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Leonard G. Feld and Shabnam Jain

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Charles J. Homer

## OVERVIEW

<b>Making the Case to Improve Quality and Reduce Costs in Pediatric Health Care</b>	<b>731</b>
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Ramesh C. Sachdeva and Shabnam Jain

This article makes a case for the urgent need to improve health care quality and reduce costs. It provides an overview of the importance of the quality movement and the definition of quality, including the concept of clinical and operational quality. Some national drivers for quality improvement as well as drivers of escalating health care costs are discussed, along with the urgency of reducing health care costs. The link between quality and cost is reviewed using the concept of value in health care, which combines quality and cost in the same equation. The article ends with a discussion of future directions of the quality movement, including emerging concepts, such as risk-adjustment, shared responsibility for quality, measuring quality at the individual provider level, and evolving legal implications of the quality movement, as well as the concept of a shared savings model.

<b>Unwarranted Variation in Pediatric Medical Care</b>	<b>745</b>
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David C. Goodman

This article provides a survey on the concepts, methods, and applications of the study of unwarranted variation in health care with particular attention to children's medical services.

## APPROACHES TO IMPROVING HEALTH CARE IN PEDIATRICS

### *QI Methods*

<b>Model for Improvement—Part 1: A Framework for Health Care Quality</b>	<b>757</b>
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Cheryl D. Courtlandt, Laura Noonan, and Leonard G. Feld

The Model for Improvement is a rigorous and reasonable method for busy health care practitioners to use to improve patient outcomes. The use of this model requires practice for clinicians to be comfortable, but mastery is critical to develop the necessary skills to participate in quality improvement initiatives. The future of health care in the United States depends on

every practitioner delivering safe, effective, and efficient care. The case study demonstrates how this methodology can be applied in any busy health care setting. Incorporating this approach to quality improvement into daily work will improve clinical outcomes and advance health care delivery and design.	
<b>Model for Improvement—Part 2: Measurement and Feedback for Quality Improvement Efforts</b>	<b>779</b>
Greg Randolph, Megan Esporas, Lloyd Provost, Sara Massie, and David G. Bundy	
Measurement and feedback are fundamental to quality improvement. There is a knowledge gap among health care professionals in knowing how to measure the impact of their quality improvement projects and how to use these data to improve care. This article presents a pragmatic approach to measurement and feedback for quality improvement efforts in local health care settings, such as hospitals or clinical practices. The authors include evidence-based strategies from health care and other industries, augmented with practical examples from the authors' collective years of experience designing measurement and feedback strategies.	
<b>Modifying the Toyota Production System for Continuous Performance Improvement in an Academic Children's Hospital</b>	<b>799</b>
F. Bruder Stapleton, James Hendricks, Patrick Hagan, and Mark DelBeccaro	
The Toyota Production System (TPS) has become a successful model for improving efficiency and eliminating errors in manufacturing processes. In an effort to provide patients and families with the highest quality clinical care, our academic children's hospital has modified the techniques of the TPS for a program in continuous performance improvement (CPI) and has expanded its application to educational and research programs. Over a period of years, physicians, nurses, residents, administrators, and hospital staff have become actively engaged in a culture of continuous performance improvement. This article provides background into the methods of CPI and describes examples of how we have applied these methods for improvement in clinical care, resident teaching, and research administration.	
<b>QI Measures</b>	
<b>Approach to Improving Quality: The Role of Quality Measurement and a Case Study of the Agency for Healthcare Research and Quality Pediatric Quality Indicators</b>	<b>815</b>
Kathryn M. McDonald	
Data and well-constructed measures quantify suboptimal quality in health care and play a crucial role in improving quality. Measures are useful for three major purposes: (1) driving improvements in outcomes of care by prioritizing and selecting appropriate interventions, (2) developing comparative quality reports for consumer and payer decision making and health system accountability, and (3) creating incentives that pay for performance. This article describes the current landscape for measurement in	

pediatrics compared to adult care, provides a case study of the development and application of a publicly available and federally funded pediatric indicator set using routinely collected hospital discharge data, and addresses challenges and opportunities in selecting and using measures as a function of intended purpose.

### **Quality Improvement, Clinical Research, and Quality Improvement Research—Opportunities for Integration**

831

Peter Margolis, Lloyd P. Provost, Pamela J. Schoettker, and Maria T. Britto

The opportunity to mobilize linkages between quality improvement (QI) and research is at an early stage. This article describes some of the opportunities for and challenges of integrating QI and more traditional forms of clinical research to achieve broad improvements in medical care. The authors suggest that such integration would include more active experimentation in the health care delivery system and that the application of QI methods offers a rational, effective, and reasonably fast method to support the learning required to adapt new knowledge to specific practice environments and to create and test innovations needed to improve systems of care delivery.

