

SECTION 1: OHIO'S QUALITY SYSTEM ASSESSMENT

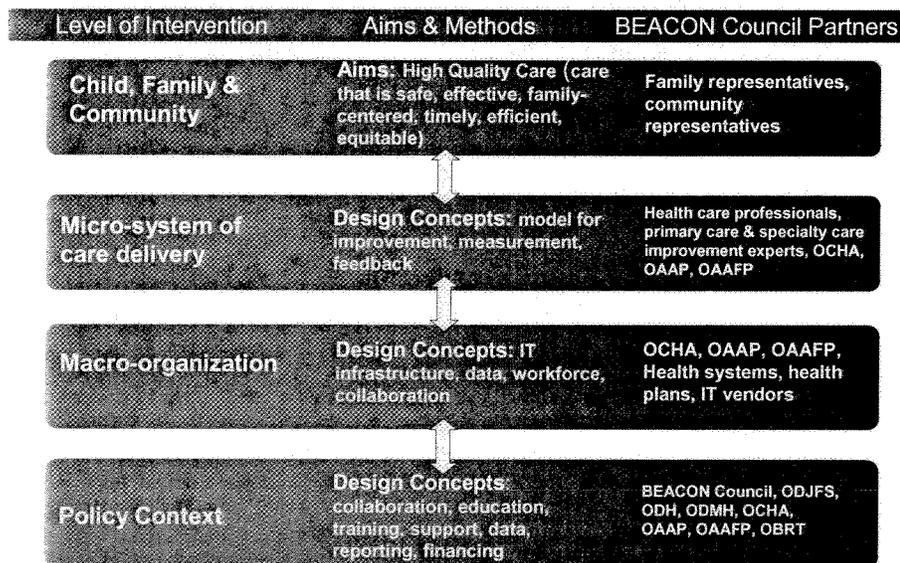
(Please note: Acronyms used throughout this proposal are defined in the Appendix)

Ohio proposes the **B**est **E**vidence for **A**dvancing **C**hildhealth in **O**hio **N**OW (BEACON) initiative to demonstrate breakthrough improvement in the quality of health care and outcomes for children enrolled in Medicaid. The goal is to achieve unprecedented best-in-nation status for major child health quality indicators. To accomplish the goal and contribute to building a national quality system in children's health care, Ohio will: (a) work at multiple levels of the health care system in a culturally competent manner; (b) demonstrate how integrated care systems and data-driven continuity of care focused on specifically and reliably addressing children's needs across the pediatric lifespan improves outcomes; (c) build on a robust, but early, existing infrastructure of inter-related collaborative networks and relationships across provider-based models (including children's hospitals, perinatal providers, primary care practices), state agencies, professional organizations, family and child advocates, and university-based researchers; (d) apply strong theoretical and evidence-based proven approaches of quality improvement (QI) science across all settings to reliably achieve processes that improve outcomes; (e) emphasize quality measurement and evaluation; (f) build on strong support from the Governor, state agencies, state and national professional organizations, health providers, advocacy groups, the business and insurance community, and other stakeholders; (g) involve stakeholders throughout the process to enable sustainable change, and (h) utilize a collaborative governance approach to prioritize, target, and coordinate improvements for children in Medicaid.

We use the following model adapted from the Institute of Medicine Quality Chasm report. The four levels of the health care system targeted in this transformational approach include: 1) the experience of patients and families (to design better approaches and keep the patient and

family as the focus); 2) the optimal functioning of the small work units that provide the care that the child experiences (i.e., microsystems: primary care practices, neonatal unit, delivery rooms); 3) the optimal functioning of organizations that support the microsystems (i.e., macrosystems and leadership engagement, including boards), and 4) the environment (e.g., policy, payment, regulations) that shapes the behavior, interests and opportunities of organizations. This framework recognizes that efforts at each level of the health system, and interactions among them, influence the achievement of dramatic improvements in quality.

Transforming Care for Children in Ohio: The BEACON Multilevel Approach



Adapted from Berwick et al, 2001. OCHA – Ohio Children’s Hospital Association; OAAP – Ohio chapters of the American Academy of Pediatrics; OAAFP – Ohio Academy of Family Physicians; IT – information technology; ODH – Ohio Department of Health; ODMH – Ohio Department of Mental Health; OBRT – Ohio Business Round Table

Strategies must be targeted at all four levels to close the gap between knowledge and practice, and improve outcomes. Our efforts are aligned in addressing these levels through measurement, leadership engagement, shared accountability, and capability for improvement.

Through the systematic application of established improvement science methods for all projects, Ohio’s statewide collaboration will achieve best-in-nation results for birth outcomes, behavioral health, and safe hospital care for children. We will also undertake experimentation

and evaluation of promising ideas to improve the quality of children's health care and demonstrate improved outcomes.

We will address Categories A, B, C, and E of the grant application. Together, these projects accelerate and integrate activities in Ohio to build a sustainable, high quality, child health care system. Category A activities will build on Ohio's existing commitment to quality and performance metrics by implementing a statewide, sustainable performance measurement system using a core measurement set to provide timely, relevant, reliable, valid, and actionable information for stakeholders to improve the performance of child health care and the quality of care provided to children on Medicaid. Category B will provide an information technology platform for actionable steps toward quality improvement by creating a collaborative and sustainable central repository of information and intelligence for research and quality decision making. The repository will link Medicaid, public health, and hospital data to inform Category A, C, and E projects. Category C activities share a collaborative provider-based model and evidence-based practices to optimize safety and outcomes for hospitalized children and improve health outcomes by reducing premature birth and infant mortality via Solutions for Patient Safety (SPS) and the Ohio Perinatal Quality Collaborative (OPQC). Category E activities will measurably improve outcomes by supporting appropriate screening, identification, assessment, referral and treatment of children with developmental and behavioral health concerns through the Ohio Pediatric/Psychiatry Decision Support Network (OPPDSN).

Ohio's proposal is strengthened by addressing several grant categories to build a sustainable and enduring infrastructure for improving the quality of child health care statewide. It creates a critical state infrastructure in QI by both testing and reporting of quality measures (through Category A) and building an HIT infrastructure to support all planned and future initiatives

(through Category B), and applies these methods to make measurable improvements in specific areas focused on critical health needs of children and families (Categories C and E). In aggregate, Ohio's multifaceted proposal has the potential to impact each of the 1.1 million children enrolled in Medicaid/CHIP throughout their lives: at birth (Category C); during acute illness requiring inpatient services (Category C); and throughout their primary-care-based outpatient years (Category E). Furthermore, the selected grant categories will be integrated by a cohesive and shared governance structure with clearly articulated roles, responsibilities and decision making processes, common principles and models of care, common use of rigorous QI science methods, integration of core quality measures, and shared infrastructure.

In the past three years, Ohio state agencies (Ohio Department of Health - ODH, Ohio Department of Job and Family Services - ODJFS, Ohio Department of Mental Health - ODMH), children's hospitals (OCHA), the business community, the state offices of the American Academy of Pediatrics (AAP), American College of Obstetrics and Gynecologists (ACOG), and American Academy of Family Physicians (AAFP), and physician leaders have converged individual initiatives to improve the quality of children's healthcare to reduce rates of prematurity, improve patient safety, and increase developmental screening in primary care. These individual projects form the foundation for statewide collaboratives, each dedicated to improving one aspect of child health. While they did not share common goals, infrastructure, implementation models, or governance, they gave us experience and a vision for what is possible. The CHIPRA Quality Demonstration Grant Program offers a unique opportunity to build on this strong foundation to catalyze the development of an outstanding umbrella QI program in Ohio. The BEACON initiative will have coordinated goals, a common infrastructure and shared governance, a robust model for implementation, and a common purpose. BEACON

will accelerate Ohio's ability to produce measurable results for children. BEACON is dedicated to forming an enduring collaborative among key public and private partners and with an established governance model described in #5 below. Ohio is also fortunate to have assembled a stellar team committed to BEACON, many of whom are nationally recognized for their quality leadership and their ability to deliver results. **Ohio has the leadership, infrastructure, stakeholder involvement and support, and demonstrated capacity to implement this initiative – all factors underscoring the proposal's feasibility and sustainability.**

1. Political and State Agency Leadership

Governor Strickland, key legislative officials of both parties, and leaders of key state agencies strongly support this proposal. The proposal is also supported by many stakeholders and non-governmental organizations. This degree of support will ensure that the results achieved will be sustained after the demonstration support ends. Key letters of support and excerpts of additional letters are in the Appendix. All the letters of support, in their entirety are on the BEACON website (<http://www.odh.ohio.gov/landing/beacon/beacon.aspx>).

