



Improving the Value of Transcather Aortic Valve Replacement (TAVR)

Braden W. Batkoff^a, Ty J. Gluckman^b, Robert F. Hunter^a, Michael Ring^a, Leland Siwek^a, Branden Reynolds^a, Matthew Forrester^a, Stephen Thew^c

^aProvidence Spokane Heart Institute, Providence St. Joseph Health, Spokane, WA; ^b Center for Cardiovascular Analytics, Research and Data Science (CARDS), Providence St. Joseph Heart Institute, Portland, Oregon;
^c Kootenai Heart Clinics Northwest, Kootenai, Idaho

Background

- Transcatheter aortic valve replacement (TAVR) represents a transformational technology for patients with severe symptomatic aortic stenosis.
- The cost of performing this procedure, however, can be prohibitive, which can impact an organization's ability to meet growing clinical need.

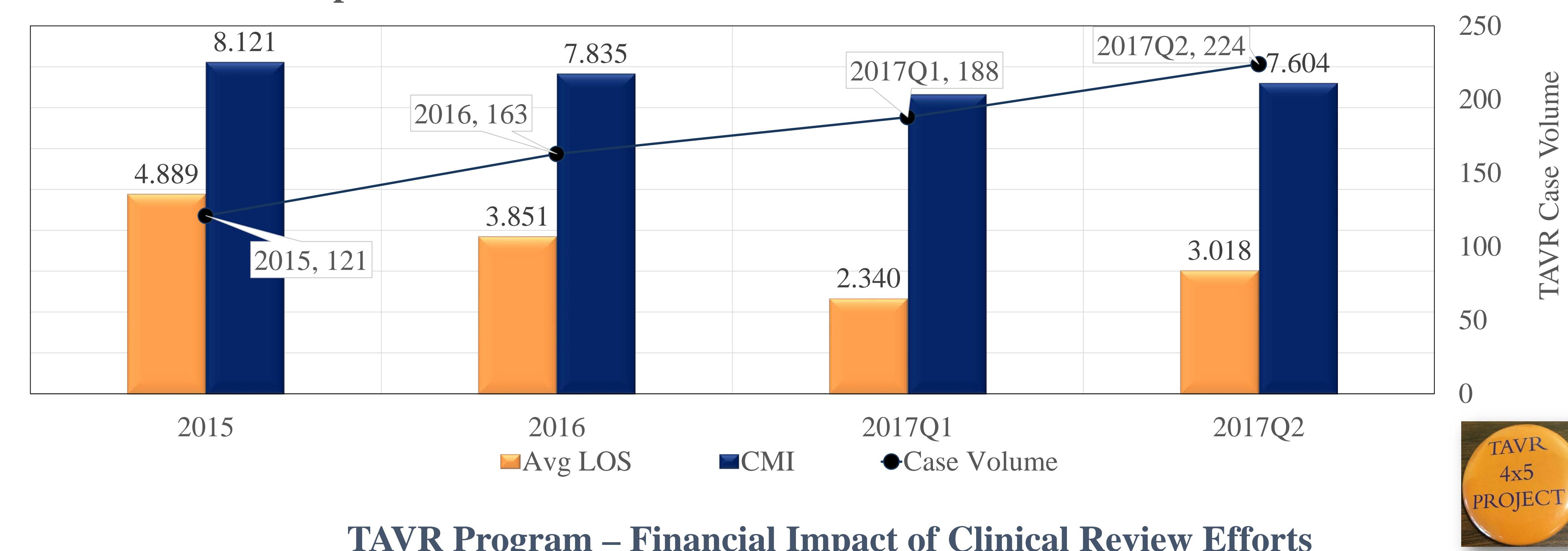
Methods

- In an attempt to lower the direct hospital costs of TAVR, and increase capacity for growing clinical need, a multidisciplinary team from our health system was convened in 2016 to review the absolute and relative contributions to the procedure's direct costs.
- Team members from interventional cardiology, cardiothoracic surgery, anesthesia, the operating room, and recovery room sought to standardize multiple aspects of the procedure's workflow.
- Each step in the care delivery process was mapped, with elimination of steps that provided little to no value.

