

# Long-term outcomes of TAVI show non-cardiac co-morbidities main cause of mortality

March 26 2012

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Non-cardiac co-morbidities such as chronic obstructive pulmonary disease, chronic kidney disease and frailty are the main predictors of late mortality after transcatheter aortic valve implantation (TAVI), suggesting that patients with these conditions merit closer evaluation and follow-up, according to research presented today at the American College of Cardiology's 61st Annual Scientific Session. The Scientific Session, the premier cardiovascular medical meeting, brings cardiovascular professionals together to further advances in the field.

The study provides the longest multicenter follow-up data on the [clinical outcomes](#) and valve durability of TAVI, a procedure that has been developed to repair or replace a diseased heart valve in [patients](#) who cannot undergo surgery. The minimally [invasive procedure](#) consists of inserting a bioprosthetic valve through a [catheter](#) into the heart to take the place of the diseased valve.

"While TAVI has emerged as the treatment of choice in non-operable patients who need valve repair, most data on TAVI are limited to acute and one-year follow-up," said Josep Rodés-Cabau, MD, lead study author and director of the Cardiac Catheterization and Interventional Laboratories at the Quebec Heart & Lung Institute. "Also, very few data exist on the long-term durability of transcatheter valves. Identifying the clinical factors associated with poorer late outcomes is very important in improving patient selection and follow-up, while properly evaluating

valve durability is one of the most important factors determining the potential expansion of TAVI to younger and lower-risk patients."

The study included 339 patients considered to be non-operable or at very high surgical risk who underwent TAVI at six Canadian medical centers between January 2005 and June 2009. The transfemoral approach was used in 48 percent of the patients, while the transapical approach was used in 52 percent of the patients. Patients received a balloon-expandable valve (Cribier-Edwards, n=57), (Edwards SAPIEN, n=275), (SAPIEN XT, n=7) and were then followed to determine both safety and efficacy. Clinical follow-up to determine safety was conducted in clinical visits and/or through phone contact, while efficacy follow-up was performed through echocardiography with central Echo Core Lab evaluation.

After the median three-year follow-up, 146 (43.1 percent) of the patients had died. Thirty-six (10.4 percent) of those patients died within 30 days of TAVI, and 110 patients (32.4 percent) died during the remainder of the follow-up period. Of those who died more than 30 days post-procedure, 74 (67.3 percent) died because of non-cardiac causes, including pulmonary causes (32.7 percent) and end stage kidney disease (10 percent). Twenty-nine patients (26.4 percent) died of cardiac causes. There were no cases of valve structural failure, and there were two cases of re-intervention because of valve endocarditis, infection of the valves.

After examining the long-term data from those who died more than 30 days post-procedure, researchers determined that death was most often caused by [chronic obstructive pulmonary disease](#) [COPD] (HR: 1.99, 95 percent CI: 1.34-2.95, p=0.0007), [chronic kidney disease](#) [CKD] (HR: 1.62, 95 percent CI: 1.09-2.41, p=0.017), atrial fibrillation [AF] (HR: 1.82, 95 percent CI: 1.24-2.67, p=0.002) and frailty (HR: 1.76, 95 percent CI: 1.17-2.64, p=0.006). The echocardiography showed that valve performance following TAVI was maintained throughout the

follow-up period. Mild aortic regurgitation, which is a leaking of the valve that limits forward blood flow, was frequent after the procedure but remained stable throughout the follow-up period.

According to the researchers, the study results show that TAVI was associated with good long-term valve function but a relatively high death rate. They add that because most of the patients died from non-cardiac co-morbidities, the results highlight the importance of closer evaluation and follow-up of patients with certain conditions, including the inclusion of other specialists in these processes. For example, they say that the evaluation of patients with COPD by pulmonary specialists before and after receiving TAVI may be clinically relevant, and that working with geriatricians to evaluate and follow-up frail patients may also improve TAVI outcomes.

"I think everyone in the field now recognizes that patients undergoing TAVI are very complex and that we need to closely collaborate with other medical specialties," Dr. Rodés-Cabau said. "Just as is already being done with cardiologists and cardiac surgeons on the Heart Team, we need to involve more specialists in the patient selection process and the follow-up of these patients."

Provided by American College of Cardiology

Citation: Long-term outcomes of TAVI show non-cardiac co-morbidities main cause of mortality (2012, March 26) retrieved 7 May 2024 from <https://medicalxpress.com/news/2012-03-long-term-outcomes-tavi-non-cardiac-co-morbidities.html>

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