Summit Highlights: Interventional Cardiology

At Virtua's cardiovascular services summit in October, the capabilities and achievements of the teams delivering heart and vascular care at Virtua were on display. Presenting were representatives from each of our Councils, including congestive heart failure, cardiothoracic surgery, clinical cardiology, heart rhythm specialists, and structural heart. Due to a patient emergency, Adam Levine, DO, FACC, FSCAI, FACOI, was unable to present on behalf of Virtua's Interventional Cardiology Council, so we have summarized his report here:

Cardiogenic Shock

Both within and outside of the cardiac critical care unit, we are focusing on a team approach to this emergency condition, with a coordinated strategy involving interventional cardiology, cardiothoracic surgery, and the CCU staff. System-wide education is focusing on early recognition of this acute cardiac-based circulatory insufficiency to the brain, kidneys, and other vital organs.

Among treatments that reverse this urgent condition, our heart team can insert and manage supplemental circulation using the Impella cardiac pump device (Impella CP, Impella RP, or Impella 5.0). The team places these left ventricular assist devices endovascularly, via the femoral artery, advancing this catheter with its tiny pump across the aortic valve. A micromotor in the device spins and pulls blood from the left ventricle and pushes it through a narrow tubular housing to pump it into the base of the aorta, in order to support blood supply to the coronary arteries and throughout the body. With a maximum pumping capacity of approximately one-half of that of a normal heart, the Impella can temporarily support patients whose heart capacity has failed.

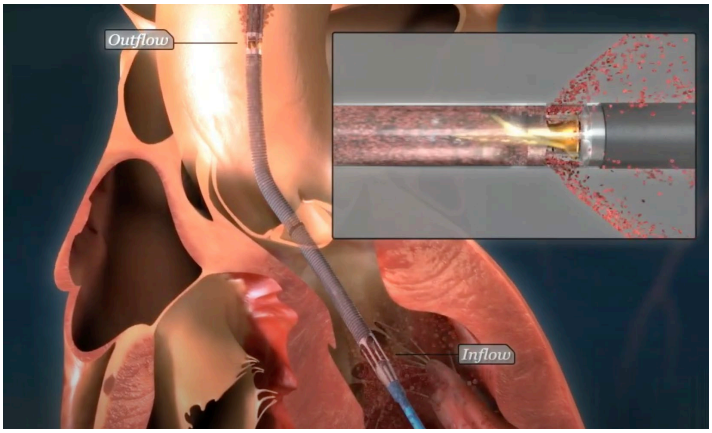

Illustration of the Impella pump.

In 2020, we performed 56 Impella implants, a significant increase from the previous year.

Other patients in cardiogenic shock may receive emergency care with the Protek Duo device (a dual-lumen cannula inserted percutaneously via the internal jugular vein, with the distal outflow lumen positioned in the main pulmonary artery and the proximal inflow lumen positioned in the right atrium providing extracorporeal membrane oxygenation and right heart support). Some patients may also benefit from application of conventional ECMO.

“Unfortunately, mortality rates for cardiogenic shock can be as high as 50 percent,” said Dr. Levine. “Our team’s goal is to significantly reduce that figure across all Virtua hospitals.”

FFR-CT Evaluation

Virtua has established a multidisciplinary group to investigate the value of fractional-flow-reserve computed tomography (FFR-CT). This newer cardiac imaging approach, still in the early stages of clinical implementation in the U.S., provides a vessel-specific calculation of coronary artery blood flow. As a view into coronary artery disease, FFR-CT might be an alternative to, or advancement in, noninvasive screening tools for cardiac catheterization—possibly offering better predictive value of CAD impact than traditional coronary CT angiography.

Metrics that the IC Committee is also tracking include:

- Combined patient volume for the cardiac catheterization laboratories
- Mortality rates
- Door-to-balloon time for stat angioplasties
- Daily on-time start rate for interventions within the cardiac cath labs.