

Description of clinical care for TAVR patients

Pre-TAVR

At our institution, patients with severe symptomatic aortic stenosis (Stage D disease) who have been risk stratified and deemed as having high or surgically prohibitive risk by cardiothoracic surgery are referred for TAVR. They are evaluated by our designated Heart Team in either an outpatient or inpatient setting during which they undergo a thorough integrated personalized risk/benefit profile and a shared decision-making process. Standard TAVR workup includes an overall clinical and functional assessment of the patient and review of comorbid conditions. Patients will undergo a thorough echocardiographic assessment which may include transesophageal echocardiography. Computed tomography (CT) angiography is also performed to further delineate anatomy for optimal valve sizing and positioning. All patients undergo cardiac catheterization for a complete hemodynamic evaluation and coronary angiography. CT angiography of the thoracoabdominal and iliofemoral arteries is performed to determine suitability for access. After initial assessment and work up, eligible candidates are scheduled for their procedure. Other patients may undergo additional testing and subspecialist referral and are re-evaluated after optimization of their comorbid conditions.

TAVR procedure

TAVR at our institution is performed by a dedicated experienced joint team of interventional cardiologists and cardiothoracic surgeons in a hybrid operating room setting. The procedure is performed under general anesthesia. Patients receive prophylactic antibiotics pre- and post-procedurally. They are pre-treated with aspirin (81-325 mg) daily and receive a loading dose of clopidogrel 300 mg prior to the procedure. The procedure is performed under continuous invasive hemodynamic monitoring with fluoroscopic and transesophageal guidance.

Post-TAVR

Patients are monitored post procedurally in an ICU setting for at least 24 hours. Patients are mobilized early and discharged within several days. Long term TAVR follow up is provided at a specialized Heart Valve Clinic at 1, 6, and 12 months post TAVR wherein patients undergo clinical and echocardiographic assessment. Patients continue aspirin indefinitely and clopidogrel 75 mg daily for 3 months (self-expanding valves) or 6 months (balloon expandable valves). Patients maintain their routine follow up with their primary care providers.

Table S1 Primary readmission diagnosis categories

CARDIAC

Ischemic heart disease

Non-ST-elevation Myocardial Infarction

ST-elevation Myocardial Infarction

In-stent restenosis

Heart Failure

Acute decompensated heart failure with reduced ejection fraction

Acute decompensated heart failure with preserved ejection fraction

Volume/Fluid overload secondary to heart disease

Arrhythmia

Atrial Fibrillation with rapid ventricular rate

Supraventricular tachycardia

Sinoatrial Block

Atrioventricular Block

Ventricular tachycardia and fibrillation

Syncope secondary to arrhythmia

Pacemaker or Defibrillator malfunction

Sick Sinus Syndrome

Pacemaker induced tachycardia

Valvular Heart disease

Paravavular leak

Valvular regurgitation or Stenosis

Acute infective endocarditis

Leaflet thrombosis

TAVR PROCEDURE RELATED

Heart Block directly related to Transcatheter Aortic Valve Replacement procedure

Transcatheter Aortic valve Replacement access site complications

Wound seroma

Wound dehiscence

Psuedoaneurysm

NON-CARDIAC

Respiratory

Acute exacerbation of chronic obstructive pulmonary disease

Hypercapnic respiratory failure

Pulmonary Fibrosis

Interstitial Lung disease

Table S1 (*continued*)

Table S1 (continued)

CARDIAC

Tracheostomy malfunction

Symptomatic pleural effusions

Sepsis/Infections

Methicillin resistant staphylococcus aureus bacteremia (No endocarditis)

Gram negative septicemia

Pseudomonas Bacteremia

Aspiration Pneumonia

Pyocystitis

Acute Enterocolitis due to Clostridium difficile

Cellulitis

Abscess

Viral infections

Influenza infection

Respiratory Syncytial Virus

Listerial sepsis

Osteomyelitis

Gastrointestinal

Acute Diverticulitis

Upper gastrointestinal bleeding

Lower gastrointestinal bleeding

Acute cholecystitis without obstruction

Angiodysplasia with bleeding

Acalculous cholecystitis

Acute intestinal obstruction without surgery

Peptic ulcer disease

Gastritis

Liver Disease

Acute Encephalopathy

Ascites

Hepatohydrothorax

Acute Liver Failure/Necrosis

Spontaneous bacterial peritonitis

Renal

Acute kidney injury

Uremia

Table S1 (continued)