In addition, Governor Strickland's Administration has demonstrated a strong commitment to strengthening the wellbeing of children and improving the reach and quality of children's health services— even as Ohio experiences difficult economic times. The Administration and state leaders have made the health care of Ohio's children a top priority – and have begun major initiatives with bipartisan support including: changes to the governance of child services; convening the Infant Mortality Task Force; and expanding programs, eligibility and services (See more at: <http://www.odh.ohio.gov/landing/beacon/beacon.aspx>).

In addition to participating in these initiatives, Ohio Medicaid has directly advanced the quality of child health care by: (1) pursuing and securing external funds for innovative

advancements to improve quality and outcomes in child health through grants including: a CMS Transformation grant to improve neonatal outcomes, a Commonwealth-funded State Quality Institute which formed the Ohio Coverage and Quality Improvement Council, and a National Academy of State Health Policy (NASHP) Assuring Better Child Development (ABCD) award); (2) supporting QI collaboratives in childhood obesity and early childhood development; (3) establishing a Section on Children's Health within Medicaid, (4) initiating Medicaid funding for services to children in schools; and (5) prioritizing child health even when other parts of the state budget were being cut.

2. Stakeholder Support

This proposal involves strong stakeholder support and commitment – with a broad partnership of public and private sector organizations serving as BEACON partners: (Section 1, Part 5 and <http://www.odh.ohio.gov/landing/beacon/beacon.aspx>), including key state agencies addressing child health, advocacy groups, professional organizations of child health providers, children's hospitals, academic institutions and researchers, and other non-governmental organizations. Each group is key to improving child health care and so will be aligned to achieve the project's programmatic goals. Stakeholders supporting the BEACON initiative are not just stakeholders, they are committed partners (see Section 1, part 5). Stakeholders/Partners include:

- **ODJFS (Medicaid)** is the lead Ohio agency, acting together with **ODH** and **ODMH**. These agencies and key staff have a long history of working collaboratively to improve children's health and have formal interagency agreements related to the management of Medicaid programs and services. The Director of ODH and the Medical Director of Medicaid will co-chair the BEACON Council (this section, part 5). Also, the ODMH sits on the Council – particularly important since the vast majority of Medicaid funded mental health services are administered as

a carve-out through ODMH and a network of local boards and providers. One of the leaders in child health efforts and this grant proposal is ODH's Title V Maternal and Child Health Director, Karen Hughes, who is administratively responsible for the Ryan White program and has the department's primary relationship with Ohio's FQHCs. ODH also maintains the primary relationship with Ohio's 130 local health departments and other safety net providers of care for many children and families served by Medicaid.

- Consumer, parent, family, and advocacy groups – including **Voices for Ohio's Children** and the **National Alliance on Mental Illness (NAMI)** – strongly support this initiative, and are represented on the Council. Another key leader in earlier efforts and this proposal is Gayle Channing-Tenenbaum, a widely recognized advocate for children, who has been involved in the behavioral health component of this grant.

- **Ohio chapters of AAP and AAFP** represent primary care physicians for children across Ohio and the AAP represents many subspecialists. The AAP has worked closely with ODJFS, ODMH, ODH, and the children's hospitals in developing the Category E initiative that will lead to improved screening and referral/treatment for children with developmental and behavioral health needs in Ohio. Both organizations are represented on the BEACON Council.

- **The Ohio Children's Hospital Association (OCHA)** includes six Ohio children's: Children's Hospital of Akron, Children's Hospital of Dayton, Cincinnati Children's Hospital and Medical Center; Children's Hospital of Toledo; Nationwide Children's Hospital in Columbus; and Rainbow Babies & Children's Hospital in Cleveland. Two additional hospitals are affiliated: St. Vincent's Hospital, Toledo and the Cleveland Clinic. OCHA and a group of its physicians, researchers, QI and policy experts have worked in partnership with the state on successful collaborative state-wide child health quality initiatives that address perinatal outcomes (OPQC,

section 2), hospital inpatient safety and quality (SPS, Section 2), development of publicly reported measures for children's inpatient care, and reduced harm to children from codes outside the ICU through implementation of medical response teams in all children's hospitals. This partnership forms the foundation for the projects proposed in category C. **Academic institutions:** Ohio's children's hospitals are the major teaching institutions of the University of Cincinnati, Case Western Reserve University, Ohio State University, the University of Toledo, Northeast Ohio College of Medicine, and the University of Dayton. Several of the key project physician leaders are senior university faculty with extensive experience in project design and implementation. The Government Resource Center, a collaboration of the Deans of Ohio's Medical Schools, is also actively engaged.

- **The Ohio Business Roundtable (OBRT)** has identified child health issues as integral to economic viability and strength, and so has worked closely on child health and education issues with the above state agencies, the AAP, OCHA, and physician leaders. The OBRT has been involved in planning this proposal and several of its members – including Cardinal Health – are committed to this proposal (see letter of support). **Business and insurer communities** will be represented on the BEACON Council.

- **Providers of care to minority and underserved populations.** Through the Council's Community Advisory Committee, we ensure representation of safety net providers, rural clinics and organizations committed to serving poor, minority and underserved populations.

- **National support.** BEACON has received support from Donald Berwick MD (Institute for Healthcare Improvement), the American Academy of Pediatrics, and the American Board of Pediatrics. The Ohio pediatric improvement community has worked closely with Dr. Berwick/IHI on several improvement efforts and has close partnerships with the ABP and AAP.

3. Status of Ohio's Medicaid/CHIO Health Delivery System

- **Progress towards development of a comprehensive program to improve the quality of healthcare for children enrolled in Medicaid/SCHIP.** The goal of Ohio's Quality Assurance program is to develop and implement appropriate measures for all of Ohio's Medicaid population and to improve the accountability for assessing the quality of care provided. ODJFS has established a multi-dimensional strategy to measure and improve quality, including: 1) the use of national standards as benchmarks for quality and clinical performance and as goals for improvement, 2) assessment of technical measures of clinical quality and access through medical records review and analysis of Medicaid claims and encounter data, 3) use of external, clinical peer-review panels to assist with the development of measures and studies so results are clinically meaningful, 4) consumer surveys to determine satisfaction and review of complaints and grievances, 5) consumer education through guides and other materials, and 6) communication with stakeholders and the public regarding significant findings. Also, in light of the large number of children served by managed care plans (MCPs), Ohio has a strategic and comprehensive approach to our quality work with MCPs. Performance measures and expectations have been established for quality of care, access to care, consumer satisfaction, and administrative capacity. MCPs must meet minimum performance standards established in the accountability system; results are made available publicly. These requirements are specified in the contract between ODJFS and the MCPs (Category A). The EPSDT Collaborative with all MCPs is an example of work underway and serves as a building block for Category E. The ODJFS Medical Director leads its quality committee, with support of other health care professionals (nurses, pharmacists, health information specialists), researchers, statisticians, health care policy experts, and program managers.

- **Statement of program’s goals and objectives.** The complete statement of the Administration’s Health Care Vision and Medicaid mission, vision, goals and objectives is available at <http://www.odh.ohio.gov/landing/beacon/beacon.aspx> . Ohio Medicaid has participated in three very significant reviews over the past five years, including business leadership, diverse and extensive stakeholder input, legislative involvement and thousands of hours of policy work. These are the 1) Ohio Commission to Reform Medicaid, 2) Medicaid Administrative Study Commission and 3) the Auditor of State Report. While certainly a “work in progress,” Ohio’s Medicaid program is constantly engaged, often sought out, and in ongoing dialogue about the most important issues related to health care quality and cost for Ohioans.