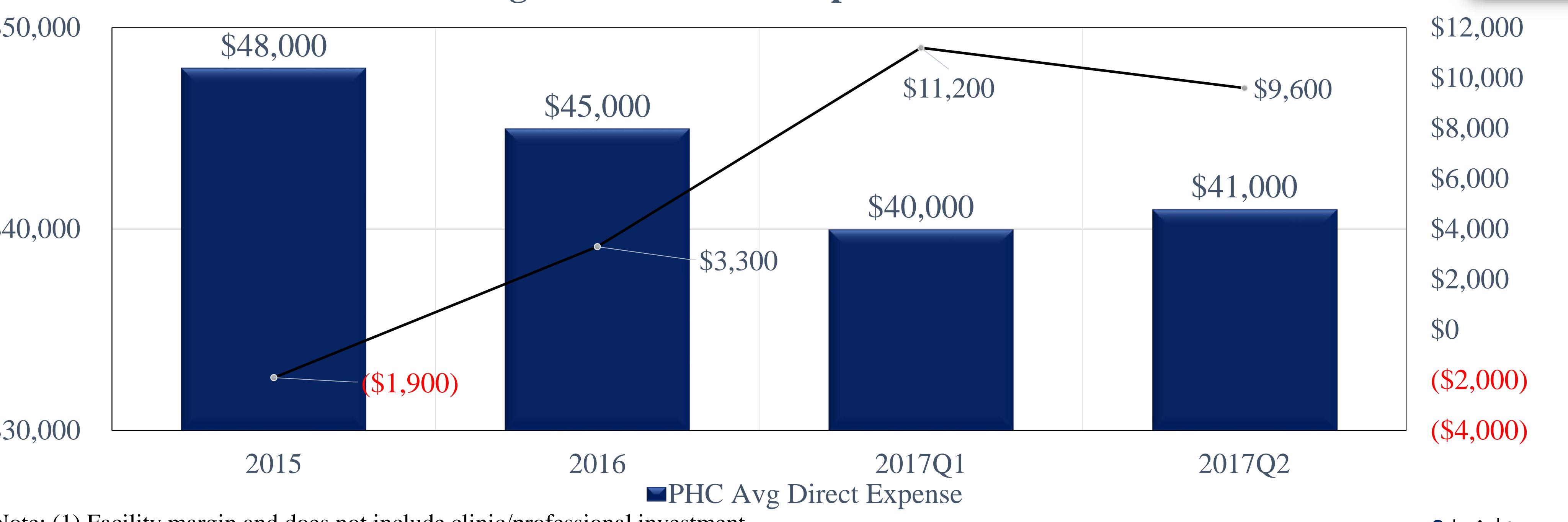
Results

- Partly from workflow standardization and partly from modifying existing protocols to match the increased treatment of intermediate risk patients,
 - Mean case time was reduced by 30 minutes (18%),
 - Length of stay was reduced by 2.18 days (44%),
 - Direct hospital costs were reduced by \$7,800 (16%),
 - Operating room capacity increased from 2 cases/day to 4 cases/day, as total case volume grew by 70%,
 - Unadjusted, in-hospital mortality over 12 months decreased from 3.4% in 2015 to 0.6%,
 - Average net income per case improved from a loss of \$2,000 in 2015 to a gain of \$12,000 in 2017,
 - Case mix index decreased from 8.12 to 7.48 during this same time frame.
- The most notable operational improvements included greater use of moderate conscious sedation (versus general anesthesia), reduced use of intensive care unit services, and increased percutaneous access.

TAVR - Impact of Clinical Standardization Efforts on LOS & Case Mix



TAVR Program – Financial Impact of Clinical Review Efforts



Note: (1) Facility margin and does not include clinic/professional investment

Conclusions

- Application of lean methodology and process mapping in TAVR resulted in reduced cost and improved quality for patients undergoing this procedure..