### **The Pediatric Quality of Life Inventory: Measuring Pediatric Health-Related Quality of Life from the Perspective of Children and Their Parents**

843

James W. Varni and Christine A. Limbers

Health-related quality of life (HRQOL) has been recognized as an important outcome, some contend *the* most important outcome for children's health care interventions. The PedsQL Measurement Model was designed as a modular approach to measuring pediatric health-related quality of life, developed to integrate the relative merits of generic and disease-specific approaches. We suggest that part of the process of improving the quality of health care includes measuring HRQOL outcomes from the perspective of children and their parents on a routine basis, consistent with a consumer-based health care system approach.

## **DRIVING CHILDREN'S HEALTHCARE INITIATIVES**

### **Neonatal Intensive Care Unit Collaboration to Decrease Hospital-Acquired Bloodstream Infections: From Comparative Performance Reports to Improvement Networks**

865

Joseph Schulman, David D. Wirtschafter, and Paul Kurtin

This two-part article provides a general guide to thinking about data-driven clinical performance evaluation and describes two statewide improvement networks anchored in such comparisons. Part 1 examines key ideas for making fair comparisons among providers. Part 2 describes the development of a data-driven collaborative that aims to reduce central line associated bloodstream infections in neonatal ICUs across New York State, and a more mature collaborative in California that has already succeeded in reducing these infections; it provides sufficient detail and tools to be of

practical help to others seeking to create such networks. The content illustrates concepts with broad applicability for pediatric quality improvement.

**Standardize to Excellence: Improving the Quality and Safety of Care with Clinical Pathways**

893

Paul Kurtin and Erin Stucky

Providing practitioners with locally developed, consensus-driven, evidence-based clinical pathways can improve the quality of care by (1) incorporating national guidelines and recommendations into routine care practices, increasing the use of validated practice; (2) reducing unnecessary variation in care by a single physician or group of physicians, improving efficiency and timeliness and reducing disparities; and (3) standardizing care processes, improving safety. Pathways make it easier to identify opportunities for future improvements in care processes while simultaneously making those improvements easier to enact. Pediatric hospitalists have a vital role in creating, implementing, evaluating, and improving clinical pathways. Involving house staff enriches the scholarly components of pathway development while actively engaging them in the science and practice of quality improvement.

**Transforming Safety and Effectiveness in Pediatric Hospital Care Locally and Nationally**

905

Keith E. Mandel, Stephen E. Muething, Pamela J. Schoettker, and Uma R. Kotagal

Achieving dramatic, sustainable improvements in the safety and effectiveness of care for children requires a transformational approach to how hospitals individually focus on improvement and learn from each other to achieve national goals. The authors describe a theoretic framework for transformation that includes setting system-level priorities, aligning measures with each priority, identifying breakthrough targets, testing interventions to get results, and spreading successful interventions throughout the organization. Essential key drivers of transformation include leadership, building will, transparency, a business case for quality, patient and family engagement, improvement infrastructure, improvement capability, and reliability and standardization. Improving national system-level measures requires each hospital to pursue its own transformation journey while collaborating with hospitals and other organizations.

**Implementing a Pediatric Rapid Response System to Improve Quality and Patient Safety**

919

Kerry T. Van Voorhis and Tina S. Willis

Life-threatening events are common in today's hospitals, where an increasing proportion of patients with urgent admission are cared for by understaffed, often inexperienced personnel. Medical errors play a key role in causing adverse events and failure to rescue deteriorating patients. In-hospital cardiac arrest outcomes are generally poor, but these events are often preceded by a pattern of deterioration with abnormal vital signs and mental status. When hospital staff or family members observe warning signs and trigger timely intervention by a rapid response team, rates of

cardiac arrest and mortality can be reduced. Rapid response team involvement can be used to trigger careful review of preceding events to help uncover important systems issues and allow for further improvements in patient safety.