- **Current level of Ohio’s inter- and intra- agency collaboration aimed at improving the quality of children’s health care.** Ohio has a high degree of cooperation among ODJFS, ODH, and ODMH – key agencies already working on many projects, including this application. These agencies also collaborate with the Governor’s Early Childhood Cabinet, Ohio Healthcare Coverage and Quality Council, Ohio Family and Children First Council, Ohio Health Information Technology Advisory Board, Office of Budget and Management. Full letters of support from these collaboratives appear at: www.odh.ohio.gov/landing/beacon/beacon.aspx

- **Overview of how Medicaid / CHIP deliver healthcare to Ohio children.** Ohio administers the Children’s Health Insurance Program (CHIP) as a Medicaid expansion, so both CHIP (Title XXI) and the Medicaid Program (Title XIX) offer the same benefit. All references throughout this grant application to “Medicaid children” include both groups. Ohio currently covers approximately 1.1 million children, and pays for approximately 1/3 of all of Ohio’s births. As of July 2009, about 85% of Medicaid children under 18 were served via capitated contracts with seven managed care plans (MCPs) in Ohio. As with the fee-for-service (FFS) benefit, the

managed care benefit includes a full array of children’s primary and most specialty care. Medicaid provides a full array of services, including a many “optional” services, home health/hospice, dental, vision, therapies. More details related to Medicaid eligibility, services and service delivery can be found at <http://www.odh.ohio.gov/landing/beacon/beacon.aspx>.

4. Documentation of the Status of Relevant Activities

- **Testing and reporting of quality measures.** Ohio has several strengths underscoring the state’s capacity to address child quality measures, notably: (a) Ohio’s MCPs currently report annually on HEDIS measures. Ohio has an incentive program for MCPs, and MCPs use their own incentive program for physicians; (b) Ohio has reported on performance measures as part of national reporting and through internal state-level reports; and (c) Researchers involved in this proposal have a long history of investigating important policy issues including quality indicators.
- **Use of HIT within the state’s Medicaid/CHIP.** As described in section 2, Category B, Ohio is home to outstanding HIT resources. ODJFS has made a major commitment to improving its own data validity, capacity and analysis with the goal of improving health care delivery for Medicaid children and adolescents. Specifically, collaborative improvement projects are now employing a centralized integrated data repository that includes data from three sources: the state vital statistics program, facility data entered through web forms, and other data forms entry. Ohio Medicaid is also in the process of replacing its outdated MMIS with the Medicaid Information Technology System (MITS), which will be fully compliant with the standards for the MITA architecture and will provide sophisticated tools to support evidenced based practices.
- **Care Delivery Models in Use.** Ohio’s context for the care delivery proposals in Category C and E include: 1) effective January 1, 2010, Ohio has new health insurance regulations prohibiting discrimination on the basis of preexisting conditions. These and other insurance

changes in Ohio and at the federal level will dramatically change the landscape; 2) the Ohio Health Care Coverage and Quality Council (discussed below) is studying and will soon make recommendations regarding the use of “medical homes”; and 3) the priority emphasis on EPSDT, including the Collaborative with MCPs, will impact the 1.1 million children they serve.

5. Stakeholder Involvement

Led by ODJFS, in partnership with ODH, ODMH and multiple private-sector partners, the BEACON initiative is committed to transforming the health care of Ohio’s children with specific emphasis on children covered by Medicaid. BEACON’s governance is described in detail at <http://www.odh.ohio.gov/landing/beacon/beacon.aspx>. The BEACON Council is advisory to key state government agencies - providing oversight and coordination to child health improvement activities in Ohio. It is co-chaired by the Medical Director of the Ohio Medicaid Program and the Director of the Ohio Department of Health. The Council includes the heads of key Ohio government agencies; leaders in child health research, clinical practice, QI, and policy; state organizations representing child health delivery systems; business and insurer representatives, advocacy groups, and the community. The BEACON Council builds on our earlier work and brings together existing individual improvement projects as the “incubators” for larger system change. The Council will oversee the organization and direction of this demonstration grant, will be responsible for developing the final operational plan, provide consultation to project committees on QI priorities and measures, monitor and ensure progress in meeting all its goals, identify challenges and barriers to improvement and sustainability that are system wide and should be addressed at the highest levels, and work with CMS and the national evaluation team throughout this demonstration. BEACON Council has four specific Infrastructure Committees that will address cross-cutting issues: (1) the Quality Measurement Committee

(linked to Grant Category A) to help guide the testing, use, and evaluation of the impact of the core measures; (2) the *Health Information Technology and Data Committee* (linked to Grant Category B) to guide all HIT/data activities and ensure leverage and coordination with other state and community HIT initiatives; (3) the *Quality Improvement Capacity Committee* (linked to Grant Categories C and E) to ensure the support and training of dedicated QI teams at Ohio children's hospitals and community practices to develop a workforce capable of sustaining QI and transformation efforts after the end of this grant; and (4) *The Community Advisory Committee* (cross-cutting across the entire BEACON initiative) which includes a diverse group of parents, child advocates, and community resource groups to advise other committees on the role of families and children in the initiatives and assure family-centered approaches in the projects. The Council will also oversee the work of *Project Committees* that focus on specific domains targeted for QI in this demonstration grant – including perinatal health (Grant Category C), hospital safety (Grant Category C); and developmental and behavioral health (Grant Category E).

BEACON, through its *Quality Improvement Capacity Committee* will focus on sustaining improvements achieved under this demonstration so as to create a quality child health system for Ohio. This Committee, led by a nationally recognized expert, Dr. Carole Lannon, will undertake a needs assessment of the Ohio improvement workforce and capacity and design training to meet the needs. Lessons from current Ohio training efforts will inform the development of Improvement Advisor training for the children's hospitals, perinatal centers, and partnering professional organizations. In addition to broad involvement of stakeholder groups through the Council, targeted stakeholder input is sought for each initiative in Section 2.

6. How the Grant Proposal Complements Other Initiatives

- **Initiatives Related to Quality Measures & Data Reporting.** As of August 2006, Ohio hospitals were statutorily mandated to publicly report their performance measure data. On January 1, 2010 the hospital performance measure reporting system went “live” as **Ohio Hospital Compare:** <http://ohiohospitalcompare.ohio.gov/>. This website provides information to consumers about the quality of care in hospitals for selected medical conditions and surgical procedures. Most measures are based on national standards. The work of OPQC, SPS and OCHA helped shape the final measures selected for reporting including measures related to infection and pregnancy/delivery. In addition, Ohio is home to the largest state survey of health insurance and access, the Ohio Family Health Survey, which has been used by researchers involved in this initiative to study Medicaid relevant issues including stability and churning.
- **Quality Activities.** Ohio is participating in the Commonwealth Fund’s State Quality Improvement Institute, working to implement a comprehensive set of strategies to transform Ohio health care into a high quality, cost-effective, high performing system (The Ohio Health Quality Improvement Plan: <http://ohqis.pbworks.com>). Ohio’s budget provides funding to help implement the plan (\$10 million and \$16 million in FY 2010 and ’11 respectively). The Ohio Health Care Coverage and Quality Council has been formed to coordinate these efforts. More information about the Council is at: <http://www.healthcarereform.ohio.gov/hccqc.aspx>.
- **Child Health Improvement Investments.** Several current projects provide a foundation to complement and accelerate (but not duplicate) the work of the Ohio BEACON proposal. ODH sponsors an Autism Diagnosis and Education Pilot Program. ODJFS has contracted with Cincinnati Children’s Hospital to work with the AAP and ODH to use improvement science methods to increase primary care physician’s identification and referral of children with autism and developmental concerns by using structured screening during the EPSDT visit. OPQC, SPS,

and developmental screening work have demonstrated improved outcomes with initial funding; the BEACON initiative allow transition from individual projects to a robust coordinated and sustainable statewide infrastructure for improvement.