Table S1 (continued)

CARDIAC

Electrolyte Imbalance with need for urgent dialysis

Acute Interstitial Nephritis

Nephrotic Syndrome

Severe Hyponatremia

Trauma

Nasal bone fractures

Mechanical falls leading to fractures

Lacerations

Vascular (not related to TAVR)

Femoral Abscess

Arteriovenous Fistula repair/thrombectomy

Acute Limb ischemia

Gangrene

Pseudoaneurysm

Ocular

Acute angle closure glaucoma

Hematological/Bleeding (not including ICH)

Blood transfusion

Iron Deficiency Anemia

Supratherapeutic International Normalized ratio

Bleeding Diathesis

Unexplained pancytopenia

Thrombocytopenia

Neurological

Spontaneous intracerebral hemorrhage

Embolic Stroke (not in the immediate post Transcatheter Aortic Valve Replacement period)

Transient Ischemic Attack

Atraumatic subdural hematoma

Malignancy

Myelodysplastic Disorders

Leukemia

Lymphoma

Cervical Cancer

Musculoskeletal

Compression fractures

Table S1 (continued)

Table S1 (continued)

CARDIAC

Atraumatic fractures

Peri-prosthetic fractures

Myalgias

Myositis

Spondylosis

Radiculopathy

Other

Alcohol Intoxication

Generalized weakness

Non-cardiac chest pain

Bleeding after dental extractions

Sacral Decubitus Ulcers

Epistaxis

Drug reactions/severe side effects

Major Depression

Acute Delirium

Epistaxis

Orthostatic hypotension

Failure to thrive

Table S2 Echocardiographic baseline characteristics

| Hemodynamics | Data |
|--|-------------|
| Left Ventricular Systolic Diameter | 33.0 ± 9.41 |
| Left Ventricular End-Diastolic Diameter | 45.8 ± 8.20 |
| Pulmonary Artery Systolic Pressure | 49.4 ± 17.1 |
| Ejection Fraction | 53.3 ± 13.6 |
| Ejection Fraction ≥50% | 746 (71.9%) |
| Aortic Mean Gradient (mmHg) | 48.4 ± 14.4 |
| <40 mmHg | 233 (22.5%) |
| Aortic Valve Area (cm ²) | 0.64 ± 0.18 |
| Aortic Insufficiency | |
| None (0) | 91 (8.8%) |
| Trace/Trivial (1) | 238 (23.0%) |
| Mild (2) | 397 (38.3%) |
| Moderate (3) | 163 (15.7%) |
| Severe (4) | 41 (4.0%) |
| Mitral Insufficiency | |
| None | 28 (2.7%) |
| Trace/Trivial | 204 (19.7%) |
| Mild | 466 (44.9%) |
| Moderate | 231 (22.3%) |
| Severe | 56 (5.4%) |
| Mitral Stenosis | 138 (13.3%) |
| Tricuspid Insufficiency | |
| None | 11 (1.1%) |
| Trace/Trivial | 258 (24.9%) |
| Mild | 419 (40.4%) |
| Moderate | 200 (19.3%) |
| Severe | 50 (4.8%) |
| Aortic Valve Mean Gradient and Ejection Fraction | |
| AV Mean Gradient <40 and EF <50 | 117 (11.3%) |
| AV Mean Gradient <40 and EF ≥50 | 116 (11.2%) |
| AV Mean Gradient ≥40 and EF <50 | 162 (15.6%) |
| AV Mean Gradient ≥40 and EF ≥50 | 620 (59.8%) |

*All Continuous variables are presented as Mean ± SD

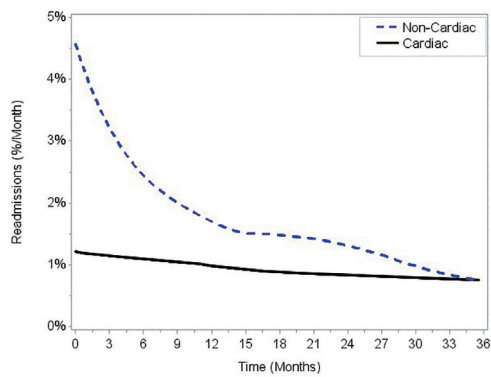


Figure S1 Instantaneous hazard function estimates for overall readmissions (N=1,017).

