



RACP Foundation Research Awards

FINAL REPORT

Project / Program Title	Wireless" fractional flow reserve measurement using computational fluid dynamics analysis during coronary angiography	
Name	Dr Andy Yong	
Award Received	2015 Sir Roy McCaughey Fellowship (Research Establishment)	
Report Date	8 August 2018	
Chief Investigator / Supervisor	Dr Andy Yong	
Administering Institution	ANZAC Research Institute	
Funding Period	Start Date:	1 January 2015
	Finish Date:	31 December 2016

PROJECT SUMMARY

Fractional flow reserve (FFR) is a technique used in the cardiac catheterisation laboratory during coronary angiography to evaluate the significance of coronary narrowings in patients with coronary artery disease. The use of FFR to guide management decisions has been shown to improve outcomes. FFR measurement currently requires the introduction of a coronary guidewire with a pressure sensor into the coronary vessel of interest. The aim of this work is to develop and validate a method to derive FFR using computational analysis of three-dimensional coronary angiography images with novel software. This method will remove the need for a pressure sensor wire.

PROJECT AIMS / OBJECTIVES

SIGNIFICANCE AND OUTCOMES

The traditional method to measure FFR requires using a coronary pressure sensor guidewire. This is disadvantageous because these specialised wires are expensive, and cost approximately \$1200 per wire. Wiring the artery is also associated with a small but significant risk of complications such as causing tearing or perforations of the blood vessels of the heart. The method developed from this research project will therefore save cost, and make FFR assessment

safer and more accessible. It will also likely aid in providing better treatment to patients with coronary disease.

PUBLICATIONS / PRESENTATIONS

Abstract publications:

1. Wong et al. Comparison of a novel "wireless" fractional flow reserve technique versus three-dimensional quantitative coronary angiography to predict functionally significant coronary stenoses. Transcatheter Cardiovascular Therapeutics 2018.

2. Wong et al. Validation of a novel method to calculate fractional flow reserve without the pressure sensor wire. Cardiac Society of Australia and New Zealand 2018.

We are currently about to submit the first paper to be considered for publication.