- **Health Information Technology Initiatives.** In addition to activities listed earlier, the Ohio Health Information Exchange Center was created to advance the implementation of health information technology, a key element health care efficiency and reform. See more at: <http://www.healthcarereform.ohio.gov/healthit.aspx>.

- **Legislative Efforts.** The activities Ohio proposes complement the policy environment created by legislative changes at state and federal levels. As described above, Ohio has adopted insurance reforms and initiated a public process to expand coverage and prepare for health care reform. The federal CHIPRA legislation and the health information technology changes in ARRA are of particular interest to us, with the priority on quality health care for children and the health IT opportunities. These align strongly with Ohio's proposals.

In summary, Ohio has a track record of achieving results for improving child health care quality. The activities described above provide a strong foundation for a sustainable quality infrastructure to improve outcomes for children through a re-designed child health system. This collaborative effort takes the bold step of bringing divergent organizations together to advance the delivery and improvement of care by utilizing: 1) collaborative improvement methods, 2) a focus on outcomes, measurement and results feedback, 3) shared data management methods, 4) a shared governance Council, and transparent process, and 5) learning and exploration, with consumer input.

Abstract - Ohio Best Evidence for Advancing Childhealth in Ohio NOW (BEACON)

The Aim of the Ohio **B**est **E**vidence for **A**dvancing **C**hildhealth in **O**hio **N**OW (**BEACON**) initiative is to achieve transformational change in health outcomes for children enrolled in Medicaid/CHIP by improving the quality of their healthcare. Through the systematic and reliable application of established improvement science methods and by building strong partnerships with key stakeholders, Ohio's statewide collaboration will achieve unprecedented best-in-nation results for birth and developmental/behavioral health outcomes and safe hospital care for children. Simultaneously, BEACON will establish a sustainable infrastructure for improvement capability. We address Categories A, B, C, and E:

A – Experiment With and Evaluate use of Newly Developed and Evidence-Based Measures of the Quality of Children's Healthcare. Implement a statewide, sustainable performance measurement system that uses the core measurement set to provide timely, relevant, reliable, valid, and actionable information to continuously improve the quality of care provided to Ohio's children enrolled in Medicaid/CHIP

B - Promote the Use of Health Information Technology in Children's Healthcare Delivery. Enhance the capacity of Ohio's Medicaid program to measure the performance of its healthcare delivery systems for children; and provide a platform for a collaborative and sustainable central repository of information and intelligence for research, data-driven decision making, and improvement. This will link Medicaid, public health, and hospital data for children to inform the Category A, C, and E projects.

C - Evaluate Provider-Based Models that Improve the Delivery of Children's Healthcare. Utilize two existing collaborative provider-based models to accelerate the spread and transformation of safe and reliable hospital care by all hospitals providing care for children in Ohio: (1) The Solutions for Patient Safety project aims to eliminate all preventable harm for children cared for in Ohio hospitals, with an initial focus on reducing all serious safety events by 75% during the five years of the grant, and (2) The Ohio Perinatal Quality Collaborative aims to measurably improve perinatal outcomes and health by reducing premature births and infant mortality, especially among minority populations, with an initial focus on reducing all scheduled premature deliveries without medical indication throughout all hospitals in Ohio and hospital-acquired bloodstream infections for all preterm infants by at least 50%.

E – Enhance EPSDT and the Developmental/Behavioral Healthcare Systems' Delivery, Coordination, Quality and Access. Measurably improve outcomes for children by supporting the appropriate identification, assessment, referral and treatment of children with developmental and behavioral health concerns through the establishment of the Ohio Pediatric/Psychiatry Decision Support Network; utilize improvement science to create a system for reliable and appropriate use of atypical antipsychotics in 90% of youth, and ensure that 85% of young children receive structured developmental screening and appropriate referral at EPSDT examinations.

Ohio BEACON therefore requests \$14,981,171 over 5 years to create a critical, robust, and sustainable state system for quality improvement that transforms child healthcare in Ohio. By building strong infrastructure (categories A, B) and addressing critical needs in child health (categories C, E), Ohio will both markedly improve health care now and establish a sustainable foundation for future improvements. This state model of collaboration and quality can serve as a BEACON for the nation.

SECTION 2: CATEGORY A - TESTING AND REPORTING QUALITY MEASURES

[Please note: References are listed on <http://www.odh.ohio.gov/landing/beacon/beacon.aspx>]

1. Mission, vision, and objectives, and how they align with CMS’ Category A goals

Mission: To develop and implement a statewide, sustainable performance measurement system that provides timely, reliable, valid, and actionable information for stakeholders to improve health care system performance and quality of care for children in Medicaid. **Vision:** The performance measurement system will become a cornerstone for effective quality improvement, program monitoring, public reporting, and value-based purchasing to improve the quality of child health care. **Objectives** for Category A and their alignment with CMS goals are shown in Table 1.

Capacity: Ohio is in a strong position to accomplish the goals of Category A (see Section 1, #4). Ohio has a history of robust reporting, submits annual reports to CMS for CHIP children,¹ and reports on Medicaid managed care enrollees² using some measures in the AHRQ core set.^{3,4} Ohio also uses outcomes to affect performance via annual managed care plan reports on HEDIS measures and use of incentive programs for MCPs and their contracted physicians.

Table 1: Strategies to achieve each objective

Category A – SMART Aims	CMS Category A Objectives
<p>Planning Phase (9 months)</p> <p><i>Aim 1</i> – Develop a plan by March 2011 to report on core measures, assess barriers in data collection and identify ways to overcome them, and plan to disseminate results so data can be used for improvement.</p> <p>1.a. Develop a plan to report on core measures – including, assessment of data collection barriers, identification of ways to overcome barriers, and dissemination of results.</p> <p>1.b. Develop plan to disseminate reports on core measures to maximize quality improvement and integrate with other categories of this grant.</p> <p>1.c. Based steps above, develop Category A Operational Plan for BEACON Council, for submission to CMS.</p>	<p>Objective 1: To demonstrate that grantees can collect and report on the core set of child health quality measures identified by AHRQ/CMS.</p> <p>Objective 2: To learn how best to collect data for core measures, identifying barriers and how they can be overcome.</p>

Implementation Phase	
<p>Aim 2 – Build Ohio’s capacity to improve the scope and impact of its quality performance monitoring and reporting system by July 2013. We will:</p> <p>2.a. Assess information needs and preferences of parents – especially vulnerable populations – for information on quality measures of child health care</p> <p>2.b. Assess the information needs, preferences, prior exposure, barriers and concerns of other stakeholders for information on child health quality,</p> <p>2.c. Produce a report recommending format and distribution strategies for the core quality measures.</p>	<p>Objective 1: To demonstrate that grantees can collect and report on core child health quality measures identified by AHRQ/CMS.</p> <p>Objective 2: To learn how best to collect data for core measures, identifying barriers and how they can be overcome.</p> <p>Objective 3: To learn how stakeholders (States, providers, payers, consumer groups) use core measures (public reporting, pay-for-performance, quality improvement, education).</p>
<p>Aim 3 – Building on the results of Aims 1 and 2, Ohio will produce a second report on child health quality, demonstrating the ability to collect and report on the full core set of child health quality measures identified by AHRQ/CMS using the required CMS format by July 2014.</p> <p>3.a. Produce a report on the full core set of child quality measures on Ohio’s Medicaid population by July 2014.</p> <p>3.b. Disseminate the final report broadly across Ohio.</p>	<p>Objective 1: To demonstrate that grantees can collect and report on core child health quality measures identified by AHRQ/CMS.</p> <p>Objective 3: To learn how stakeholders (States, providers, payers, consumer groups) use core measures (public reporting, pay-for-performance, quality improvement, education).</p>
Impact Assessment	
<p>Aim 4 – Assess the impact on, and use of, the second child health quality report from various perspectives: stakeholders, families and child health care delivery system by June 2015.</p> <p>4.a. Assessment of how stakeholders used the core measures.</p> <p>4.b. Assessment of impact of the core measures on improving the child health care delivery system.</p>	<p>Objective 4: To measure the impact of the use of core measures on quality improvement activities, children’s access to and quality of health care provided by Medicaid and CHIP, and on transparency and consumer choice.</p>

2. Strategies that will be used to achieve each objective

Aim 1.a. Ohio will develop a plan for initial reporting on the core set of 24 measures (Table 2) and on ease of reporting. We believe Ohio can initially report on 14 measures that are part of current NCQA/HEDIS reporting or are readily available through data already collected (see Table 2). Data are also readily available for nine other measures plus BMI, which is being added to claims. In the planning phase, we will assess strategies needed and ways to overcome barriers to collecting and reporting on these measures— including strategies for combining data (e.g., reporting on immunization through claims data combined with state immunization registry) and extending approaches (e.g., extending CAHPS surveys conducted by MCPs to other beneficiaries).