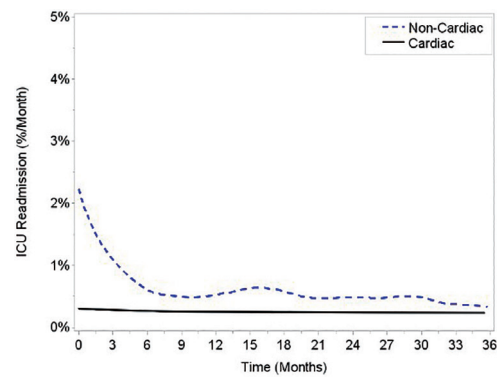


Figure S4 Instantaneous hazard function estimates for ICU readmission.

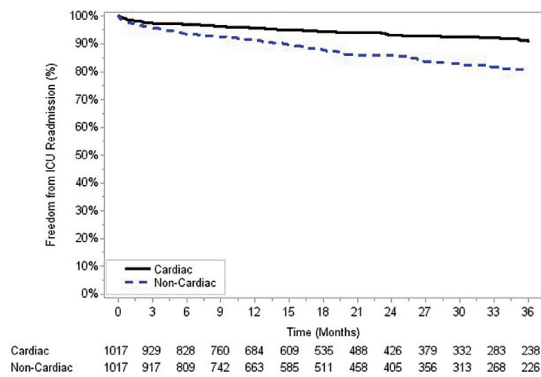


Figure S2 Kaplan-Meier Estimates for ICU readmissions (time from index discharge).

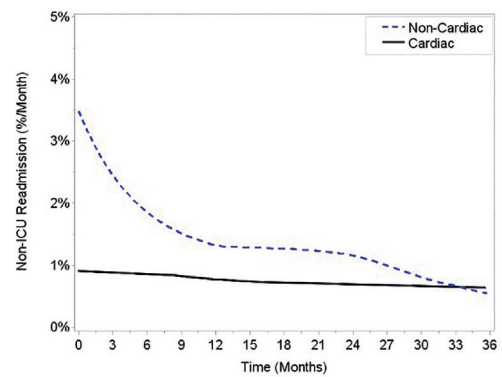


Figure S5 Instantaneous hazard function estimates for non-ICU readmissions.

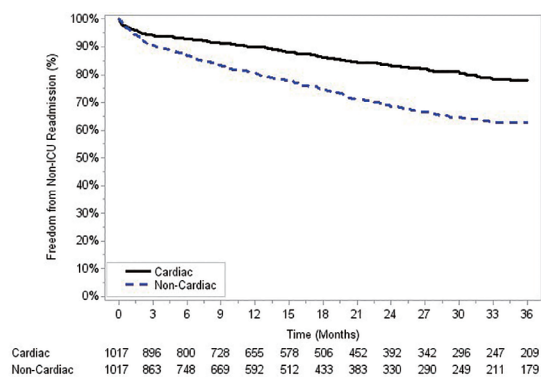


Figure S3 Kaplan-Meier estimates for non-ICU readmissions (time from index discharge).

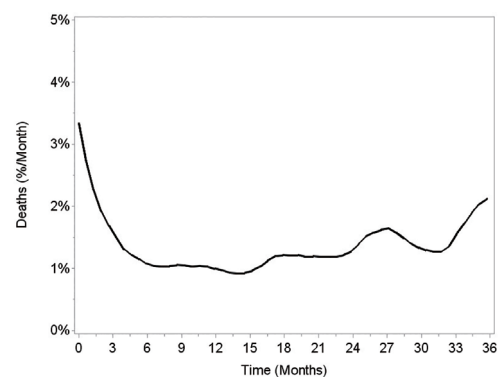


Figure S6 Instantaneous hazard function estimates for mortality (N=1,037).