Feasibility and Acceptability of Using Wireless Cardiac Monitoring Before Transcatheter Aortic Valve Implantation (TAVI): A Pilot Study

Lee C.,[1] Hutchinson A.,[1,2] Dick R.,[1] Yudi M.,[1] Proimos G.,[1] Soon K.,[1] Palmer S.,[1] Leary O,.[1] Canon C.,[1] Khaw, D.,[1,2] & Walton, A.[1]

1. Epworth HealthCare
2. Centre for Quality and Patient Safety Research, Deakin-Epworth HealthCare Partnership

Background

- Currently, all transcatheter aortic valve implantation (TAVI) patients treated at Epworth Richmond are admitted the day before their procedure for cardiac monitoring to identify undiagnosed arrhythmias that may increase the risk of requiring a permanent pacemaker. These patients also undergo a routine pre-operative full blood test, chest X-Ray and ECG.
- Use of remote cardiac monitoring devices from the patient's home may increase the efficiency of workflows, reduce bed usage in coronary care, and improve bed capacity, ultimately increasing hospital revenue. However, presently, the use of such devices has been inadequately tested.

Aims of this poster

In this poster we:

1. **Summarise the findings of research investigating the use of remote cardiac monitoring devices,**
2. **Describe our planned directions for investigating the use of remote cardiac monitoring at Epworth HealthCare.**

Review of current literature

Table 1 shows the outcomes of published studies investigating the impact of wearable technology for the detection of postoperative atrial fibrillation (POAF) and other arrhythmias.

Table 1. The CardioScan 'myPatch' monitor

First author (year)	Study findings	Study Interpretation
Bidar (2014)	POAF occurred in 73 (49.3%) patients	N/A
Ha (2021)	AF detection increased by 17.9% within 30 days of hospital discharge compared with usual care. Incidence of AF in the Intent-to-treat analysis: Intervention group 32 patients (19.6%) vs 3 patients (1.7%) in the usual care group (absolute difference, 17.9%; 95% CI, 11.5%-24.3%; $p < .001$).	There was an increase in atrial fibrillation detection within 30 days of the patient being discharged from hospital compared to when an inpatient.
Lamberigts (2020)	17% developed atrial fibrillation 73.9% of participants found the application made them feel safer and reassured after discharging home. 87% of participants recommended the application be used in common practice.	Majority of participants had good satisfaction with the application and confidence when discharging home. Almost all participants would recommend the application became a permanent part of common practice.

Future directions

Pilot study to assess remote cardiac monitoring

We are currently undertaking a pilot study to assess the feasibility and acceptability of wireless cardiac monitoring. This study aims to:

1. *Investigate the feasibility of incorporating the CardioScan 'myPatch' Holter monitor into the current TAVI service model of care,*
2. *Evaluate whether use of the monitor is acceptable to clinicians and consumers at Epworth HealthCare, Richmond.*

Fig 1. The CardioScan 'myPatch' monitor

Methodology of pilot study

A prospective observational study involving:

- 15 participants - Patients with symptomatic severe aortic stenosis, 65 years or older.
- 6 TAVI practitioners and two structural heart nurses will be invited to collaborate in study protocols.
- Patients are presented and accepted in the multidisciplinary team meeting prior to their procedure. Patients will be asked to participate in the study and written informed consent will be sought.

Conclusions

Research in the use of remote cardiac monitoring is currently limited. Our planned pilot study will assist us to determine the viability of incorporating this approach into our model of care at Epworth Richmond. Outcomes of our proposed pilot study will also inform the development of future research to determine whether remotely monitoring patients for cardiac arrhythmias at home improves patient outcomes and leads to better hospital bed access and reduced length of stay.

If the data quality meets the requirements of treating interventional cardiologists, this could potentially eliminate the need for patients to be admitted 24 hours prior to their scheduled TAVI procedure.