In the planning phase, we will produce a first report using as many measures as feasible from the current claims database. Measurement will be performed as mandated by CMS. Current measurement strategy uses claims and calculates separately for children in MCPs and Medicaid fee for service, then combines the two for a total. We anticipate CMS’s mandated methodology to be similar enough so as to position Ohio well in adopting the mandated methodology.⁵⁻¹⁸

In addition to the core data set, we will report on “duration of coverage” as mandated in CHIPRA¹⁹ and the RFP.²⁰ Ohio has already investigated methods to measure duration of coverage²¹ in accordance with recommendations in an AHRQ report.²² We will also report the proportion of children meeting the continuous enrollment requirement for each measure and relate these data to the ability of plans to manage quality for their populations.

Aim 1.b. We will develop a list of stakeholders focused on quality measurement and improvement, including organizations and individuals within them responsible for data and quality improvement - primary care providers, hospital clinical leaders and QI officers, community health center clinicians and administrators, health plan QI officers, and employers. We will seek stakeholder advice to optimize form and frequency of data reports (Aim 2), and

**TABLE 2– Core Measure Preparedness and Impact
Recommended Initial Core Set Measures for Children’s Health Care Quality**

Legislative measure topic/Subtopic/Current measure label	Measure Ability	Related categories*	State Impact**
PREVENTION AND HEALTH PROMOTION			
Prenatal/Perinatal			
Frequency of ongoing prenatal care (NCQA measure)	1	C- OPQC	58,504
Timeliness of prenatal care (NCQA measure)	1	C- OPQC	58,504
% of live births weighing < 2,500 grams	2	C- OPQC*	
Cesarean Rate for Low-risk First Birth Women	2	C- OPQC*	
Immunizations			
Childhood immunization status (NCQA measure)	2	E- OPPDSN	54,806
Adolescent immunization (NCQA revised for 2010)	2	E- OPPDSN	
Screening			
BMI documentation 2—18 years old	3	E- OPPDSN	
Rates of screening for delays using screening tools	2	E- OPPDSN*	
Chlamydia screening for women	1	E- OPPDSN	58,439
Well-Child Care			
Well-child visits in the first 15 months of life	1	E- OPPDSN	59,622
Well-child visits in the third thru sixth years of life	1	E- OPPDSN	200,000
Well-child visits for 12-21 years of age – w/PCP	1	E- OPPDSN	305,262
Dental			
Total eligibles receiving preventive dental services	1	E- OPPDSN	
MANAGEMENT OF ACUTE CONDITIONS			
Pharyngitis—appropriate testing (NCQA measure)	2		45,602
Otitis Media Effusion—avoidance of inappropriate use	2		
Total EPSDT eligibles who received dental treatment	1	E- OPPDSN	
ED utilization—Average # of ED visits per member	1		
Pediatric catheter associated blood stream infection rates (PICU and NICU)	2	C-SPS*/OPQC*	
MANAGEMENT OF CHRONIC CONDITIONS			
Annual # of asthma patients with ≥1 asthma ER visit	1		
Follow-up care for children prescribed AD/HD medication	2	E- OPPDSN*	15,738
Follow up after hospitalization for mental illness	1	E- OPPDSN	20,404
Annual hemoglobin A1C testing	1		
FAMILY EXPERIENCES OF CARE			
CAHPS Health Plan Survey 4.0, Child Version	1		
AVAILABILITY OF SERVICES			
Children and adolescents’ access to PCP	1		739,327

Notes: * Directly related to impacts expected in this project

** Based on ODJFS HEDIS 2009. It is important to reiterate that most HEDIS measures require continuous Medicaid eligibility, thus undercounting the number of children affected.

Numbers in column 2 have the following meanings: 1 = Measuring now or available; 2=Able to measure with current data; 3= Need new data collection tools to measure

assess the impact of the core quality measures (Aim 4). The Category A Committee (Quality Measurement Committee, Section 1, Part 5) will develop an initial list of individuals and organizations to be contacted and we will use modified snowball sampling techniques to add to the list.²³ We will also work with project personnel for grant categories B, C, and E to ensure that appropriate core baseline and outcome measures (Table 2, above) are collected, enabling impact assessment of each quality improvement initiative on key indicators. **Aim 1.c.** After Ohio based discussions, revisions, and approvals, we will combine the operational plan for Category A with the operational plans for the other grant categories and send to CMS for approval. Category A's operational plan will summarize findings from investigations in the planning phase, including: (i) which quality measures are/are not available for initial reporting, (ii) quality of the administrative, claims-based data, (iii) plan for measuring duration of coverage, (iv) plan for improving quality of claims-based data on core measures, including identifying barriers to full and accurate collection of core measures, and ways to overcome them, (v) plan to increase the proportion of children meeting the continuous enrollment requirement for inclusion in the quality reports, (vi) schedule to incorporate other measures in the core set, and (vii) plan for disseminating reports on quality measures.

AIM 2: This phase will focus on improving the data reporting from Aim 1. Here we will assess the needs and preferences of parents, providers and other stakeholders to inform the design reporting documents (Aim 3), plan for impact assessment (Aim 4), and engage providers in developing performance incentives.

This Aim will succeed through regular meetings of the Category A Committee (including researchers, physician leaders, representatives of state agencies, managed care plans, providers, and categories B, C, and E) to discuss improving the quality of data health care. Data on quality

measures will be summarized annually beginning in year two. The Category A Committee will meet after each year's summary to make recommendations for improvement. Additional quarterly teleconferences will be held of the full committee to review progress and data for Category A. Category A leadership will meet bi-weekly and as needed. Category A chairs will be members of the BEACON Council and will attend the regular Council meetings.

Aim 2.a. One goal in developing measures of quality of children's health care is for outcomes to be understood and used by consumers. We plan on a two-step approach to report child quality measures to parents. First, we will conduct focus groups with parents to elicit information about needs, wants, beliefs, and views regarding quality and their prior experience with quality data. These will inform the format and content of the reports (Aim 3). We will ascertain parent willingness to participate via Aim 4 using methods such as telephone surveys, mail surveys, and central location intercept interviews (talkingquality.gov). At least ten focus groups will be held in urban and rural settings to capture the diversity of Ohio Medicaid families (including some conducted in Spanish). Second, after initial quality indicators are prepared in Aim 1, we will conduct cognitive interviews with representative parents (drawn from focus groups) to determine if they can readily understand and interpret the data and find it useful in decision-making. Based on results, we will refine the design and content of consumer reports. Focus groups and cognitive interviews will be conducted by experienced facilitators using recommended techniques and analyzed using well-established practices.^{24, 25}

Aim 2.b. We will also conduct focus groups and key informant interviews with non-parent stakeholders identified in Aim 1.b. according to established techniques and analytical approaches to determine needs and preferences regarding the type, granularity and format for the indicator reports. We will also explore preferences and conditions for pay-for-performance or other

incentives for quality, using the structure of earlier Ohio focus groups.^{26,27} The first report of quality measures (Aim 1.a.) and models from other states and the literature will provide starting points for these discussions.

