Roles for Children's Hospitals in Pediatric Collaborative Improvement Networks

AUTHOR: Marlene Miller, MD, MSc[a,b]

[a]*Children's Hospital Association, Alexandria, Virginia; and* [b]*Johns Hopkins Children's Center, Baltimore, Maryland*

KEY WORDS
quality improvement, children's hospitals, pediatric health care

ABBREVIATIONS
CCCs—complex chronic conditions
QI—quality improvement

The content is solely the responsibility of the author and does not necessarily represent the official view of the Agency for Healthcare Research and Quality.

www.pediatrics.org/cgi/doi/10.1542/peds.2012-3786l

doi:10.1542/peds.2012-3786l

Accepted for publication Feb 27, 2013

Address correspondence to Marlene Miller, MD, MSc, Johns Hopkins University, 200 North Wolfe St, Room 2094, Baltimore, MD 21287. E-mail: mmille21@jhmi.edu

PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

FINANCIAL DISCLOSURE: *The author has indicated she has no financial relationships relevant to this article to disclose.*

FUNDING: The conference on which the articles in this supplement were based was funded by the American Board of Pediatrics Foundation, the National Association of Children's Hospitals and Related Institutions (now the Children's Hospital Association), the James M. Anderson Center for Health Systems Excellence at Cincinnati Children's Hospital Medical Center, and the pediatric Center for Education and Research on Therapeutics, supported by cooperative agreement number U19HS021114 from the Agency for Healthcare Research and Quality.

abstract

Children's hospitals represent a significant opportunity to reduce morbidity, mortality, and costs, particularly for children with complex chronic conditions (CCCs) who comprise a disproportionate and growing share of admissions, readmissions, and resource use. Most children with CCCs are in some way associated with a children's hospital, and the subspecialists who care for them are primarily concentrated in the ~200 children's hospitals in the United States. Children's hospitals and their associated subspecialty clinics are uniquely positioned to achieve significant outcomes and cost savings through coordinated quality-improvement efforts. However, even the largest children's hospital has relatively small volumes of patients with any given condition. Only by linking children's hospitals in networks can a sufficient "N" be achieved to build the evidence for what works for children. Large-scale pediatric collaborative network exemplars have demonstrated the ability to improve outcomes, reduce costs, and spread changes found to be effective. Substantial opportunities exist for networks to expand to additional conditions, improvement topics, and sites, but financial barriers exist. Although much of their participation has been funded as "pay to participate" efforts by the hospitals themselves, most financial benefits accrue to payers. As health care reform becomes a reality and financial pressures intensify, it will become increasingly difficult for children's hospitals to serve as the primary source of support for networks. Partnerships between children's hospitals and national payers to support collaborative networks are needed, and these partnerships have the potential to significantly improve pediatric care and outcomes, particularly for children with CCCs. *Pediatrics* 2013;131: S215–S218

During the last decade, many of the >200 children's hospitals around the United States have made independent efforts to implement high reliability processes to improve the care they provide for their patients. Despite individual success, significant improvements for all children, whether they come to a children's hospital or a community hospital that also takes care of children, will require a more systematic spread of change. Large-scale pediatric collaborative improvement networks of children's hospitals such as the Children's Hospital Association's Quality Transformation Network,[1,2] Ohio Children's Hospitals Solutions for Patient Safety,[3] and the California Perinatal Quality Care Collaborative[4] have demonstrated the ability to improve outcomes and reduce costs. This paper summarizes the substantial opportunities that exist to expand to additional conditions and improvement topics, as well as important potential barriers that threaten the growth and scalability of collaborative improvement networks for both children and children's hospitals.

CHILDREN'S HOSPITALS REPRESENT SIGNIFICANT OPPORTUNITIES TO REDUCE PEDIATRIC MORBIDITY, MORTALITY, AND COSTS

Although most children are well, and improvement opportunities exist in ambulatory pediatric practices (for prevention, anticipatory guidance, and acute illness management), children with complex chronic conditions (CCCs), with their intensive service needs and high health resource utilization, comprise a disproportionate and growing share of hospital admissions, readmissions, and resource use. In 1 study in 37 children's hospitals, 18.8% of admissions and 23.2% of inpatient charges were accounted for by the 2.9% of patients with frequent recurrent admissions.[5] Although children with at least 1 CCC comprised 10.1% of admissions in 2006, these admissions used 22.7% to 26.1% of pediatric hospital days, used 37.1% to 40.6% of pediatric hospital charges, and accounted for 41.9% to 43.2% of deaths.[6] Overall, hospitalization rates of children with diagnoses in >1 CCC category almost doubled, from 83.7 per 100 000 in 1991–1993 to 166 per 100 000 in 2003–2005 ($P < .001$).[7] On a related issue, Medicaid was also the designated payer for 42% of preterm/low birth weight infant stays,[8] hospitalizations that often encompass high-cost time in the NICU.

