Significant Publications


This publication details how children with private health insurance are more than six and a half times as likely to lose coverage in the three months after one or both of their parents loses a job, compared to children whose parents remain employed. In the current economic environment, this finding is especially troubling. Study results estimate that for every 1,000 jobs lost, 311 privately insured children lose coverage and more than 45 percent of the poorest and most vulnerable of privately insured children became uninsured and concludes that much more effort is needed to quickly enroll children in public health insurance programs when their parents suffer a job loss.


This publication identifies several contextual factors shown to be important to QI success, although the current body of literature lacks adequate definitions and is characterized by considerable variability in how contextual factors are measured across studies. It provide recommendations on QI success, including that research should focus on identifying and developing measures of context tied to a conceptual model that examines context across all levels of the health care system and explores the relationships among various aspects of context.


This article discusses the significant variation in diagnostic testing and treatment for inflammatory bowel disease...
and how quality improvement science methods can help address unwarranted variations in care and outcomes. It provides an overview of the ImproveCareNow Network and the prototype for a model of improving subspecialty care that includes three components: 1) creating enduring multicenter collaborative networks of pediatric subspecialists, 2) sharing of performance data collected in patient registries, and 3) training in quality improvement. Initial results suggest improvements in both care processes and outcomes that suggest that practice sites are learning how to apply quality improvement methods to improve the care of patients.


This publication examines TAC, which is commonly prescribed in KTX recipients, though overexposure can be nephrotoxic. CIVN, used to treat post-KTX hypertension, may inhibit TAC metabolism resulting in overexposure and potential toxicity. It presents two case reports and analysis of 2068 KTXs from the PHIS to characterize post-KTX intravenous anti-hypertensive use and to determine whether CIVN in TAC-treated patients would predict "immunosuppressive drug causing adverse effects in therapeutic use".


Despite its high prevalence, pain often is poorly managed in the emergency department. This article details how improvement science and quality-improvement methods can reduce delays associated with opioid delivery for children presenting to the emergency department with clinically apparent extremity fractures. By applying quality-improvement and process improvement methodology, the study team identified key drivers for the rapid delivery of systemic opioids to patients with clinically apparent extremity fractures and significantly improved the timeliness of analgesic delivery for this subgroup of patients.

**Division Highlights**

**Overview**

This year closes the first fiscal year of operations for the James M. Anderson Center for Health Systems Excellence. The AC centers focus accelerated on both new knowledge generation and its application in the delivery of care. As part of the Anderson Center’s FY11 operating plan, we focused on building our funding and outputs in support of this mission. The effort was very successful. External revenue related to the Anderson Center’s research activities grew in FY11 to almost $6 Million, representing a 15% increase over FY10, and continues the significant growth in research that began in FY09. In addition, faculty affiliated with the Anderson Center submitted 58 manuscripts for publication and 17 new grant proposals, an increase in both from the previous year.

**Patient Safety**

Patient safety remained a top priority for both the Anderson Center and the organization this year. This year safety team under Dr. Steve Muething’s leadership instituted daily safety briefs, established baseline metrics for serious preventable harm, and spread successful trip-fall interventions. Leveraging major funding received in FY10 they successfully launched Solutions for Patient Safety (SPS), a collaborative of all 8 Children’s Hospitals in Ohio with a singular focus on the elimination of serious harm. To date SPS has achieved a 60% reduction in surgical site infections in designated procedures and a 34.5% reduction in overall adverse drug events.

**Capacity Management**

Dr. Fred Ryckman led the Capacity Management team in their effort to improve productivity using existing
assets. This system-wide flow team spread a discharge prediction tool to reduce system delays, launched six programs aimed at reducing cost in the operating room, and achieved reliable check out procedures in 80% of divisions.

Chronic Care Systems

Chronic care systems, under the leadership of Dr. Maria Britto, exceeded goals for the year, with chronic care improvement teams meeting 83% of their FY11 targets. Efforts around embedding individual disease-based outcome measures into EPIC were very successful, resulting in 54% of conditions having 2 measures reliably collected in the EPIC system. At the close of FY11, we have 26 diseased-based teams working to improve the care of children with chronic diseases.

Population Health

Under the direction of Dr. Robert Kahn, four teams continued work in the Population Health area in FY11. The Infant Mortality team successfully identified prematurity hot spots in Price Hill that are ripe for intervention testing in the coming year. Obesity and Asthma teams developed key drivers for their programs and developed baseline data in these areas. The Injury team worked to define their population.