Aim 2.c. This report will contain the recommendations for statewide reporting of child health quality measures based on parent and stakeholder focus inquiries, assessments of data quality, and the feasibility of collecting all core measures. It will estimate the budgetary impact of the recommendations and identify which recommended data collection changes would require state or federal approval. It will recommend dissemination strategies for Category A reports.

Activities will be coordinated with those of the Ohio Quality and Access Commission (Dept. of Insurance), providing the “child health focus” for the emphasis on patient-centered medical home and payment reforms being developed by the Commission. The report will be reviewed by the Category A Committee and, after any needed revisions, by the BEACON Council by July 2013. The BEACON Council will review and modify as needed and convey to ODJFS. While we expect ODJFS will be receptive to the recommendations, they are non-binding and their implementation will depend on fiscal/resource impact and political feasibility.

Aim 3.a. This report, covering one year, will include all core quality measures in the final AHRQ dataset and the “duration of coverage” measure. The report format and content will flow from our experience in producing the initial report (Aim 1), data from targeted stakeholders (Aim 2.a, 2.b.), and the initial set of recommendations (Aim 2.c). The report likely will present data at health plan and county levels, and possibly selected provider groups and communities using primarily claims data linked with Dept. of Health data (e.g., immunization registry, birth certificates). It will also draw on the improvement database described in Category B. It will highlight measures showing progress on outcomes for Categories C and E. A companion report

will address National Evaluation Questions 1 (Was the grantee able to collect and report on the full set of core measures?) and 2 (How did the grantee collect data for/ generate core measures?).

The BEACON Council will advise on the final report format and presentation.

Aim 3.b. The report will be printed in attractive, easy-to-read format and made available online through an interactive platform to enhance its consumer and user-friendliness. The printed report will be distributed to stakeholder target groups (Aim 1.b.), and notices about web-site locations of the report distributed to other key policymakers. The results will be presented at meetings of stakeholder groups (e.g., Ohio AAP, OCHA, Ohio Business Roundtable, Ohio Insurers).

AIM 4: The impact assessment will include both process and outcome measures. It seeks to measure the impact of use of core measures on quality improvement activities, children's access to and quality of health care provided by Medicaid, and on transparency and consumer choice.

This Aim asks two main questions: (1) How did stakeholders use core measures (process evaluation; National Evaluation Question 3)? and (2) What was the impact of the core measures on improving the child health care delivery system (outcome evaluation; National Evaluation Question 4)? Recognizing capacity to assess short- and intermediate-term outcomes over long-term outcomes in the span of time available, we will focus on knowledge, use, intentions, short-term and intermediate behavior. The results of this evaluation will also be used to shape the data system (Category B). Throughout this Aim, we will collaborate with the national evaluators.

Aim 4.a. This assessment aims to fully answer the National Evaluation Question 3, including: who used the core measures and how were they used, etc? We will address these questions through qualitative and quantitative methods involving three user groups. (1) Stakeholders involved in quality improvement (identified in Aim 1.b.). These individuals will include, for example, the quality improvement officers in hospitals, top person in managed care plans responsi-

ble for quality, and others in similar positions. We will conduct key informant interviews and focus group discussions using semi-structured guidelines to ascertain answers to these national evaluation questions. This inquiry will yield a good assessment of the impact of the reports on quality improvement in the field. (2) Consumers (parents). We will use standardized measures (e.g., National Survey on Consumers' Experiences with Patient Safety and Quality Information <http://www.ahrq.gov/qual/consattitud.htm>), modified if needed, to address whether they were aware of and used the core measures, how they interpreted the core measure report, whether and how the measures affected decision-making, etc, as per the national evaluation questions. Based on the results of Aim 2.a., we will use telephone surveys, mail survey, or central location intercept interviews (talkingquality.gov).^{24, 25, 28} (3) Managers of the projects in other categories of this demonstration grant (i.e., categories C and E) will be interviewed to assess whether these projects used the quality findings from related core measures (Table 2).

Aim 4.b. This assessment will seek to answer questions from National Evaluation Question 4 by employing qualitative methods and interviewing key decision makers at the state level – including the Director of Medicaid, Department of Health, Department of Mental Health, the Governor's office, key legislators and state agencies. In addition to addressing the national evaluation questions, we will seek to understand if any specific actions were taken as a result of the quality data in the core measures. For example, did outcomes on the core measures have an impact on reimbursement at either the plan or the provider level? Did they translate into improvement efforts? We will look especially at the contracts between ODFJS and the MCPs to determine if any outcomes on the core measures affected this process: for example, if performance on certain measures led to named areas for improvement in the MCP contracts.

3. Expected degree of stakeholder involvement

As noted throughout our approach, we will achieve a very high degree of stakeholder involvement. The BEACON Quality Measurement Committee will provide input and guidance throughout the project and is made up of representatives from the public and private sectors including key state agencies noted earlier, experts in quality measurement and the information infrastructure needed to support it at the state, health plan and provider levels, health plans, practitioners, safety net providers, and consumer advocates. Stakeholders will also be shaping the design of the quality reports, the format and means by which they are disseminated and participating in the evaluation of the impact of the measures.

4. Evidence that the applicant will be able to implement the project

Ohio is in a strong position to accomplish Category A goals given its history of robust reporting and its experience using outcomes to affect performance (section 1, parts 4 and 6; section 2, category A, part 1), the existing and planned HIT infrastructure (section 1, parts 4 and 6; section 2, category B), and the experience of the project personnel (biographies in Appendix).

5. The plans for category A will fully answer the National Evaluation Questions

This is described under Aims 3.a. (National Evaluation Questions 1 and 2) and 4 (National Evaluation Questions 3 and 4). Noteworthy in our evaluation design is the use of mixed methods emphasizing measurement of use and impact from multiple key stakeholder perspectives, including consumers, providers, hospitals, safety net providers, health plans, state officials, community organizations, and advocates. In addition, the quality measurement committee will review data annually for earlier improvements in the accuracy and quality of the data.

In summary, the work conducted under Category A will yield a sustainable methodology for routine reporting on Core Measures to CMS and will provide a foundation for the systematic use of core measures to measurably improve the quality of health care for children in Ohio.

Section 2: CATEGORY B - HEALTH INFORMATION TECHNOLOGY (HIT)

[Please note: References are listed on <http://www.odh.ohio.gov/landing/beacon/beacon.aspx>]

Integral to each of the projects in Categories A, C and E is the design and implementation of Health Information Technology (HIT) to support and enhance the initiatives and provide a lasting infrastructure for sustained transformation of child health care in Ohio.

1. Mission, vision and objectives, and how they align with CMS’s Category B goals

Mission: The HIT mission of Ohio’s BEACON initiative is to enhance the application of improvement science to achieve results and promote transparency and efficiency of data collection, management and analyses employed in Parts A, C and E. Ohio is well positioned to complete this HIT mission because of the technological expertise of partner organizations and ongoing efforts by the Ohio Medicaid program to develop this capacity.

Vision: The HIT capacity of Ohio BEACON will provide the central information and intelligence for quality decision making for the State’s Medicaid-insured pediatric population. Ohio Medicaid and clinical leaders are well positioned to improve quality with the right information provided in a timely fashion.

