Model demonstrates high-quality patient care while reducing costs

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Credit: Anne Lowe/public domain

Providing high-quality patient care while reducing costs is a significant goal in the current health care reform environment. The Institute of Medicine has specifically called for the establishment of "learning health systems" to address this challenge. In a learning health system, the electronic health record is utilized to drive research and personalized treatments based on data from patients with similar conditions and risk

factors.

A recent pilot study by a team from Nationwide Children's Hospital and The Ohio State University has demonstrated that with the implementation of a "local" learning health system, clinical quality can be improved while simultaneously reducing health care costs. The study was published in a recent issue of Developmental Medicine and Child Neurology with an editorial published today online in the *Journal of the American Medical Association* (*JAMA*).

Current efforts to establish learning health systems have been designed primarily around the integration of electronic health records among multiple hospital systems. While substantial progress has been made with this approach, the operational and technical barriers of bringing together such diverse hospital systems led the Nationwide Children's/Ohio State team to consider an alternative based on the concept of a "local" learning health system.

Local systems start with the integration of research, clinical care and quality improvement within a specific health service and then use the knowledge gained to systematically deliver quality improvement and cost savings. Those clinical improvements can be expanded to other programs within the hospital or across the health care network.

The team from Nationwide Children's and Ohio State developed and implemented a local learning health system model of care with optimization of the electronic health record and a robust care coordination system at its core. The project, named the "Learn From Every Patient" (LFEP) Program, was piloted with a group of 131 children treated through the Nationwide Children's Cerebral Palsy (CP) Program.

Children treated in the LFEP Program during the 12-month study period

experienced a 43 percent reduction in total inpatient days; a 27 percent reduction in inpatient admissions; a 30 percent reduction in emergency department visits; and a 29 percent reduction in urgent care visits. LFEP Program implementation resulted in reductions in <u>health care costs</u> of $1.36 million.

"Introducing electronic health record-supported care that integrated clinical care, quality improvement and distinct, clinician-driven research resulted in large reductions in health care utilization, greatly reduced healthcare charges and improved care coordination," explains William E. Smoyer, MD, vice president, Clinical and Translational Research and director, Center for Clinical and Translational Research at Nationwide Children's Hospital, senior author on the study paper and lead author of the editorial.

The cost of implementing the pilot program, including care coordination expenses, totaled approximately $225,000 over the first year. However, these costs were only 16 percent of the reduced total health care expenditures realized during the first year of the program, representing a savings of approximately $6 for each $1 invested. In addition, the clinicians working in the CP clinic reported that this approach simplified their documentation, enabling more patients to be seen during each session.

Consistent with the goals of a learning health system, the data collected in the electronic health record included five clinician-inspired "learning projects" conducted during routine clinical care for the pilot LFEP group. One of these studies has been published in a peer-reviewed journal and one is in press.

"The use of the LFEP Program in our clinic has resulted in robust research data that can be used for publication and for implementing evidence-based improvements in clinical care," says author Garey

Noritz, MD, medical director of the Cerebral Palsy Program at Nationwide Children's Hospital and associate professor at The Ohio State University. "For example, children with cerebral palsy are prone to hip dislocation, so our practice had been to perform x-rays on every child every year. An examination of our data revealed that this was excessive for children with mild CP. We have since changed our protocol for these patients, reducing their exposure to radiation, as well as costs."

"These results demonstrate that a learning health system can be developed and implemented in a cost-effective manner, and can integrate clinical care and research to systematically drive simultaneous clinical quality improvement and reduced health care costs," notes co-author Peter Embi, MD, MS, associate professor and interim chair of Biomedical Informatics and chief research information officer at The Ohio State University.

As described in the journal article, the early experience of this local learning health system (i.e. a bottom-up approach) suggests that this method has the potential to be an effective complementary or alternative strategy to the top-down approach of learning health systems to achieve the overall goal of clinical transformation at the national level. The LFEP approach is being used as the foundation for the recently created Cerebral Palsy Research Network, which will connect multiple CP programs across the U.S. and Canada.

"The adage that our local environment will affect our global health efforts has never been truer than now. With all of the externalities impacting health care, we need to be innovative, progressive and integrative relative to research and operations at every opportunity," notes senior author, Susan Moffatt-Bruce, MD, PhD, MBA, professor of Surgery and Biomedical Informatics and chief quality officer at The Ohio State University Wexner Medical Center.

"There are numerous future challenges related to demonstrating the potential value of using local learning health systems to develop a national adaptable learning [health system](#)," says Dr. Smoyer. "We still need to investigate whether local learning health systems can be successfully scaled across the wide variety of clinical programs that comprise the nation's health care systems. However, these preliminary findings from implementing this disruptive innovation at a single center demonstrate that learning health systems are indeed able to be implemented and that their feasibility and effectiveness can be tested."

Provided by Nationwide Children's Hospital