payers.

II. Principles of the Sustainability Strategy

IHIE's sustainability strategy is based in certain principles that are key to health information exchange being a self-sustaining endeavor:

- HIE is a business - As with all businesses, creating a sustainable HIE requires offering services that the market wants at a price the market will bear and doing so in such a way that revenue exceeds expenses. It also means that the services delivered by the HIE must be at a level that healthcare organizations have come to expect from their suppliers.
- The Leveraging of High-Cost, High-Value Assets - Once the dollars have been invested in the creation of HIE infrastructure, it is essential to leverage and re-use those assets to deliver

as much and as many services as is necessary to achieve sustainability. In other words, the services an HIE is able to provide to the market must be capable of producing sufficient revenue to cover expenses and, due to the cost of the infrastructure that is required, offering multiple services to various market stakeholders is conducive to sustainability.

- Natural Monopoly - HIEs are natural monopolies. That is to say that the total cost of producing HIE services for a given market is lower if there is just a single producer than if there are several competing producers. There is a large cost for the necessary infrastructure (which is a fixed cost), making the creation of a redundant infrastructure wasteful and detrimental to the economy as a whole. In addition, in order to achieve sustainability, HIEs must have the opportunity to offer all (or nearly all) revenue generating health information exchange services to their market.

- The Need for Scale - As noted above, many of services that an HIE needs to provide in order to be sustainable involve substantial initial investments and relatively large fixed costs. This means that scale (geographic coverage, population served, payers participating) is important to financial success. Micro-economics tells us that there is an optimal size for businesses of any given type; therefore, there is an optimal size for an HIE. There is a scale in terms of population or medical service area concentration at which a given HIE service model is optimal and below which a given service model is not economically sustainable. Based on the experience of the largest HIEs, the upper bound of the optimal size of a health information exchange business has not yet been reached.

- Avoidance of Grants for Operational Cost - Grants are indispensable sources of start-up funds for HIEs but should not be counted on to cover operational costs beyond a HIE's early ramp-up stage. We believe that, once fully operational, HIE services must be able to

generate revenue equal to or in excess of expenses so that grants (or other non-operating revenue sources) are not necessary to cover operational costs.

III. Sustainable Models for Beacon Community Program Services

Many of the HIE services offered by the Indiana Health Information Exchange were developed and proven by the Regenstrief Institute. Currently, three services make up the profile of IHIE's offerings and, therefore, the core of its plan to be sustainable. These are:

DOCS4DOCS® Clinical Messaging Service: IHIE's clinical messaging service is the delivery of clinical results to physician offices -- either directly into their electronic medical record, into a secure web-based clinical messaging application, or via fax. Called the DOCS4DOCS® service, the system receives lab/transcription/radiology results and other clinical messages from participating data sources (e.g., hospitals and labs) via HL7 interfaces, converts the clinical results into a consistent report format, and delivers them to the intended provider.

The sustainable business model for clinical messaging is a per-result delivery fee. Hospitals, labs and other data sources pay IHIE to deliver results they would otherwise have to deliver. IHIE is able to deliver results at a cost that is lower than each data source experiences because it is delivers results from many sources. It has higher volume than any single source and so the fixed costs of maintaining provider directories and connectivity to each provider is spread over much higher volumes. Physicians pay nothing regardless of their chosen method of receipt.

The INPC Clinical Repository Service: The Indiana Network for Patient Care (INPC), which the Regenstrief Institute has operated in the greater Indianapolis healthcare market since 1998, is the basis of IHIE's clinical repository service. The INPC is a community health repository system that merges individual patient health information from multiple sources into one single, virtual patient medical record. The information is aggregated in real-time, so the

summary provides the most-accurate, up-to-date information about a patient, regardless of treatment location. The INPC carries nearly one billion discrete results as well as text documents, images and other data and in addition to serving Central Indiana, is currently being implemented in Northwest, Southwest, West Central, and North Central Indiana.

The sustainable business model for INPC: The INPC will be transitioned to a fee-based model in which health systems are charged a monthly fee based on their adjusted patient days. The INPC can be used by clinicians in the emergency department, inpatient or outpatient settings. It delivers more comprehensive and timely patient information at the point of care which manifests value in improved quality, greater safety, less uncompensated care, and fewer readmissions.

Quality Health First® Program - IHIE's clinical quality data service is called the Quality Health First® (QHF) program. It provides physicians with actionable patient-level data to improve quality as well as aggregate measures of quality across most of their patients and a comparison of their performance to peers. For health plans, it offers a single community-wide quality report, by provider, which is endorsed by providers and serves as the basis for quality improvement incentives.

The sustainable business model: No single payer in our area can produce quality reports that cover the majority of a provider's practice or incorporate substantial clinical information. Since QHF also includes alerts and reminders and offers providers the opportunity to correct errors, these reports and program features are used by providers to improve care and are accepted as a basis for incentive payments. Payers fund the program by paying a per-member-per month fee. Physicians pay nothing and are poised to increase their revenue through participation in the incentive programs of participating payors. Multiple payors including the two largest in the Indiana market, WellPoint and United Healthcare, are existing customers of the service. Medicare participates via a demonstration program.