Category B – SMART Aims	CMS Category B Objectives
<p><i>Aim 1</i> - To plan and develop a complete data model and exchange mechanisms for an integrated data repository that will promote clinical quality improvement (QI) in Ohio. During the <u>nine-month planning phase</u> specified in the RFP, we will:</p> <ul style="list-style-type: none"> (a) Complete a comprehensive planning process covering key elements noted below, including complete data and form specification for each of the current proposed quality projects. (b) Test data linkage programs and exchange points for Ohio Medicaid, Ohio Bureau of Vital Statistics and hospital 7databases with Ohio BEACON server. (c) Complete data governance and publication agreements for all Ohio BEACON Council institutions. 	<p>Objective 1 – To learn how best to implement HIT designed to improve the quality of children’s health care, reduce costs, or increase transparency and consumer choice, including promotion of HIT use and identifying barriers and how they can be overcome.</p> <p>Objective 2 – To learn</p>

<p>(d) Establish a communications infrastructure for QI programs and distribute it to providers and patients throughout Ohio.</p>	<p>how best to use HIT data for quality improvement and cost reduction purposes.</p>
<p>Aim 2 – To implement an integrated central data repository combining information from multiple sources. During the ensuing 12 months, we will:</p> <p>(a) Revise the existing Ohio Perinatal Quality Collaborative (OPQC) warehouse to include multiple quality projects and integrate into a central data repository.</p> <p>(b) Integrate and link Medicaid files (enrollment, claims/encounters, immunizations, and lead testing results) and vital statistics (Ohio Department of Health) into a central data repository.</p> <p>(c) Begin comprehensive analysis and reporting to QI teams and the full collaborative.</p>	<p>Objective 2 – To learn how best to use HIT data for quality improvement and cost reduction purposes.</p>
<p>Aim 3 - To evaluate the impact of Ohio BEACON HIT services to enhance QI teams and their work. We will assess the role of HIT services in improving decision support services of the QI teams by:</p> <p>(a) Examining data quality and flow.</p> <p>(b) Conducting a user satisfaction survey with each Category Committee to assess use and intended future use of Ohio BEACON HIT services.</p> <p>(c) Monitoring and evaluating the use of reporting tools by members of the various learning networks.</p>	<p>Objective 2 – To learn how best to use HIT data for quality improvement and cost reduction purposes.</p>

2. Strategies that will be used to achieve each objective

The evolution of the OPQC warehouse into a larger Ohio BEACON warehouse and communication services, combined with the innovative evolution of the State Medicaid claims and other state public health data, will allow Ohio to develop a model HIT system for transparency and flexibility in quality reporting and transformation. We will employ an integrated central data repository developed by information management faculty together with coordinated communication tools. To achieve these goals, we propose to define and develop a data chain of custody through the complete lifecycle, in accordance with NIH Office of

Biorepositories and Biospecimens Best Practices, and an associated data model and exchange mechanism. The project will build the data collection, communication and management infrastructure for a network of databases associated with the Ohio BEACON quality improvement (QI) science projects. Because we expect a variety of sources and data types, a premium will be placed on the integration and quality of data. We will build or enhance data collection and management infrastructures for consortia that include both research projects and clinical systems. Each data infrastructure project will use methods to enable linkage of data elements across constituent databases.

Aim 1: *To plan and develop a complete data model and related exchange mechanisms for an integrated data repository that will promote for clinical QI in Ohio.* The proposed infrastructure and resulting warehouse for the various projects will require careful processes, as noted above. The BEACON HIT and Data Committee (section 1) will, at a minimum, address the following:

1. Planning elements: a) All improvement projects will be initiated with a written, IRB-approved research protocol with participation of a data management team, project leads and a project statistician in project design; b) An all-data-elements worksheet will be finalized prior to initiating the project, with participation of project leads and data management team; c) Run/control charts displaying baseline data will be completed and analyzed for variation and stability prior to initiating the project, and d) Patient level data will be linked including elements from existing databases, such as the Vermont Oxford collaborative, Ohio Children's Hospital Association, birth/death certificates, medical records, payer claims, Ohio Hospital Association uniform hospital discharge data.

2. Data management elements: a) Explicit use, including legal context, for an "honest broker" concept to address privacy/confidentiality, peer-review, market competitiveness and

Health Insurance Portability and Accountability Act concerns. The process will: a) employ an honest-broker mechanism to ensure protected health information is kept secure while allowing for data to be correlated with clinical data when warranted; b) allow Web-based access to electronic data collection forms, all-data-element worksheets, instructions for collecting, entering and transmitting data; c) System includes web-based data entry of patient-level and provider-level data with “built-in” data quality audit/edit procedures; d) include validation procedures to verify that each element measures what it is intended to measure and that data in the project data set reliably represents the primary data source; e) include “instantaneous” and automatic analysis and updating of high-quality graphical/tabular output as soon as data are edited and audited; and f) include human-to-human “help desk” functions related to data management issues.

3. Analysis elements: a) Secure, confidential, private project analyses are available to all project participants as soon as they are completed; b) System allows ready annotation of analysis reports by project staff not directly involved in data management system; c) Analysis reports can be readily translated to other publication or presentation software; d) System communicates automatically periodically with participating sites on potential and actual data quality, timeliness and completeness issues; and e) System includes a web-site with the following functions: peer-production, blog, listserv, public pages, and password-protected, secure extranet (provider and patient confidentiality and privacy).

In addition to these planning elements, the steering group and relevant legal counsel will revise the OPQC data participation and publications agreements for BEACON to include each different party (state, hospitals, clinicians) and all relevant parties will complete their agreement, including willingness to undergo security audits (see Ohio BEACON website: <http://www.odh.ohio.gov/landing/beacon/beacon.aspx>). Finally, we will develop a communica-

tions network to conduct statewide QI projects, including: a) meeting support for teleconferences and videoconferencing, b) 1-800-number support for governance and project calls and QI calls for participating teams, c) webpage development for communications related to each project, d) SharePoint site management for each project, and d) a patient portal for communications with Ohio CHIPRA. A unique 800 number will support patient referrals from primary care clinicians for the Ohio Pediatric/Psychiatry Decision Support Network, Category E).

Aim 2: *To implement an integrated central data repository combining information from multiple sources.* To support the measurement needs of the statewide QI projects described in Ohio's BEACON application, we will build a data management infrastructure that will be shared by all projects. The Electronic Data Capture and Database Management (EDC) system that we propose is nearly identical to and modeled on the system currently being used successfully by OPQC (www.OPQC.net).

Technical Description: The proposed Ohio BEACON EDC system is based on Microsoft Share Point Server, InfoPath web forms, SQL Server and SQL Server Reporting Services and Web Services.

Data Management: Ohio BEACON's proposed statewide improvement projects (Core Quality Measures, Solutions for Patient Safety - SPS, OPQC and OPPDSN) will share a common system for web-based data entry, audit/edit, storage, analysis and reporting. Efficiencies inherent in the proposed EDC mean that a greater proportion of CHIPRA funds can be directly used to improve care.

Each practice, participating in one or more BEACON QI project, will enter their own data using InfoPath EDC web forms or related products (e.g., Teleforms), agreed to in our planning phase, via the Internet. Additional efficiencies and analyses that target the combined population

health impacts of the various QI projects will be achieved by a set of common demographic and clinical variable definitions to ensure project-to-project comparisons and evaluations of statewide impact can be made. Each individual granted data entry privileges will have a unique account identification associated with a unique password. User account identifications are associated with the user's specific practice site, so that individuals with permission have access to only their site's data for entry and editing. Site web data will be combined with Ohio Vital Statistics and ODJFS Medicaid claims relevant to their specific projects for project analyses, a process that already is effectively underway in pilot studies.

Reporting: SAS programs will be used to compute monthly values of the measures for each practice site and for the collaborative overall and to create Excel reports for each site. Reports will contain run charts and control charts generated from the measure values previously computed. After the reports have been reviewed for accuracy, reports will be posted on the individual project's web site. Access to project web sites is controlled by individual accounts and passwords so that practice site members have access to only their site's aggregate reports.

Security: Much of the quality data collected will involve highly sensitive matters of patient safety and testing. Thus, we will emphasize data security at every step through staged processes. The EDC components will be built in accordance with 21 Code of Federal Regulations 11. The network housing EDC will be fire-walled and secure. The servers will be clustered and fault tolerant and will be hosted in a secure data center. Where relevant, research projects will seek Certificates of Confidentiality from appropriate granting agencies. In addition, the use of honest brokers and hashing will further distance researchers from actual holding of patient or institutional data.

