Technoleg Iechyd Cymru
Health Technology Wales

HEALTH TECHNOLOGY WALES (HTW) GUIDANCE 024 (September 2020)

Transcatheter Aortic Valve implantation to treat people with severe symptomatic aortic stenosis, who are at intermediate surgical risk

HTW Guidance:

Transcatheter aortic valve implantation (TAVI) is non-inferior to surgical aortic valve replacement (SAVR) in people with severe symptomatic aortic stenosis who are at intermediate surgical risk. However, the cost effectiveness evidence does not currently support the case for routine adoption.

TAVI was non-inferior to SAVR for all-cause mortality, cardiac mortality or disabling stroke, and shows similar improvements in both symptoms and quality of life. However, due to a lack of long-term data, there is uncertainty around the durability of TAVI valves and the potential need for reintervention.

A cost-utility analysis developed by HTW showed that TAVI is unlikely to be cost effective in this patient group. The cost-effectiveness result was mainly driven by the cost of the TAVI valve.

Why did Health Technology Wales (HTW) appraise this topic?

Aortic stenosis (AS) is an obstruction of normal blood flow across the aortic valve. People with severe AS are likely to develop symptoms that are associated with the narrowing of the valve and an overload of the left ventricle, such as syncope, exercise-induced angina, dyspnoea and congestive heart failure. The prevalence of severe symptomatic AS is around 3% in those aged over 75 years old, but this rises steeply with age; therefore, the prevalence is likely to increase over time due to an aging population.

Surgical aortic valve replacement (SAVR) is the standard treatment for people with severe AS who are well enough for surgery. Transcatheter aortic valve implantation (TAVI) is an alternative procedure that can be used for people of an increased operable risk, and is currently a treatment option for inoperable or high surgical risk cases in Wales. However, more focus is turning to the use of TAVI in lower or intermediate risk populations.

This topic was suggested through the Welsh Health Specialised Services Committee (WHSSC).

The status of HTW guidance is that NHS Wales should adopt this guidance or justify why it has not been followed. HTW will evaluate the impact of its guidance.

Evidence Summary

HTW identified and summarised evidence for the following question: Compared to surgical aortic valve replacement (SAVR), is transcatheter aortic valve implantation (TAVI) clinically and cost effective for severe symptomatic aortic stenosis in adults who are assessed by a heart team as being operable but at intermediate surgical risk?

The evidence to inform this appraisal was adapted from a report from a 2019 Scottish Health Technologies Group (SHTG) report "Transcatheter aortic valve implantation (TAVI) for the treatment of patients with severe symptomatic aortic stenosis at intermediate surgical risk", which detailed a EUnetHTA meta-analysis based on two randomised controlled trials (RCTs) with 2-year follow-up. An updated literature search from HTW identified published 5-year outcomes for one of these RCTs.

The evidence showed that TAVI was non-inferior to SAVR for all-cause mortality, cardiac mortality or disabling stroke. TAVI was also associated with reduced length of stay and new-onset fibrillation, but with increased paravalvular regurgitation compared to SAVR. The effect of TAVI compared to SAVR for other clinical and safety outcomes was less certain. The long-term durability of TAVI valves has not been established, but 5-year outcome data from one of the trials suggests that valve reinterventions are higher with TAVI compared to SAVR.

Ten relevant studies were identified for the economic review. One of the studies was directly applicable as it considered the UK NHS perspective (SHTG report). The other nine studies were only partially applicable as they considered healthcare systems from other countries. Overall, the studies present contrasting results with TAVI found to be cost-effective in some studies but not in others.

HTW developed a cost-utility analyses based on the methodology used in the SHTG analysis. TAVI was found to be more effective and more costly than SAVR with a resulting ICER of £94,512, which is above the threshold of £20,000 per QALY, indicating that it was not cost-effective. The cost-effectiveness result was mainly driven by the cost of the TAVI valve. Threshold analysis showed that TAVI would be cost-effective with a valve cost of £7,752 or lower. Sensitivity analysis showed that the conclusion of the analysis remained unchanged in most modelled scenarios. In probabilistic sensitivity analysis, TAVI was found to have a 27% probability of being cost-effective at a threshold of £20,000 per QALY.

The appropriate mechanism for patient engagement was determined and the patient perspective was considered where possible.

For more detail on the evidence supporting this Guidance, see Evidence Appraisal Report 024 (EAR024).

Appraisal Panel considerations

- Appraisal Panel heard that TAVI is currently a treatment option for people with severe symptomatic AS who are considered to be at high surgical risk or inoperable; experts noted that TAVI is also currently offered to people at intermediate surgical risk due to the COVID-19 pandemic. Current provision is through dedicated centres in South Wales and North West England (for patients in mid/north Wales). Compared to SAVR, TAVI is a minimally invasive procedure with reduced length of stay and faster recovery.
- The panel heard from patient and public involvement (PPI) representatives on the views and experiences from people who have previously received TAVI. People with aortic stenosis said that AS had an impact on daily life, including experiencing breathlessness and difficulty walking. Overall, they responded positively to the minimally invasive option of TAVI and were

satisfied with the care they received. Patients who had received TAVI felt it improved quality of life, wellbeing and extended their lives.

