Adult congenital heart patients with highest surgery costs more likely to die in hospital

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Higher surgical costs for adult congenital heart patients is associated with higher rates of inpatient death compared to surgical admissions that incur lower costs, according to a study in *Circulation: Quality and Outcomes,* a journal of the American Heart Association.

In the study, researchers sought to understand resource use by adults undergoing congenital heart surgery in pediatric hospitals, analyze the association between high resource use and inpatient death, and identify risk factors for high resource use.

They found that although the number of adults undergoing congenital heart surgery in pediatric hospitals is increasing, adult congenital heart patients are not using a disproportionate amount of the hospitals' resources.

The researchers identified five factors that are associated with higher inpatient charges: greater surgical complexity, government insurance, DiGeorge syndrome, weekend admission and depression. DiGeorge syndrome is a genetic disorder affecting the thymus and thyroid that also causes heart defects.

With the vast majority of congenital heart patients surviving to adulthood, adults now outnumber pediatric congenital heart patients. Many adult patients with congenital heart disease continue to receive their medical, interventional and surgical care at pediatric hospitals.

"The most interesting and actionable of our findings was that depression is a risk factor for high resource use among this surgical population. While we cannot change a patient's surgery complexity or presence of DiGeorge syndrome, we might be able to implement a treatment strategy for a potentially modifiable risk factor such as depression. One could imagine implementing a screening and treatment program for depression and assessing its impact in inpatient resource use," said Oscar J. Benavidez, M.D., lead author of the study and now chief of the Division of Pediatric-Congenital Cardiology at Massachusetts General Hospital in Boston. The study was done when he was at Children's Hospital Boston. "We might not only lower resource use but also save lives."

Benavidez and colleagues analyzed patient information at 42 pediatric hospitals in the United States from 2000 to 2008. Findings from the study include:

- Adults make up 3.1 percent of congenital heart surgery admissions to pediatric hospitals, but account for only 2.2 percent of total hospital charges.
- Although high resource use admissions made up 10 percent of adult admissions, they accounted for 34 percent of charges for all adult congenital heart surgery admissions.
- The rate of death is 16 percent for the most costly patients, but only 0.7 percent for other adult congenital heart patients.
- Adults who used the highest amount of resources in the hospital accounted for 5.7 times higher pharmacy costs than those in the lower resource use categories.

"While the number of adult congenital heart patients who undergo surgery at pediatric hospitals continues to increase, we also found that the lion's share of surgical costs is with pediatric patients," Benavidez said.

The cost for pediatric patients may be higher because they undergo highly complex surgical procedures. "The pediatric patients are resource intensive in their own right given that their extreme complexity requires highly specialized processes to care adequately for these infants and children."

Provided by American Heart Association