Aim 3: *To evaluate the impact of Ohio CHIPRA HIT services in enhancing the QI teams and their work.*

Data Quality: Data entry forms incorporate numerous data checks. These checks ensure that there is consistency between related data fields, and that required items are entered before the form can be stored in the database. Additional checks and reports are implemented in SQL Server Reporting Services so that practice sites will be able to get information about their data in real time. Data will be retrieved from the SQL Server database by a SAS program. This program will produce a SAS data set for each of the forms. In addition, the program will produce reports that identify questionable data records, and will produce a management report that summarizes the number of forms submitted by each site each month. These reports will be reviewed by a data manager who will contact a practice site if there appear to be problems.

User Satisfaction: We will conduct an annual survey of committee members and a randomly selected group of participating clinicians from the projects to ensure at least 100 respondents to each survey (sampling with replacement) to identify strengths and weaknesses of our HIT system and options for improvement. Project leads will participate in unstructured interviews at the beginning and end of the project to suggest ways to improve data collection and management.

Tracking: A feature will be incorporated into each of the forms to assist the sites in matching their data collection forms with the data records stored in the database. In order for the local patient to be associated with the central secured database, the local paper form will include a data entry block for an artificial “tracking number” titled Form ID #.

3. Expected degree of stakeholder involvement

The governance of this important resource is a critical issue. The steering committee provides leadership for the repository and helps to ensure the scientific integrity of the project,

while conforming to the ethics and standards of practice articulated by the American College of Epidemiology (American College of Epidemiology Ethics Guidelines. Annals of Epidemiology 2001:10:487-497). The steering committee also will address emerging issues that impact the repository and may recommend changes to the Ohio CHIPRA Director. The repository recognizes the final National Institutes of Health's (NIH) Statement on Sharing Research Data (NIH Guide: February 26, 2003; Notice # NOT-OD-03-032). This statement recognizes that the rights and privacy of people who participate in NIH-sponsored research must be protected at all times, including in the course of sharing data.

4. Evidence that the applicant will be able to implement the demonstration project

Ohio is well positioned to complete the goals outlined in this section and to improve care in the process. Our state is home to outstanding HIT resources in both the commercial and educational sector. More importantly, ODJFS, the state agency housing the Ohio Medicaid program, has made a major commitment to improving its own data validity, capacity and analysis, with the goal of improving health care delivery for Medicaid children and adolescents. Specifically, collaborative improvement projects are employing a centralized integrated data repository that includes data from three sources: the state vital statistics program, facility data entered through web forms, and other data forms entry. Ohio Medicaid is in the process of replacing its MMIS with the Medicaid Information Technology System (MITS), which will be fully compliant with the standards for the MITA architecture. MITS integrates technology strategies for claims processing, customer relationship management, and decision support so that the right information is delivered to all entities in the Medicaid enterprise, including physicians at the point of care. The system will use 'push' technology, which will deliver information to subscribing entities when it is indicated by conditions in the data. MITS also breaks down the

barriers between state agencies by integrating data for Medicaid-eligible patients that was previously stored in agency specific silos, especially for children. This includes vital statistics, the state-wide immunization information system, and the childhood lead testing registry. The MITS Medicaid decision support system will feature a data model that emphasizes flexibility in adding facts and dimensions, adapting to changes in the underlying data, and addition of new tables. It will be updated on a weekly schedule and will extract data weekly to the BEACON central data repository through an automated process. This will include claims/encounters, eligibility, birth certificates, immunizations and childhood lead testing.

The claims processing and customer relationship management functions of MITS are expected to be operating by December 15, 2010. A limited version of the decision support system with 2½ years of data will be operating by July 2011. Additions of birth certificate, immunization and lead testing data will occur after July 2011. Prior to the date that the Medicaid decision support system becomes operational, data will be passed to the BEACON central data repository using an automated process that extracts data and creates monthly files that are available at a secure FTP site. This data will be added monthly to the BEACON central data repository. Shown at the end of this section is an illustration of the OPQC architecture, on which Ohio's BEACON EDC system will be modeled. See Ohio BEACON website for details.

5. Description of how the demonstration project will answer National Evaluation questions

The HIT work proposed in Ohio BEACON will substantially improve the infrastructure for quality reporting transparency and communication for Medicaid through increased efficiency in data collection, storage, management and analyses, through improved multi-site communication and integration with existing state databases. Current pilot projects have demonstrated Ohio's capacity and commitment, but CHIPRA resources will allow the

development of a state-of-the-art data-driven QI HIT system, as well as integration among the separate data quality systems. Existing SQL server architecture will be expanded to support simultaneous projects and linked to a communications and reporting infrastructure. The development of the patient portal will increase the access of patients and families to information about providers and quality and, when combined, these tools will provide a template for other states to consider in QI management and reporting.

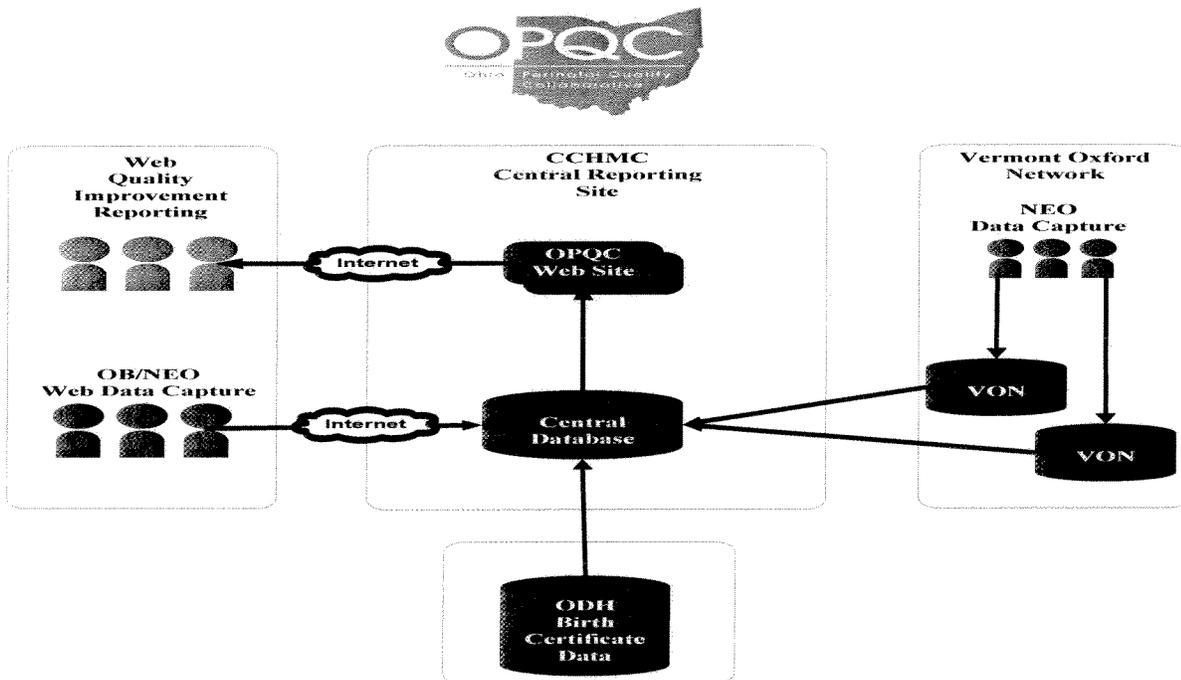
By the end of Year One, the following goals will have been accomplished:

- Completion of warehouse data model specification
- Successful test of Ohio Vital Statistics and Medicaid eligibility links to warehouse
- Web data entry forms development for at least three projects
- Opening of patient and provider portal
- Publication of standard protocols and operations for HIT requests and reports

By the end of Year Two, an integrated central data repository based upon the final data model will be implemented.

In Years Three through Five, BEACON projects will be able to utilize the data system to provide comprehensive analysis and reporting to QI teams and collaboratives to support the work in Categories A, C and E.

Ohio Perinatal Quality Collaborative Data Strategy & Architecture



12.18.2009