Capacity Building

This year Anderson Center also continued to advance our mission to build the next generation of improvement leaders through our Intermediate Improvement Science Series (I^2S^2), Advanced Improvement Methods (AIM), and Rapid Cycle Improvement Collaborative (RCIC) course offerings. To date, I^2S^2 has graduated over 300 internal leaders trained in executing quality improvement in their area. Through AIM, we have trained 84 faculty and fellows, as well as national faculty from other universities, in the theory and application of advanced quality improvement methodology including complex study designs to evaluate specific causal impact of interventions. We initiated the RCIC to support our next level of improvement capability building efforts. In addition, the Quality Scholars program, started 4 years ago and led by Dr. Evaline Alessandrini, continued to grow and diversify this year. The Anderson Center graduated four quality scholars and added several new scholars from numerous divisions and diverse specialties, including a nurse researcher, a psychologist, and a speech pathologist.

Health Services Research

As one of the cores within the Anderson Center, Health Services Research (HSR) is focused on developing a creative and robust portfolio of health services, outcomes, comparative effectiveness, and quality improvement (QI) research projects across the medical center that brings together researchers, patients and clinicians to create new knowledge and innovations about how to improve care and outcomes for children, families and communities.

In FY11, HSR leader Dr. Peter Margolis with colleagues across CCHMC, continued development of the HSR Matrix as a tool to better connect research leaders across the organization. This year the Matrix team made progress toward improving the sense of common purpose among HSR researchers at CCHMC. The community-building effort of the HSR Matrix facilitated cross-sharing of ideas that uncovered many opportunities for increased collaboration across our institutional research projects. A five year plan for development of HSR faculty across the organization and core methodologists within the Anderson Center was approved.

This year Anderson Center HSR researchers and staff worked with a number of CCHMC teams, including our own Anderson Center Learning Networks group, on a number of research partnerships, including:
<table>
<thead>
<tr>
<th>Group</th>
<th>Areas of Collaboration</th>
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| GI                                         | • C3N grant:  
  • Delivery system design  
  • Development of new informatics capabilities  
  • Comparative effectiveness research  
  • Studies in Pediatric Liver Transplantation Learning Network |
| Biomedical informatics                     | • Enhanced Registries grant                                                                                                                                 |
| General and Community Pediatrics           | • National networks of communities focused on early childhood development  
  • Population-focused screening and development activities in Price Hill |
| Rheumatology                               | • Pediatric Rheumatology—Care and Outcomes Improvement Network Learning Network  
  • Comparative effectiveness research |
| Neonatology                                | • Ohio Perinatal Quality Collaborative Learning Network                                                                                               |

In addition, the HSR core hosted several prominent speakers for open presentations on HSR topics.

**Learning Networks**

The Anderson Center Learning Networks core, led by Dr. Carole Lannon, aims to build collaborative networks that enable patients and families, clinicians, researchers, and communities to work together in a compelling process of quality improvement, innovation and discovery. The goal for these networks is to measurably improve care and outcomes for children. The Learning Networks core primarily focused this year on planning a collaborative-based approach to allow for scalable, results-driven infrastructure to support CCHMC’s initiative to launch 10 multi-site networks by 2015. The current portfolio of Learning Networks spans a broad reach of conditions, settings, and geographical locations, including:

**State**

**Ohio Perinatal Quality Collaborative (OPQC).** This statewide effort aims to reduce preterm births and improve outcomes of preterm newborns. Initial projects reduced bloodstream infections by 20% in hospitalized premature infants (24 NICUs) and decreased near term deliveries without medical indications by more than 16,000 births to date (20 OB units). These projects produced an estimated savings to Ohio of at least $11 million in annual total costs.

**Solutions for Patient Safety (SPS).** All 8 children’s hospitals in Ohio are participating in this project to improve outcomes in surgical site infections and medication safety with funding by Cardinal Health and the Ohio Business Roundtable. Resultant reductions in infection rates have saved an estimated 3,576 children from unnecessary harm and over $5.2 million in health care costs.

**National**
ImproveCareNow (ICN). This network has documented an increase in patients with inactive disease from 48% to 75% over three years. Building on the ICN foundation of 30 teams are two important research efforts: 1) an NIH-funded Transformative TR01 using an open-sciences framework to develop a Collaborative Chronic Care Network (C3N); and 2) AHRQ Enhanced Registries grant to support the development of the data collection and management infrastructure that will allow data to be entered once—during the clinical encounter—and then accessed securely for patient care, quality improvement, and research.

The National Pediatric Cardiology Quality Improvement Collaborative. Teams from 47 pediatric cardiology centers, representing most of all pediatric surgical centers that repair complex congenital heart disease in the United States, are focused on infants with complex congenital heart disease with to improve 1) care transitions at discharge; 2) interstage nutrition and growth; and 3) care coordination with the family, referring cardiologist, and primary care medical home. This is the first collaborative improvement effort in pediatric cardiology and participation provides credit towards US News and World Report ranking.

Pediatric Rheumatology—Care and Outcomes Improvement Network (PR-COIN). Eleven hospital teams have just begun working together as part of a collaborative that began in June 2011 and is focused on improving outcomes of children with juvenile idiopathic arthritis using specific disease management strategies for chronic illness care.

