Medical Xpress

Critical pediatric heart deaths drop by 24% at PC4 hospitals

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Eighteen pediatric heart centers were able to significantly reduce deaths and improve care for children with critical heart conditions after committing to transparent data sharing between one another, a new study suggests.

Postoperative mortality dropped by 24 percent among participating sites between 2014 and 2018, according to the Michigan Medicine-led research published in the *Journal of the American College of Cardiology*.

Improvements in perioperative care appear to be associated with hospitals' participation in the Pediatric Cardiac Critical Care Consortium, authors say. Launched by Michigan Medicine in 2013, PC4 aims to improve the quality of care for pediatric heart patients, including those who have surgery.

Researchers analyzed 19,600 hospitalizations at the participating sites in the PC4 clinical registry that included cardiac surgery.

"These changes in outcomes seem to reflect PC4's commitment to transparency between institutions and collaboration to share best practices," says lead author and cardiac intensivist Michael Gaies, M.D., PC4 founder and executive director and director of quality at the Congenital Heart Center at Michigan Medicine's C.S. Mott Children's Hospital.

"Hospitals are working together to create a culture of collaboration

rather than competition. This work is having a tremendous impact on children and families battling critical heart disease."

Authors hypothesized that outcomes would improve after two years of participation in the collaborative during which they could evaluate their own outcomes and seek insight from high-performing PC4 hospitals.

Outcomes were compared between the two-year baseline period and all months after the baseline. In addition to declines in mortality rates, major complications dropped by 12 percent, time on a ventilator fell by 13 percent and length of stay in the ICU was down by 5 percent.

Researchers analyzed mortality, complications, and length of stay trends over the same time period at 17 comparable hospitals that were not part of PC4 and found no evidence of improvement at these hospitals. Authors note that these data strengthen the conclusion that improvement seen at the PC4 hospitals is more likely the result of participation in PC4, and not due to a secular trend in improvement across the field.

Learning from top-performers

Many children with critical pediatric and congenital cardiovascular disease require surgery in the newborn period or later in infancy. While outcomes for pediatric cardiac surgery have improved over several decades, the improvements appeared to be leveling off in the most recent era, Gaies says.

Mortality remains high for complex operations while postoperative complications result in morbidity that can affect survivors across their lifespan. Variations in outcomes also persist across hospitals, particularly for complex surgery.

"Our data told us there were opportunities to learn from each other to

improve the quality of ICU care for babies and children who require heart surgery," Gaies says.

PC4 is modeled after similar collaboratives nationally and in the state of Michigan that work to reduce postoperative morbidity and mortality. A National Institutes of Health grant to the University of Michigan provided initial funds for PC4, but the initiative now relies on hospital and donor investments.

Member hospitals are required to share clinical outcome data through a registry that includes information about perioperative practices and outcomes that include postoperative mortality, complications, duration of mechanical ventilation, and length of stay.

More than 50 hospitals now contribute data to the registry, up from just six hospitals in 2013 when it began. Cases can be submitted in real-time immediately after a patient's discharge and participants have access to a web-based reporting platform that is updated each morning.

"Access to timely, actionable, and transparent clinical outcome data likely creates an important Hawthorne effect for hospitals that previously had limited opportunities to critically evaluate their quality of care," Gaies says. "Just being aware of your own performance has a powerful impact. We get motivated to change our practice when we see what is possible by our peers."

Participants regularly reach out to high-performing hospitals in areas of care in which they seek to improve and work with them to adopt successful practices at their own sites. Panels of experts from high-performing hospitals also explain their practices at PC4's annual meeting and through webinars.

There's still a lot of work ahead, Gaies says. Implementing and

sustaining new practices that improve cardiac ICU care requires long-term commitment across multiple care teams.

But he and colleagues are encouraged by the difference the collaboration is already making.

"Institutions are sharing insight on practices and resources that underlie their excellent performance," Gaies says. "We are seeing experts across the country committed to working together to improve the care of kids with congenital heart disease. This collaboration reveals the very best of people who care for these children and families"

Provided by University of Michigan

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