



RACP Foundation Research Awards

PROGRESS REPORT

Project / Program Title		Ventricular Tachycardia: From Mechanisms to Therapies
Name		Dr Robert Anderson
Award Received		2018 RACP NHMRC Woolcock Scholarship
Report Date		14 February 2019
Chief Investigator / Supervisor		Supervisor: Dr Geoffrey Lee; Co-supervisors: Professor Jonathan Kalman, A/Prof Saurabh Kumar
Administering Institution		The Royal Melbourne Hospital
Funding Period	Start Date:	1 January 2018
	Finish Date:	31 December 2020

PROJECT SUMMARY

Ventricular tachycardia (VT) is a complex and serious rhythm disorder of the heart. This project will explore the mechanisms and treatments of VT: studies will review and summarise the different types and provide insight into the epidemiology in the treatments for this condition. Our research will also perform basic science studies aiming to improve how we diagnose VT and contribute to our understanding of the mechanisms responsible for the high incidence in recurrence following conventional treatments.

PROJECT AIMS / OBJECTIVES

1. Provide an overview of the common types of VT and treatment techniques and strategies
2. Understand temporal trends in the use of catheter ablation in Australia
3. Improvements in the diagnosis of idiopathic VT originating from the outflow tracts
4. Understand the mechanisms of scar-related VT using a new novel mapping technique
5. Explore the co-existence of focal and re-entrant VTs in patients with myocardial scar and structural heart disease

SIGNIFICANCE AND OUTCOMES

This thesis will explore multiple areas of interest in the field of VT. It is anticipated that studies from this thesis will improve our understanding of VT mechanisms, evaluation and diagnosis of specific VT sub-types leading to better long-term outcomes for patients undergoing treatment with ablation for this condition.

PUBLICATIONS / PRESENTATIONS

Anderson RD, Kumar S, Kalman JM, Sanders P, Sacher F, Hocini M, Jais P, Haisaguerre M, Lee G. Catheter Ablation of Ventricular Fibrillation. *Heart Lung Circ.* 2019 Jan;28(1):110-122. doi: 10.1016/j.hlc.2018.09.005.

Anderson RD, Lee G, Virk S, Bennett R, Hayward C, Muthiah K, Kalman J, Kumar S. Catheter Ablation of Ventricular Tachycardia in Patients with a Ventricular Assist Device - A Systematic Review of Procedural Characteristics and Outcomes. *JACC Clin Electrophysiol.* 2019 Jan;5(1):39- 51. doi: 10.1016/j.jacep.2018.08.009.

Anderson RD, Ada C, Lee G, Kalman JM, Vohra JK, Kumar S. Incessant Idiopathic Ventricular Fibrillation Trigger Originating From an Unusual Intramyocardial (Non-Purkinje) Site Successfully Treat With Catheter Ablation. *JACC Clin Electrophysiol.* In Press November 2018.

Anderson RD, Ariyaratna N, Lee G, Virk S, Chow C, Kalman JM, Kumar S. Catheter Ablation versus Medical Therapy for Treatment of Ventricular Tachycardia associated with Structural Heart Disease: Systematic Review and Meta-analysis of Randomised Controlled Trials and Comparison with Observational Studies. Accepted abstract (poster presentation) at EHRA, Lisbon, Portugal 17-19 March, 2019

Anderson RD, Lee ZG, Prabhu, M, Patrick C, Trivic I, Chow C, Kalman JM, Kumar S. Ten Year Trends in the Use of Catheter Ablation for the Treatment of Ventricular Tachycardia Versus Other Interventional Cardiovascular Procedures in Australia. Accepted abstract (poster presentation) at EHRA, Lisbon Portugal 17-19 March 2019

Moore BM, Anderson RD, Nisbet AM, Kalla M, du Plessis K, d'Udekem Y, Bullock A, Cordina RL, Grigg L, Celermajer OS, Kalman J, McGuire MA Ablation of Atrial Arrhythmias After the Atriopulmonary Fontan Procedure: Mechanisms of Arrhythmia and Outcomes. *JACC Clin Electrophysiol.* 2018 Oct;4(10):1338-1346. doi: 10.1016/j.jacep. 2018.08.012.

Anderson RD, Prabhu M, Kalman JM, Vohra JK, Morton JB, Stevenson I. Intra-Hisian Wenkebach Phenomenon During His Bundle Pacing. *JACC Clin Electrophysiol.* In Press (accepted January 2019)

Prabhu MA, Wong GR, Anderson RD, Kalman JM. A narrow QRS tachycardia with a changing rate: What is the mechanism(s)? *Pacing Clin Electrophysiol.* 2018 Jun 4. doi: 10.1111/pace.13406.

Prabhu MA, Anderson RD, Sparks PB. Supraventricular tachycardia with abrupt onset and termination: What is the mechanism? *J Cardiovasc Electrophysiol.* 2018 Nov;29(11):1584-1587. doi: 10.1111/jce.13672.