Faculty Members

Uma Kotagal, MBBS, MSc, Professor
  Director, Health Policy and Clinical Effectiveness
  Senior Vice President, Quality and Transformation
  Research Interests Using research methods and analysis to understand, diagnose and implement sustainable changes in care practices so as to meet all dimensions of the patients and families.

Evaline Alessandrini, MD, MSCE, Professor
  Director, Quality Scholars Program in Health Care Transformation
  Research Interests Outcomes and risk-adjustment in pediatric emergency care. Quality of ambulatory services for vulnerable children. Health system interventions for improvement.

Adam Carle, MA, PhD, Assistant Professor
  Research Interests Utilizing statistical methods to improve health outcomes measurement, focus on children with special health care needs

Linda Dynan, PhD, Adjunct
  Research Interests Racial disparities in health outcomes, hospital efficiency, and inpatient quality and safety

Anthony Goudie, PhD, Assistant Professor
  Member, Child Policy Research Center
  Research Interests Identifying barriers (systems and policy) to effectively treating vulnerable pediatric populations. Studying mediating factors associated with treating chronic conditions.

Carole Lannon, MD, MPH, Professor
  Co-Director, Center for Health Care Quality
  Research Interests To learn what and how improvement science methods achieve best results in improving healthcare and outcomes. To understand what improvement science methods can help target specific practice segments t

Keith E. Mandel, MD, Assistant Professor
  Vice President of Medical Affairs, Tri State Child Health Services Inc.
Leader, Physician-Hospital Organization (PHO)
Leader, PHO Asthma Initiative
Co-leader, PHO Children with Special Healthcare Needs Initiative
Co-leader, CCHMC External Quality Consulting
Co-leader, Ratings and Rankings Committee
Co-Leader, Business Case for Quality Committee

**Research Interests** Aligning pay-for-performance programs/financial incentives with large-scale quality improvement initiatives, assessing the financial impact of quality improvement initiatives

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**Peter Margolis, MD, PhD**, Professor
Co-Director, Center for Health Care Quality
Co-Director, Health Services Research Matrix
Acting Director, Quality Scholars Fellowship in Transforming Health Care

**Research Interests** Integrating public health and quality improvement methods to design, develop and test interventions to improve the outcomes of care for populations of children and adults.

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**Kieran J. Phelan, MD, MSc**, Associate Professor

**Evidence-Based Clinical Practice Guidelines**

**Research Interests** Effects of home visitation and housing on pediatric injury epidemiology and control, chronic disease management, and the psychology of parental supervision and health care decision making.

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**Joint Appointment Faculty Members**

**Maria Britto, MD, MPH**, Professor
Adolescent Medicine

**Research Interests** Health care quality, especially for adolescents with chronic illness

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**Craig Froehle, PhD**, Associate Professor
UC College of Business

**Research Interests** Operational technologies, services management, healthcare (or health care) operations, process improvement

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**Srikant Iyer, MD, MPH**, Assistant Professor
Emergency Medicine

**Research Interests** Organizing systems and processes in emergency medicine to deliver ideal care and improve patient outcomes.

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**Heather Kaplan, MD, MSCE**, Assistant Professor
Neonatology

**Research Interests** Identifying and examining strategies for improving the implementation of evidence into practice and studying quality improvement as a mechanism of promoting the uptake of research findings and improving patient outcomes.

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**Monica Mitchell, PhD**, Associate Professor
Behaviorial Med & Clin Psychology

**Research Interests** Community based participatory research, health disparity research, nutrition and health research, translational research, sickle cell disease research

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**Esi Morgan Dewitt, MD, MSCE**, Assistant Professor
Rheumatology

**Research Interests** Improving measurement of child health status using patient-reported outcomes, comparative effectiveness of therapeutics, application of quality improvement science

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**Stephen Muething, MD**, Professor
General and Community Pediatrics

**Research Interests** Patient Safety, Reliability, Adverse Events

Michael Seid, PhD, Professor

**Pulmonary Medicine**

**Research Interests** Measuring and improving pediatric health care quality and health-related quality of life for chronically ill children and understanding the interactions between vulnerable chronically ill children and the health care system, the barriers to care faced by these populations, and policies and programs to overcome these barriers to care.

**Significant Accomplishments**

**The Chronic Care Innovation Lab**

The Chronic Care Innovation Lab focused on improving asthma control for a cohort of 60 teens whose asthma had been poorly controlled the past year. We combined sequential application of our full set of evidence-based tools for medical and environmental therapy with enhanced self-management support; enhanced outreach by phone, text and collaboration with schools; and addressed barriers. To address prevalent and important barriers to asthma care, we developed, tested and implemented throughout the lab, with >95 percent reliability, tools to improve medication access for patients without insurance; to connect patients to transportation for medical appointments; and to simplify connections to mental health services. These interventions were spread to the entire Teen Health Center and are available for implementation elsewhere at Cincinnati Children’s. Overall, 60 percent of the cohort had a clinically meaningful improvement in asthma control compared to a baseline of 25 percent for a similar cohort the previous year.