Most children with chronic disease are associated in some way with a children's hospital. The pediatric subspecialists who care for these children are primarily concentrated in the ~200 children's hospitals in the United States; relatively few are exclusively in private practice. Children's hospitals are also the location for most pediatric interventions. As the "collection point" for these children with ≥1 CCC, children's hospitals and the subspecialty ambulatory settings associated with them are uniquely positioned to achieve significant outcomes and cost savings through coordinated quality-improvement (QI) efforts.

CHILDREN'S HOSPITALS NEED TO NETWORK WITH ONE OTHER

Although the rate of chronic disease among children has doubled in the past 2 decades and the percentage of US children and adolescents with a chronic health condition has increased from 1.8% in the 1960s to >25% in 2007,[9] even the largest children's hospital still has a relatively small volume of patients with any given condition. Therefore, only by linking children's hospitals and their associated subspecialty clinics in networks can a sufficient "N" be achieved to answer key improvement, best practice, and cost questions.

Children and their families pose special communication and partnership issues, and children are physiologically, psychologically, and socially different from adults. Consequently, care of children is more complex. For example, dose ranges and equipment sizes need to be adjusted for patients as small as 500 g up to >100 kg in children's hospitals. Because of these differences, the specific care processes with which to achieve highly reliable care for children often cannot simply be extrapolated from adult evidence. Many childhood conditions are characterized by a lack of pediatric-specific research and clinicians often need to function with best practices that may have been validated only in adult populations, with a resultant increased reliance on pediatric expert opinion as evidence. Multidisciplinary, multi-institutional teams from children's hospitals participating in a collaborative improvement network bring more expertise, experience, and data out of multiple N-of-1 experiences. Together, they can experiment, test, and learn, building the evidence base about what works for children while improving current care and costs. In addition to teams of multidisciplinary clinical participants, networks of children's hospitals also bring together individuals with substantial expertise in pediatric-specific improvement science, measurement, and information technology infrastructure.

For adult populations of patients, successful improvement interventions can and are being spread via entities such as the state hospital associations or the Medicare system. However, although large, highly populous states such as California, Texas, New York, and Florida each have ≥15 children's hospitals, many states have only a handful, and a few have none. Medicaid, a state-based entity, is the largest insurer for

pediatric health care, and most states have little, if any, connection to other states' Medicaid programs. The result is that there are few state-based efforts for improving hospital-based high costs of care for children. In addition, no national effort encompassing all 50 states exists for children with CCCs. Therefore, networks of children's hospitals are vital to spreading changes that are found to work so that all children in the United States can receive reliable, high-quality, safe care. Opportunities are available to expand pediatric collaborative improvement networks to additional conditions and improvement topics.

IMPROVEMENT EFFORTS ARE LARGELY SELF-FUNDED

Economic and health care reform realities are likely to increase pressure on children's hospitals to transparently measure and report performance and to assume accountability for all aspects of a patient's health, especially for children with CCCs. Several pediatric collaborative improvement networks have been funded as "pay to participate" efforts by the children's hospitals themselves while others have been supported by public funds at the state and federal level (eg, regional perinatal improvement networks, safety networks). Typically, in all these efforts, most of the financial benefits accrue to the payers.[10] As health care reform becomes a reality and economic pressures intensify, it will be increasingly difficult for children's hospitals to serve as the primary source of support for national pediatric collaborative improvements.

NATIONAL, PAYER-FUNDED PEDIATRIC IMPROVEMENT EFFORTS ARE NEEDED

Medicaid covers 35% of the entire US population of children and 72% of poor children[11]; additional children are covered by the Children's Health Insurance Programs. Children's hospitals provide ~45% of the hospital care required by children covered by Medicaid and almost all the hospital care for Medicaid-covered children with complex conditions. Medicaid is also the single largest payer of children's hospitals' patient care.[12] The potential is high to save the state and federal governments millions in unnecessary Medicaid expenditures by spreading effective QI efforts across all of the >200 children's hospitals in the United States.