IV. IHIE's Sustainability Plan

The Central Indiana Beacon Community programs sustainability is dependent on the sustainability of IHIE. IHIE's plan for sustainability emphasizes: (i) Offering a growing profile of value-added services to various stakeholders across the health care supply chain; and (ii) Continuing to add customers -- within the central Indiana market and in additional healthcare markets in Indiana. This plan includes services offered to healthcare providers, health plans and employers. The tactics for these services is detailed below.

Services Offered To Healthcare Providers:

- Continue to provide clinical messaging services across HRR 183 and to other markets across Indiana.
- Transition the operations, support, and promotion of the clinical repository from the Regenstrief Institute to IHIE while continuing the delivery of uninterrupted service.
- Implement the clinical repository across HRR 183 and in additional Indiana markets. In the near-term this includes Evansville, Terre Haute, Northwest Indiana, Kokomo, and Lafayette.
- Transition the clinical repository from a grant-funded to a fee-based (revenue generating) service.
- Continue to grow clinical messaging and the clinical repository by selling the services to health systems priced as a combined bundle.
- Leverage the Beacon program investment to develop service models and test the economic value of the patient home monitoring service based on its prevention of readmissions.

Services Offered to Health Plans and Employers:

- Quality Health First® program will:
    - Expand the Quality Health First program across HRR 183.
    - Enroll additional commercial payors with members in HRR 183.
    - Enroll additional physician groups serving the HRR 183 market
    - Expand the QHF program to additional Indiana markets outside HRR 183, focusing first where the clinical repository is being implemented (Lafayette, Evansville, Northwest Indiana, and Terre Haute).
    - Expand the program to additional medical specialties beginning with cardiology, oncology, and orthopedics.
    - Devise a strategy for engaging self-insured employers in all markets where the Quality Health First program is offered in an effort to enroll them in the program.
- Engage the health plans and employers regarding beginning to pay for the clinical repository value that accrues to them.

- Leverage the Beacon program investment to develop service models and test the economic value of the medication adherence and payer electronic admission notification services based on their reduction of payer claims expense.

Conclusion

IHIE is a recognized model for sustainable HIE. The Beacon Community Program will enhance the sustainability of this lead organization by spreading the cost of operating the HIE over more participants, and develop and test new services designed to increase the delivered value to existing and new customers. A Beacon Program investment in Central Indiana will accelerate what is already a sustainable trajectory while achieving better health outcomes across a significant portion of Indiana's population.

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Letter of Commitment Narrative: Eliminating Duplicative Efforts

IHIE, the largest health information exchange in the nation, has invested heavily to build collaborations and help other markets trying to accomplish similar goals. As shown by the extensive number of commitment letters attached to this proposal, the Beacon Community Program has broad support from non-profit, for-profit and public organizations throughout HRR 183. A critical element of this success has been establishing collaborations that leverage existing strengths rather than duplicate efforts.

One such partnership is the Beacon Community Program's plans, as reflected by the budget, to coordinate efforts with the respective Regional HIT Extension Center. By subcontracting the REC, the Beacon Community Program will ensure that meaningful use of health IT contributes to the rich data set that will support not only clinical practice but also quality improvement through the Quality Health First utility.

To engage Quality Improvement Organizations, the Beacon Community Program is working closely with Health Care Excel (HCE). An innovative aspect of the proposed Program is the Central Indiana Alliance for Health (CIA4H), which is dedicated to engaging providers, research experts, and community members in dialogue about disparities in care and access to care. Nancy Meadows of Health Care Excel will be a critical member of CIA4H's efforts to evaluate the best methods to collect, monitor, and report data related to race, ethnicity and language (REL). This improved REL data will be integrated into the Indiana Network for Patient Care (INPC) and the QHF Program's patient care reports as well as made available for overall community, healthcare provider groups to, ultimately, improve public reporting.

The Beacon Community Program will also fully leverage the community's unique health care research community, such as the Indiana University School of Medicine and the Regenstrief Institute. Both of these institutions have a distinguished history of using information to improve physician behavior and have contributed a significant portion of the world's high quality literature on the subject. IHIE and Regenstrief have been actively involved in a number of Federal initiatives promoting health information exchange. These include, but are not limited to, being recipients of a Centers for Medicare and Medicaid Services (CMS) Demonstration Project, a Medicaid Transformation grant, an AHRQ State and Regional Demonstration Project grant, an NHIN Demonstration grant, and a CDC Syndromic Surveillance and Situational Awareness contract. The outcomes of these activities provide a foundation for the Beacon Community Cooperative Agreement program and demonstrate IHIE's ability to work collaboratively with disparate groups of key stakeholders to achieve standards driven health information exchange and its resultant improvements in quality of care.

The Beacon Community Program also has commitments with the local VA hospitals to offer its capability once it is offered to VA hospitals without DOD facilities. While our location, without a military base, does not afford us the ability to participate in the first round of providing HIE integration with the Virtual Lifetime Electronic Record (VLER) of the DOD and the VA, we have commitments with the local VA hospitals to offer this capability once it is offered to VA hospitals without DOD facilities.

