

Pediatric Cardiac Surgical Outcomes Following Implementation of a Novel Acuity Adaptable Care Model

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Purpose: We hypothesized that patients undergoing cardiac surgery following implementation of a novel acuity adaptable care model (novel group) would have improved outcomes when compared to those managed in a conventional model (conventional group; patients moved between units and care teams based on age, severity of illness, and operative status).

Methods: This study included consecutive patients undergoing an index cardiac operation between 2007 and 2015. From 2010 to 2012, we transitioned to a model in which all surgical patients were admitted to and remained in the Cardiac Care Unit and received care from the same clinical team throughout their hospitalization. Outcomes between the conventional and novel groups were compared including operative mortality, infections, hospital length of stay (LOS), failure to rescue rate (deaths in patients with any complication divided by number of total patients with any complication).

Results: There were 1,039 cardiac surgical patients who received perioperative care in the conventional model, and 970 in the new model. Demographics, Society of Thoracic Surgeons–European Association for Cardio-Thoracic Surgery (STAT) mortality categories, and presence of non-cardiac structural anomalies and genetic abnormalities/syndromes were not significantly different between groups. Unadjusted operative mortality decreased from 3.1% to 1.3% ($p=0.009$). Surgical site infections decreased from 1.8 to 0.6 per 100 cases ($p=0.02$). Postoperative LOS tended to be shorter for patients receiving care in the new model [median 6 days (IQR, 4-14) vs. 6 days (IQR, 4-11), $p = 0.14$], and the failure to rescue rate tended to be lower (7.1% vs. 4.2%, $p=0.11$).

Conclusion: When compared to outcomes achieved with a conventional model, the implementation of an acuity adaptable care model in our cardiac program was associated with a significant reduction in mortality and surgical site infections, and favorable trends in other early outcome measures.