We continue to collaborate with external partners. Students at the University of Buffalo’s Center for Socially Relevant Computing are working with us to develop a teen friendly, fully wearable air-quality sensor that would warn teens with asthma when they enter environments with elevated dust, mold and other pollutants.

**Collaborative Chronic Care Networks (C3N)**

Collaborative Chronic Care Networks, or C3Ns, are learning health systems. They combine data registries, reliable and accountable delivery systems and technology to harness individual motivation and collective vision to improve both individual and system health. The C3N continued to work with ImproveCareNow in creating the most comprehensive database of children with Crohn’s and ulcerative colitis. It created an information “commons” to overcome academic, economic and policy barriers so that it is easier to share information and products that enable everyone involved to collaborate in health improvement innovation. The team helped the ImproveCareNow network of 30 pediatric gastroenterology care centers increase the proportion of children and adolescents with Crohn’s disease and ulcerative colitis in remission from 55 percent to 76 percent without new medications.

With the initial $8 million grant from the National Institutes of Health, we assembled a diverse team of experts from medicine and numerous other sectors who created an initial network of more than 100 patients, clinicians and researchers contributing to the IBD C3N. These teams designed and put 14 prototypes into testing. ImproveCareNow and C3N also won a $12 million grant from the Agency for Healthcare Research and Quality to build the data and informatics infrastructure for the ImproveCareNow’s C3N data network.

**Capturing Clinical Outcomes from the Electronic Health Record**

Anderson Center faculty and staff from the outcomes systems group worked with clinical divisions to embed
process and outcome measures of clinical care into Epic, our electronic health record. As each division began to use Epic in its ambulatory clinics, faculty and staff from the outcomes systems group worked with clinicians to identify top conditions for tracking outcomes and defining measures for each condition.

Data elements for measures were embedded in Epic with help from the Department of Information Services and are collected at the point of care not only by physicians and nurses, but sometimes by patients and parents themselves. We identified 67 conditions and defined more than 400 measures. Data and run charts are being generated for 35 conditions and 200 measures. Half of these are process-of-care measures, with the remaining representing patient outcomes. One third of the outcome measures are patient-reported measures including health function and quality of life.

This work represents our strategic initiative to develop and embed tools for measuring and improving outcomes for 100 diseases and complex disorders. It also serves a key infrastructure component of our research since we now have validated measures that track the impact of our system interventions.

Division Publications


47. VanLare JM, Conway PH, Rowe JW. Building academic health centers’ capacity to shape and respond to


**Grants, Contracts, and Industry Agreements**

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<tr>
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| *Assessing Measurement Bias Impact*  
National Institutes of Health(University of North Florida)  
R15 NR 010631  
08/01/09-03/31/12 | $50,820  |
| *Healthcare Capital Investment Plan Evaluation of Leadership Training*  
Department of Veteran Affairs(University of Cincinnati)  
10/01/10-09/30/12 | $28,294  |
| **DONOVAN, E**            |                                      |
| *Perinatal Quality Improvement Project and Data Infrastructure Development*  
Ohio Department of Health(Ohio State University)  
01/04/11-06/30/12 | $482,575  |
| **FAIRBROTHER, G**        |                                      |
| *Research to Evaluate the Ohio Medicaid Expansion*  
Center for Medicare/Medicaid Services(University of Cincinnati)  
08/16/08-06/30/11 | $222,645  |
| *Prevention and Wellness - Leveraging National Organizations*  
Department of Health and Human Services(American Academy of Pediatrics)  
07/15/10-07/14/12 | $36,058  |
| *Child Well-Being Survey*  
United Way of Greater Cincinnati  
01/01/11-12/31/11 | $40,000  |
| *Child Well-Being Survey*  
The Health Foundation of Greater Cincinnati  
01/01/11-12/31/11 | $60,000  |
| **GOUDIE, A**             |                                      |
| *Impact on Families Caring for Children with Complex Health Conditions*  
Ohio Department of Jobs and Family Services(Ohio State University)  
11/01/10-06/30/11 | $45,455  |
| *Ohio Disability Impact Study*  
Ohio Developmental Disabilities Council(Ohio State University)  
04/01/10-12/31/10 | $13,675  |
| **LANNON, C**             |                                      |
| *Expanding the Ohio Immunization Registry to Include BMI*  
Centers for Disease Control and Prevention(Hamilton County General Health District)  
05/24/10-02/25/12 | $417,353  |
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