# Same-day discharge post TAVI using novel ambulatory ECG monitoring devices

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Transcatheter aortic valve implantation (TAVI) has revolutionised the management of severe aortic stenosis in elderly patients at high or prohibitive surgical risk, by offering a minimally invasive treatment option to patients who previously would have had a terminal diagnosis of severe aortic stenosis.

However, currently due to several factors including backlog created by the COVID-19 pandemic, there are long waiting times across the UK for TAVI procedures, with a major rate-limiting factor being availability of inpatient beds.

All patients undergoing TAVI, regardless of procedural complexity, currently require an inpatient bed to be available for them post-procedure to allow for 24-72 hours of ECG monitoring due to the risk of late electrical conduction disturbances post TAVI, that may necessitate permanent pacemaker (PPM) insertion. Rates of PPM insertion post TAVI vary between 10-24% in the literature. Several procedural factors including choice of valve type and deployment height can affect the rate of PPM insertion.

Unfortunately generalised NHS bed pressures, particularly in the winter months and during the COVID-19 pandemic have meant that a post op recovery bed is often not available. This results in last minute cancellation of procedures, causing considerable risk and distress to the patient and their family. At the Bristol Heart Institute, the average wait time for elective TAVI currently exceeds 8 months. This has resulted in a large number of emergency admissions due to decompensated severe AS, as well as some deaths on the waiting list.

Therefore, we believe there is a need to trial a same-day discharge protocol to reduce the rate of elective TAVI cancellations due to bed unavailability, and thereby shorten our current waiting times. Using real-time remote monitoring devices can help us maintain patient safety.

It is also well recognised that patients prefer the comfort and familiarity of their own home over hospital wards. In particular for the usually elderly cohort of patients who undergo TAVI, minimising hospital length of stay will importantly reduce the risk of falls, infection and delirium that may occur in hospital.

## Objectives

To evaluate the safety and efficacy of a pilot program of same-day discharge in selected low-risk patients post-TAVI

To evaluate novel real-time ambulatory ECG monitoring devices for remote cardiac rhythm monitoring in patients post TAVI

## Patient selection

To maximise patient safety, this pilot program will initially only enrol a highly selective subgroup of TAVI patients. Inclusion criteria will include:

- Procedure completed before 12pm to allow for monitoring for 8 hours post-TAVI
- Uncomplicated procedures including no vascular access-related complications
- No conduction abnormalities during or in 6-8 hours post the TAVI procedure
- Adequate social support for discharge

Enrolled patients will be followed up closely by the TAVI nurses and physiologists through telehealth..

## Ambulatory ECG monitoring devices

Currently in the NHS, there are no ambulatory ECG monitoring systems available that allow long-term real-time remote ECG monitoring. The only available devices involve implantation of devices through a further invasive procedure, which carries its own risks such as infection. Therefore we believe this is unsuitable for our needs.

While there have been a handful of reported results on same-day discharge post-TAVI, few have used real-time ambulatory ECG monitoring. We believe a real-time ambulatory ECG monitoring system is required to maintain safety in a same-day discharge post-TAVI protocol and can provide reassurance to clinicians and patients alike on a daily basis that important rhythm disturbances post-TAVI will not be missed.

## Current project status & future directions

Achievements:

- Funding of £10,000 from the Above & Beyond Charitable Trust at the local trust has been approved.
- The pilot program has been approved by local managers

Challenges:

- Sourcing an appropriate remote monitoring device has been difficult.
- The Zio AT patch which allows remote real-time monitoring and has FDA approval, is unavailable in the UK. We have tried several devices e.g. Cardidata, Zio XT but they have been unsuccessful in meeting our needs. We are currently investigating whether a new subsidiary company of Boston Scientific may have an appropriate device and hope to start this program in the summer.

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