



Healthcare  
Improvement  
Scotland

**SHTG**  
Advice on health  
technologies

# Plain Language Summary

Transcatheter aortic valve implantation (TAVI) for people with severe aortic stenosis who are at low surgical risk | February 2025

## What is our advice to NHSScotland?

Transcatheter aortic valve implantation (TAVI) should be considered for people with severe aortic stenosis who are at low surgical risk. TAVI is likely to be good value for money compared with surgery, but this depends on the price of TAVI valves in Scotland. Purchasing of TAVI valves should be coordinated to ensure Scotland achieves the best value for money.

Approximately 80% of people with severe aortic stenosis are at low surgical risk. Offering TAVI to these patients means the NHS needs to increase its capacity to deliver equitable access for all patients. Priority access should be given to people who are at the highest risk from surgery.

## What is aortic stenosis?

Aortic stenosis is a heart condition where the main valve that lets blood flow out of the heart becomes narrowed. Symptoms of aortic stenosis include chest pain, tiredness and breathlessness. Severe aortic stenosis can lead to heart failure. Aortic stenosis is more common in older people.

## What is TAVI?

The standard treatment for severe aortic stenosis is open heart surgery to replace the affected heart valve. TAVI is a less invasive alternative to surgery.

The TAVI procedure places a new valve inside the patient's own heart valve. TAVI does not require open heart surgery. The new valve is inserted through blood vessels in the groin or sometimes using a small incision in the chest wall.

## Why is this important?

Aortic stenosis is the most common heart valve disease in adults in Europe. Without treatment, people with severe aortic stenosis have an average life expectancy of 2 to 3 years after diagnosis.

Evidence has shown that TAVI is as effective, or more effective, than open heart surgery in people with severe aortic stenosis who have a high or intermediate risk of dying after surgery.

## What we did

We looked at the evidence on using TAVI to treat people who have severe aortic stenosis who are at low surgical risk and compared this to evidence on surgery. We looked at whether the treatments were effective, safe and good value for money. We also explored patient experiences of TAVI.

## What we found

### Is TAVI effective and safe?

We found evidence from five trials comparing TAVI with surgery. The combined results of the trials showed that there was no difference in the risk of dying after TAVI or surgery. In one trial, this was true for up to 10 years after patients had TAVI or surgery.

There were three more trials that had been published recently. These trials also found that there was no difference in the risk of dying after TAVI or surgery.

We found evidence of differences in the safety of TAVI and surgery.

- People who had TAVI were more likely than people who had surgery to need a pacemaker afterwards.
- People who have TAVI might have more blood leaking around the new valve compared with people who have surgery.
- People who had surgery were more likely to develop a condition called atrial fibrillation, to have kidney problems or to experience bleeding.

These safety findings were true across all the studies we looked at.

Quality of life improved more quickly for people who had TAVI compared with people who had surgery. One year after treatment, quality of life was similar for people who had TAVI or surgery.

People who have TAVI generally spend less time in hospital after their procedure compared with people who have surgery.

### Value for money

We found conflicting evidence on whether TAVI is good value for money.

- Thirteen studies found that TAVI was good value for money. These studies were mostly from European countries or the United States where TAVI valves are cheaper than in Scotland.
- One study in the UK found that TAVI was not good value for money. This may be because TAVI valves are more expensive in the UK than Europe or the US.
- Another study from the UK found that TAVI was good value for money when taking into account what happens to patients for a longer time following their procedure (that is, based on information gathered over 4 years instead of 1 year).
- The main things that affect whether TAVI is good value for money are the cost of the valve, survival benefits, complication rates and long term care costs for people with aortic stenosis.

### Patient experiences and views

We found that people in England who lived in less wealthy areas, were of African or south Asian descent or women, were less likely to get aortic valve replacements (TAVI or surgery).

Some people continue to experience mental and physical symptoms after their TAVI procedure. This is often because they have other health problems. For many people this led to feelings of disappointment, isolation and vulnerability.

People were often motivated to have TAVI so that they could regain a normal life and continue to live independently in their own home. Trial results suggest this would be quicker with TAVI.

## What SHTG considered when developing advice for NHSScotland

1. The Council recognised that not all patients who are classed as low surgical risk are suitable for TAVI. The decision on whether TAVI is the best treatment option for each person is made by a team of experts in consultation with the patient.
2. The Council agreed that TAVI was beneficial and safer than surgery for patients who are at low surgical risk. They also agreed that TAVI may lead to an improved procedure related patient experience.
3. The Council noted that TAVI appears to cause more leaks around the new valve than surgery. They accepted that it was difficult to compare this leakage risk between TAVI and surgery. An expert explained that only moderate or severe leaks were likely to affect patients. Newer TAVI valves have a lower risk of leaking.
4. The Council asked an expert about the length of hospital stay for patients after TAVI or surgery. The expert said that TAVI patients tended to leave hospital after no more than a day. Patients who had surgery may 1–2 days in intensive care and to remain in hospital for 4 or 5 days.
5. The Council discussed the UK based evidence on the value for money of TAVI and how this depended on the price of TAVI valves. The Council felt it was important that purchasing TAVI valves should be coordinated nationally to ensure the best price.
6. The Council highlighted that patients who are at low surgical risk represent a much larger group than those currently eligible for TAVI in Scotland. They recognised that offering TAVI to these patients would present challenges for delivering TAVI services across NHSScotland because of limited capacity. The Council was clear that if capacity was to increase, then access to TAVI should be prioritised based on surgical risk. In other words, patients who have the fewest alternative treatment options (highest risk) are treated first.
7. Concerns were voiced by the Council that there appeared to be unequal access to TAVI depending on where patients lived. The expert informed the Council that the number of TAVI procedures in Scotland was expected to increase to match levels in England. The Council agreed it was important there was equal access to TAVI for all suitable patients living in Scotland.
8. The Council acknowledged that patients who are at low surgical risk tend to be younger and live longer than high risk patients. They noted that life expectancy for this patient

group could be longer than the TAVI valve lasts. Results from a recent trial suggest that newer TAVI valves can last for at least 10 years.

### What next?

Our advice will be used by NHSScotland to decide whether TAVI should be offered to more people with severe aortic stenosis.

This plain language summary has been produced based on an SHTG Recommendation