State autonomy in administering Medicaid programs gives each state the flexibility to make changes in the program design and approach that are consistent with its budget and policy environment. This autonomy is realized as state-by-state variations in interest in each issue, in approaches to solutions, and in vulnerability to state budget pressures. The wide variation gave rise to the adage: "If you've seen one state Medicaid program, you've seen one state Medicaid program." In practice, this fragmentation in state Medicaid programs remains an obstacle to national-level QI efforts focused on children and to broad children's hospital involvement in national-scale pediatric collaborative improvement networks. In addition, it should be noted that the federal government covers more than one-half of states' Medicaid costs but has repeatedly abstained from requiring states to adopt unified approaches to quality measurement or QI focuses for children. Even the most recent Children's Health Insurance Program Reauthorization Act is intended to develop a "menu" of performance measures for states to choose from, which is unlikely to result in a uniform national set of measures and goals for all children, particularly those with CCCs. This action is in direct contrast to Medicare efforts that have a myriad of measures mandated and reported at the national level for adult patients.

CONCLUSIONS

The reports in this supplement not only show hope for the potential impact of collaborative improvement networks for children but also demonstrate a clear path forward. Partnerships between children's hospitals and national payers to support collaborative networks have the potential to significantly improve pediatric care and outcomes and save costs, particularly for children with CCCs. Our children deserve no less.

REFERENCES

1. Miller MR, Niedner MF, Huskins WC, et al; National Association of Children's Hospitals and Related Institutions Pediatric Intensive Care Unit Central Line-Associated Bloodstream Infection Quality Transformation Teams. Reducing PICU central line-associated bloodstream infections: 3-year results. *Pediatrics*. 2011;128(5). Available at: www.pediatrics.org/cgi/content/full/128/5/e1077
2. Blumenthal A. The stories behind the stats: NACHRI quality transformation network reaches milestone. *Pediatr Nurs*. 2011;37(5):276–278
3. Ohio Children's Hospitals Solutions for Patient Safety. Available at: http://solutionsforpatientsafety.org/. Accessed April 4, 2013
4. Wirtschafter DD, Powers RJ, Pettit JS, et al. Nosocomial infection reduction in VLBW infants with a statewide quality-improvement model. *Pediatrics*. 2011;127(3):419–426
5. Berry JG, Hall DE, Kuo DZ, et al. Hospital utilization and characteristics of patients experiencing recurrent readmissions within children's hospitals. *JAMA*. 2011;305(7):682–690
6. Simon TD, Berry J, Feudtner C, et al. Children with complex chronic conditions

in inpatient hospital settings in the United States. *Pediatrics*. 2010;126(4): 647–655

7. Burns KH, Casey PH, Lyle RE, Bird TM, Fussell JJ, Robbins JM. Increasing prevalence of medically complex children in US hospitals. *Pediatrics*. 2010;126(4):638–646
8. Russell RB, Green NS, Steiner CA, et al. Cost of hospitalization for preterm and low birth weight infants in the United States. *Pediatrics*. 2007;120(1). Available at: www.pediatrics.org/cgi/content/full/120/1/e1
9. Halfon N, Newacheck PW. Evolving notions of childhood chronic illness. *JAMA*. 2010; 303(7):665–656
10. Miller M, Wietecha M. Keeping children healthy. Fresh approaches sorely needed to expand pediatric HAI prevention efforts. *Mod Healthc*. 2012;42(1):22
11. Health care coverage: indicators on children and youth. Child Trends DataBank. September 2011. Available at: www.childtrendsdatabank.org/?q=node/116. Accessed April 4, 2013
12. National Association of Children's Hospitals and Related Institutions. All children need children's hospitals. Available at: www.childrenshospitals.net/Content/ContentFolders34/Publications/Reports/AllChildren2011_final101411.pdf. Accessed July 3, 2012

Roles for Children's Hospitals in Pediatric Collaborative Improvement Networks

Marlene Miller

Pediatrics 2013;131;S215
DOI: 10.1542/peds.2012-3786I

PEDIATRICS®
OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

Roles for Children's Hospitals in Pediatric Collaborative Improvement Networks

Marlene Miller

Pediatrics 2013;131;S215
DOI: 10.1542/peds.2012-3786I