

Evolving portrait of the use and clinical outcomes of transcatheter aortic valve implantation (TAVI) in Québec: an evaluation in the real-world context of care, 2013 to 2018

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Direction des services de santé et de  
l'évaluation des technologies



# MAIN FINDINGS

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## Organizational structure

- The number of TAVIs performed in Québec increased from 294 in 2013-2014 to 526 in 2017-2018, at which time it accounted for 30% of all aortic valve replacements (TAVIs and SAVRs, with or without CABG, combined);
- The TAVI utilization rate of 49 per million population in 2017-2018 is similar to the Canadian average but is below that observed in Ontario and British Columbia;
- Since 2014-2015, all facilities performing TAVI have met the minimum annual volume of 30 procedures recommended in 2017 [INESSS, 2017a];
- Half of interventional cardiologists performing TAVI in Québec carried out fewer than 20 procedures per year, which is the minimum operator volume currently recommended [INESSS, 2017a].

## Patient characteristics

- Many of the patients selected for treatment with TAVI in Québec were over 85 years of age and had major comorbidities and suffered symptoms that substantially limited their physical activity (NYHA classes III and IV).

## Patient selection process and wait times

- The documentation of processes has improved, particularly with regards to:
  - documentation of the Society of Thoracic Surgery (STS) score, a measure of the predicted risk of surgical mortality, which improved from being present for 50% of patients in 2013-2014 to 72% in 2017-2018;
  - the proportion of patients who had documentation that the treatment decision was made by a multidisciplinary team, which increased from 0% in 2013-2014 to 92% in 2017-2018;
  - the documentation of dates necessary for measuring wait times: in 2017-2018, the date of referral and the date of the treatment decision by the multidisciplinary team were documented for more than 9 out of every 10 patients.

## **Wait times**

- Since 2015-2016, the median time for patient assessment (from referral to treatment decision) has been maintained at approximately 60 days and is in line with the Canadian median. The median time from the treatment decision to the actual procedure has decreased since 2015-2016 to 32 days in 2017-2018, which is shorter than the Canadian median delay of 56 days.

## **TAVI care processes**

- At the provincial level, the transfemoral access route was the most frequently used TAVI approach (in 79% of all interventions in 2017-2018);
- In Québec, two main categories of valves are currently used in more than 95% of patients, namely, balloon-expandable and self-expandable devices. However, these two categories of valves are in constant technical evolution, and other types of valves continue to emerge;
- In 2017-2018, at least two operators were present in the catheterization laboratory or hybrid room during 88% of the TAVI procedures. In most of these cases, a cardiac surgeon was either responsible for the treatment or had a supportive role.

## **Major adverse events and length of hospital stay**

- Overall, the incidence of peri- and post-procedural adverse events has decreased over time in Québec;
- The incidence of urgent conversion to SAVR decreased from 3% in 2013-2014 to 0.2% in 2017-2018, and the proportion of patients for whom more than one valve was deployed decreased from 7% to 1%;
- From 2013-2014 to 2017-2018, a decrease in the proportion of patients with major bleeding from 13% to 6% ( $p < 0.05$ ) was observed, as well as reduced variability of results across the six TAVI programs. The frequency of blood transfusion during the hospital stay (pre- or post-procedure) also decreased, from 30% in 2013-2014 to 16% in 2017-2018 ( $p < 0.05$ );
- The frequency of implantation of a new permanent pacemaker has remained relatively unchanged over the years at the provincial level, accounting for 17% of the cases in 2017-2018, with variability being observed between the facilities and the different types of valves;
- The incidence of intrahospital stroke has remained between 2.2% and 4.4%;
- The median length of stay at TAVI centres decreased from 5 to 3 days between 2013-2014 and 2017-2018. The median length of stay in the most recent year of observation was 2 days for patients treated via the transfemoral approach (the most frequently used), and 5 days for those treated via alternative approaches.

## Clinical outcomes

- The proportion of patients who returned home at hospital discharge increased from 74% in 2013-2014 to approximately 80% in 2017-2018. During the same time period, there was a decrease in the proportion of patients who died at a TAVI facility (from 6.5% to 1.9%), or who were sent to a long-term care facility (from 5% to 2%). The proportion of patients transferred to another acute care hospital has remained relatively stable over the years (13% in 2013-2014 and 14% in 2017-2018).
- The incidence of 30-day mortality decreased from 6.5% in 2013-2014 to 2.7% in 2017-2018 ( $p=0.008$ ), while 1-year mortality decreased by a third, from 14.6% in 2013-2014 to 9.0% in 2017-2018 ( $p=0.01$ ).

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