- Both PPI input and clinical experts emphasised the importance of patient choice. Experts also noted the importance of TAVI as a timely intervention for severe AS, in acknowledgement of the long waiting lists for surgery.
- Clinical experts reinforced the requirement of an integrated disease pathway for aortic stenosis that captures all effective diagnostic and management options. Experts indicated that work in this area was already underway with the Welsh Health Specialised Services Committee.
- Clinical experts suggested that evidence from the key clinical trials does not reflect current practice. One of the experts reported data from patients treated with aortic valve surgery in Cardiff which showed lower mortality and pacemaker rates in comparison to trial data.
- Appraisal Panel agreed that the clinical evidence demonstrated non-inferiority of TAVI compared to SAVR for mortality and disabling stroke, but noted there was uncertainty around the long-term outcomes of TAVI, in particular the increased risk of permanent pacemaker and valve degeneration.
- The Appraisal Panel considered the health economic evidence, most notably the new cost-utility analysis developed by HTW, based on an analysis by SHTG and using data from one of the randomised controlled trials. The Panel accepted the results of the cost-utility analysis and concluded that TAVI was more effective but more costly than SAVR, and that this was driven by the cost of the TAVI valve. The Panel noted that reduction in the cost of the TAVI valves would improve the cost-effectiveness of TAVI.
- Overall, the Panel concluded that the case for cost-effectiveness did not support adoption of TAVI in people with severe symptomatic AS at intermediate surgical risk.
- The Appraisal Panel agreed that the choice between TAVI and SAVR should be undertaken by a multidisciplinary heart team, and should be guided by detailed individualised assessment of risk factors, including age, frailty and other comorbidities. Where both TAVI and SAVR are an option, the multidisciplinary team should include both a cardiac surgeon and cardiologist.
- The Appraisal Panel agreed that patient choice and shared-decision making was an important element when determining treatment for severe symptomatic AS. The panel noted that such discussions should take into account the uncertainty around long-term durability of TAVI valves and the risk of permanent pacemaker.
- Appraisal Panel noted that additional randomised trials were ongoing and welcomed the opportunity to review this topic should additional published data be made available, particularly data that would address the uncertainty around long-term durability of TAVI valves.

Responsibilities for consideration of this Guidance

Health Technology Wales (HTW) was established by Ministerial recommendation[1,2] to support a strategic, national approach to the identification, appraisal and adoption of non-medicine health technologies into health and care settings. The HTW Appraisal Panel comprises senior representation from all Welsh boards with delegated authority to produce guidance 'from NHS Wales, for NHS Wales'. The status of HTW guidance is 'adopt or justify'. There is an expectation from Welsh Government that HTW guidance is implemented with adoption regularly audited by HTW.[3]

The guidance in this document is intended to assist Welsh care system decision makers to make evidence-informed decisions when determining the place of health technologies and thereby improve the quality of care services.

The content of this HTW guidance was based upon the evidence and factors available at the time of publication. An international evidence base was reviewed and external topic experts and HTW committee members consulted to contextualise available evidence to Wales. Readers are asked to consider the generalisability of the evidence reviewed to NHS Wales and that new trials and technologies may have emerged since first publication and the evidence presented may no longer be current. It is acknowledged that evidence constitutes only one of the sources needed for decision making and planning.

This guidance does not override the individual responsibility of health professionals to make decisions in the exercise of their clinical judgment in the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

No part of this guidance may be used without the whole of the guidance being quoted in full. This guidance represents the view of HTW at the date noted. HTW guidance is not routinely updated. It may, however, be considered for review if requested by stakeholders, based upon the availability of new published evidence which is likely to materially change the guidance given.

Standard operating procedures outlining HTWs evidence review methods and framework for producing its guidance are available from the HTW website.

Acknowledgements. HTW would like to thank the individuals and organisations who provided comments on the draft Evidence Appraisal Report or HTW guidance.

Declarations of interest were sought from all reviewers. All contributions from reviewers were considered by HTWs Assessment Group. However, reviewers had no role in authorship or editorial control and the views expressed are those of Health Technology Wales.

Chair, Health Technology Wales Appraisal Panel

1. National Assembly for Wales, Health and Social Care Committee. Access to medical technologies in Wales. December 2014.
2. Response to Recommendations from the Health & Social Care Committee: Inquiry into Access to Medical Technologies in Wales. February 2015.
3. Gething, V. Letter to all Health Board Chairs re Funding for Sacral Nerve Stimulation in Wales. VG_01655_17. September 2017.