IHIE was formed through a collaborative effort among 13 Indiana organizations, and recognizes the critical importance of designing effective collaborations that fully leverage each organization's existing strengths and minimize duplicative efforts. The Central Indiana Beacon Community has broad, coordinated support dedicated to moving the entire region's health care providers toward achieving meaningful use.

Central Indiana Beacon Community Program
LETTERS OF COMMITMENT
Stakeholder Summary Matrix

A. Name of Stakeholder Organization	B. Name of Primary Point of Contact	C. E-mail Address	D. Type of Stakeholder Organization	E. Level of Commitment (1-4)
Indiana FSSA Medicaid	Pat A. Casanova, Director, Office of Medicaid Policy and Planning	pat.casanova@fssa.in.gov Director Indiana Medicaid	Government entity	3
Indiana Health Information Technology Coordinator	Michael Gargano, Interim Indiana HIT Coordinator	Michael.gargano@fssa.in.gov Chief of Staff, Indiana FSSA	Government entity	3
Anthem BCBS	David T. Lee, MD, VP, Provider Engagement & Contracting	David.lee@anthem.com	Payer	4
Employers Forum	Daniel Rives, Assoc VP	drives@indiana.edu	Employers Association	4
Health Care Excel	Karin Kennedy, VP Client Srvcs	kkennedy@hce.org	Quality Improvement Organization	4
Purdue University HTAP Regional Extension Center (pending)	Victor L. Lechtenberg, PhD, Vice Provost for Engagement PU	mckinnis@purdue.edu (David McKinnis)	Academic institution	4
Regenstrief Institute	Thomas S. Inui, ScM, MD – President and CEO	tinui@iupui.edu	Health informatics and research	4
St Vincent Health	Vincent Caponi,	vccaponi@stvincent.org	Hospital	4
SureScripts	Kate Berry, Sr VP Business Development	Kate.berry@surescripts.com	Pharmacy connectivity vendor	4
United Health Group	Dan Krajnovich, CEO United Healthcare Indiana	Daniel_krajnovich@uhc.com	Payor	4
Clarian Health	Daniel F Evans, Jr., President, CEO	lparsley@clarian.org Leigh Parsley, Admin Assist	hospital	3
Community Health Network	Edward Koschka, MBA Chief Information Officer	EKoschka@ecommunity.com	Health Network	3
Community Physicians of Indiana	Timothy Hobbs, MD, MBA CEO	thobbs@ecommunity.com	Physician Organization	3
Indiana Hospital Association	Douglas J. Leonard, FACHE President	bulrich@ihaconnect.org (Bernice Ulrich, VP)	Hospital association	3

Indiana Rural Health Association	Cindy Large, RN Network Director	mserricchio@indianarha.org (Matt Serricchio, MPA Special Projects Coordinator)	Rural Health organization	3
Richard L. Roudebush VA Medical Center	Kenneth E. Klotz, MD Chief of Staff	judy.otter@va.gov (Judy A. Otter, Admin. Assistant)	VAMC	3
St. Francis Hospital & Health Centers	Robert J. Brody, President & CEO	Gina.sharp@ssfhs.org (Gina Sharp)	Hospital	3
St Vincent Physician Network	Bruce Haga, Vice President	adsnell@stvincent.org (Alan Snell, Chief Medical Information Officer, St Vincent Health)	Physician network	3
American Academy of Pediatrics	Roger F. Suchyrta, MD, FAAP Assoc Exec Director	rsuchytra@aap.org	Professional medical society	1
American College of Physicians	John Tooker, MD, MBA, FACP – Exec VP and CEO	adouglas@mail.acponline.org (Arlene Douglas)	Professional medical society	1
IU Bowen Research Center	Deborah Allen, MD, FAAFP, Director	diallen@iupui.edu	Academic institution	1
Richard M. Fairbanks Foundation, Inc	Leonard J Betley, President	luse@rmfairbanksfoundation.org Susan Luse, Dir of Admin	Charitable foundation	1
Indiana Academy of Family Practice	Ash Hannah, MD, FAAFP - President	iafp@in-afp.org	Professional medical society	1
Indiana Primary Health Care Association	Philip L. Morphew, CEO	pmorphew@indianapca.org	FQHC organization	1
Indiana State Department of Health	Judith A Monroe, MD, State Health Commissioner	cmickens@isdh.in.gov Chris Mickens, Chief Technology and Compliance Officer	Government entity	1
Indianapolis Coalition for Patient Safety	Glenn Bingle, CMO Carol Birk	gbingle@community.com	Professional medical society	1
Indianapolis Medical Society	John Ellis, MD – President	bhurt@imsonline.org (Beverly Hurt, Executive VP)	Professional medical society	1
Suburban Health Organization	Julie Carmichael, President & CEO	RebeccaS@suburbanhealth.com (Rebecca Salley, Shared Services Coordinator)	Hospital Network	1