**Quality Improvement and Patient Safety in the Pediatric Ambulatory Setting: Current Knowledge and Implications for Residency Training**

935

Daniel R. Neuspiel, Daniel Hyman, and Mariellen Lane

The outpatient environment has been the leading edge of improvement work in pediatrics and it has similarly served as an effective locale for the training of pediatric residents in the science of improvement. This review summarizes what is known about the measurement of quality and patient safety in pediatric ambulatory settings. The current Accreditation Council for Graduate Medical Education (ACGME) requirements for resident training in improvement and their application in these settings are discussed. Some approaches and challenges to meeting these requirements are reviewed. Finally, some future directions that this work may follow are presented; the goal is to strengthen the effectiveness of improvement methods and their linkage to professional education.

**The Medical Home—Improving Quality of Primary Care for Children**

953

Steven E. Wegner, Richard C. Antonelli, and Renee M. Turchi

The concept of a medical home appears to be a key driver for enhancing the value of health services as care systems are transitioned to meet the ongoing challenges of improving quality and containing costs. This article provides an overview of the challenges faced in United States health care delivery systems that affect child health, explains how the medical home might address them, describes methods for measuring quality in medical homes, and identifies barriers to implementation of the model.

**The Role of Health Information Technology in Quality Improvement in Pediatrics**

965

Alan E. Zuckerman

Health information technology (HIT) will play an important role in most efforts to improve the quality of pediatric medicine, as evident from the range of investigations and projects discussed in this volume. Clement McDonald identified the importance of using information technology as an integral component of quality initiatives early in the development of electronic medical records (EMR). The role of HIT in quality improvement is not limited to tools integrated into EMR, but that remains an important strategy. Today, much attention is focused on interoperability of clinical systems that integrate and share data from multiple sources. There are also additional freestanding quality-improvement tools that can be used without an EMR. This article explores the many roles of HIT in quality improvement from several perspectives.

**Nursing: Key to Quality Improvement** **975**

Susan R. Lacey and Karen S. Cox

Nurses and effective nursing care contribute to quality patient outcomes. This article explains in detail the importance of nursing care in the quality agenda and explores the existing gaps in this field of science. Key stakeholders and groups that advocate and focus on specific quality agendas within the field of pediatrics are briefly described. Pediatric health care uses a multidisciplinary model of delivery; each discipline uses specific domains of knowledge and interventions, making it difficult to separate them when evaluating patient outcomes. Much work needs to be conducted using health services research approaches that link and partition the overall and combined contribution of discipline-specific providers.

**THE FUTURE OF QUALITY IN PEDIATRIC PRACTICE**

**Maintenance of Certification: The Role of the American Board of Pediatrics in Improving Children's Health Care** **987**

Paul V. Miles

This article describes the evolution of board certification for pediatricians and the current ongoing assessment process called Maintenance of Certification (MOC). To be called a board-certified pediatrician under the MOC framework requires a level of training, competence, and knowledge that can only be achieved by completing a rigorous, defined, closely monitored training program approved by the Accreditation Council for Graduate Medical Education and then demonstrating a level of knowledge comparable to established standards by passing the initial certifying examination. Once this landmark baseline threshold is reached, the emphasis shifts to demonstrating lifelong professional development and the ability to deliver quality care and to continually improving that care through MOC.

**A Pediatrician's Opinion** **995**

Richard Lander

Pediatricians are inundated by phrases such as “pay for performance” and “enhancement of payments tied into quality measurements.” Although there is no argument that we must provide high quality care to our patients and must continuously improve ourselves, we need flexibility within the managed care criteria. Medicine is not only a science, but it is also an art with many interpretations.

**Pay for Performance: Quality- and Value-Based Reimbursement** **997**

Norman (Chip) Harbaugh, Jr.

There is urgent need to reform health care reimbursement models, including physician compensation, to address high health care costs, despite numerous quality initiatives. Pay for performance (P4P) is a model that attempts to align financial incentives with better outcomes and value rather than the current system of rewarding volume and intensity of care

delivered. P4P has been implemented in other countries besides the United States and is perhaps most advanced in the United Kingdom. Measurement for P4P is evolving, as are the types of incentives; neither is perfect at this time. For P4P to succeed, all health care stakeholders will need to collaborate.

## **How Health Policy Influences Quality of Care in Pediatrics**

**1009**

Lisa A. Simpson and Gerry Fairbrother

The primary focus of child health policy for the last twenty years has been on improving health care coverage and access. More recently, the focus has shifted to include not only coverage, but also the quality of the care received. This article describes some “voltage drops” in health care that impede delivery of high quality health care. The growing emphasis on quality is reflected in provisions of the new Child Health Program Reauthorization Act of 2009 (CHIPRA) legislation. In addition to providing funding for health coverage for over four million more children, it also includes the most significant federal investment in pediatric quality to date.

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