Commentary: It takes a village

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Complications occur in all programs that perform pediatric cardiac surgery, and as many as 40% of patients will have a perioperative complication.^{1,2} Complication reporting has matured quickly during the past decade and is becoming a routine part of quality initiatives.^{3,4} Commitment to complication data as a means of assessing or improving program outcomes entails a systems-level approach with the following elements: (1) standardized definitions; (2) data collection that is prospective, standardized, and audited; (3) data analysis; (4) risk stratification; (5) optimally, benchmarking between programs to allow identification of opportunities for improvement; and (6) also optimally, a “close-the-loop” process in which changes can be implemented and the effectiveness of changes monitored.

After having established the first 4 elements of complication monitoring (ie, 9 complications chosen and defined, risk stratification in place, and the requisite infrastructure for data collection) Brown and colleagues⁵ present in this issue of the *Journal* “Incidence and Risk Factors for Important Early Morbidities Associated with Pediatric Cardiac Surgery in a United Kingdom Population.” This is a series of perioperative complications experienced by 2861 patients undergoing 3090 consecutive pediatric cardiac surgical admissions in 5 pediatric cardiac surgery centers in Britain during 21 months. Among these procedure admissions, 675 (21.8%) were accompanied by the occurrence of at least 1 of the tracked complications. The findings of the study corroborate those already reported by others, including the finding that complications occur at a similar rate regardless of site¹ and that younger age and increasing complexity of operation are independent risk factors for complication occurrence.^{2,4}

The features that stand out about this study are the scope and rigor of the project. Brown and colleagues⁵ implemented the study in 5 centers that account for just more than 50% of pediatric cardiac surgery cases performed annually in the United Kingdom. Consistent definitions were established and standardized, prospective data collection was used, and the data collected were both current and

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Central Message

Complication monitoring has become a critical aspect of assessing pediatric cardiac surgery program performance that requires dedicated personnel and resources.

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audited for quality. Also notable is the involvement of parents and medical caregivers in defining the “significant” complications.

Brown and colleagues⁵ chose to define complications locally, rather than using available multisocietal standardized definitions.³ They also limited themselves to tracking 9 complications. Because they limited the data set a priori, they are not able to prove that they did in fact choose the most important complications to assess. The limited set of uniquely defined complications also compromises the ability of other programs (outside of those choosing to adopt their definitions) to use their data as a benchmark.

One of the important concepts that has arisen from the study of programmatic complications is the failure to rescue rate, which is defined as the proportion of patients who have a complication occur who subsequently die. The distinguishing feature of high-performance, low-mortality programs has been shown to be not a reduction in the incidence of complications but rather an increase in the ability to diagnose and treat successfully, or “rescue,” patients.⁶ Brown and colleagues⁵ were unable to calculate failure to rescue rate in their population which is an important metric to help contextualize whole team performance.

Identifying upstream events to prevent complication occurrence is clearly the next horizon in improving pediatric cardiac surgical outcomes.⁷ To do that, however, there must be a culture of quality improvement that supports investment in the infrastructure necessary for accurate data collection and recording, and Brown and colleagues⁵ are

to be congratulated, because they have built a village of important stakeholders and are now in position to use this excellent work as the basis for benchmarking and changing practices to improve patient outcomes.

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