

## The Path to Better Clinical Outcomes

For the past four years, the Cincinnati Children's Heart Institute has been leading the field in reducing length of stay (LOS) and improving mortality among key benchmark operations in a national database of cardiac surgical procedures. According to James S. Tweddell, MD, executive co-director of the Heart Institute, factors at play in these results include the team's ongoing focus on multidisciplinary care combined with a resolute dedication to seeking opportunities for improvement.

The risk-adjusted multi-institutional database results show that the Heart Institute is below the 25th percentile for most benchmark operations and has had superior results with the Norwood procedure. Average mortality for the Norwood is 6.9 percent for the Heart Institute, compared to a national average of 14.4 percent.

### Taking a Cue From NASA

One strategy contributing to these outstanding outcomes is the Heart Institute's adoption of "flight plans" for reviewing patient cases. This approach was first implemented at The Hospital for Sick Children (SickKids) in Toronto and is based on a "threat and error" safety protocol originally developed by NASA for airline pilots. The premise behind these flight plans is to look at a pilot's entire flight and learn lessons to make flying safer—or in the case of healthcare, to review a patient's surgical path through the hospital and identify areas that can be improved upon.

"The goal of presenting these flight plans within the Heart Institute each week is to enable blameless but accountable work and close the loop of awareness for each patient's clinical course," explains Monica Dugan, APRN, CRNFA, lead of advanced practice for cardiothoracic surgery. Using this tactic is helping gauge both outcome and team performance, as well as uncovering areas where they can improve.

### Addressing Barriers to Discharge

Another effort affecting this team's outcomes is its commitment to ongoing quality improvement initiatives. The Pediatric Acute Care Cardiology Collaborative, led

by Nicolas Madsen, MD, MPH, is a nationwide multi-institutional quality improvement effort that recently looked at chest tube removal practices across the country. They found that early chest tube removal was not associated with adverse outcomes. As a consequence of these findings, the team began adopting a strategy of early chest removal here in Cincinnati. It has resulted in shorter LOS for routine cases.

Beyond simply proposing and supporting quality improvements, the Heart Institute focuses on sustaining the results they've achieved and encouraging the use of improvement science throughout all aspects of their care. Says Tweddell, "These achievements are not necessarily due to any one specific initiative, but to the fact that we have created a system that permits ongoing innovation as a standard of care."

Length of stay outcomes		
Procedure/ Diagnosis	Heart Institute median*	National median*
Norwood procedure	27.5	48.0
Atrioventricular septal defect	7.0	17.9
Tetralogy of Fallot	6.0	11.7
Coarctation of the aorta	5.5	11.9
Ventricular septal defect	5.0	9.2

\*LOS (days)

Above data is from January 2014–December 2018

