



RACP Foundation Research Awards

YEAR 1 PROGRESS REPORT

Project / Program Title	Preservation of lung function in adults with obstructive airways diseases: the role of early detection and adequate treatment	
Name	Dr Daniel J Tan	
Award Received	2019 RACP NHMRC Woolcock Scholarship	
Report Date	13 February 2020	
Chief Investigator / Supervisor	Professor Shyamali Dharmage	
Administering Institution	University of Melbourne	
Funding Period	Start Date:	4 February 2019
	Finish Date:	4 February 2022

PROJECT SUMMARY

Asthma is one of the most common chronic diseases worldwide and is now recognised to have long-term effects on lung health. These effects include accelerated lung function decline and an increased risk of developing fixed airflow obstruction - a feature more commonly seen in smoking-related airways disease. Because these complications can take years-to-decades to develop, our understanding of this complex relationship is limited.

My research aims to explore the link between lifetime asthma and lung health from childhood to middle-age. My work will identify and examine strategies which might prevent / reduce these adverse effects, and will evaluate novel methods of detecting these complications earlier in the disease process.

PROJECT AIMS / OBJECTIVES

1. To characterise the natural history of asthma over the lifespan and its effect on lung function into middle-age
2. To evaluate the impact pharmacological and non-pharmacological asthma management on lung function decline and risk of fixed airflow obstruction
3. To evaluate novel spirometry-based methods of detecting small airways disease earlier in the disease process

These objectives are being achieved by using data from the world's largest and longest-running population-based study of respiratory diseases, the Tasmanian Longitudinal Health Study (TAHS).

SIGNIFICANCE AND OUTCOMES

- In our systematic review, we showed that inhaled corticosteroids have age-dependent effects on lung function in asthma, with a protective effect observed in adults but not in children.
- In our biomarker study, we showed that adults with remitted asthma who have abnormal profiles of systemic and airway inflammation are at increased risk of adverse lung function outcomes
- In our BDR study, we provided new evidence on the discriminatory accuracy of BDR testing in adult asthma, identifying a number of important limitations to its use in clinical practice

PUBLICATIONS / PRESENTATIONS

Conference Abstracts:

- **Tan DJ**, Bui DS, Dai X et al. 'Inhaled corticosteroids in asthma and longitudinal change in lung function: a systematic review and meta-analysis' European Respiratory Society Congress, 2019 (Madrid, Spain)
- **Tan DJ**, Lodge CJ, Lowe AJ et al. 'Bronchodilator reversibility as a diagnostic test for adult asthma: findings from the Tasmanian Longitudinal Health Study' Thoracic Society of Australia and New Zealand ASM, 2020 (Melbourne, Australia)
- **Tan DJ**, Lodge CJ, Lowe AJ et al. 'Biomarkers of asthma relapse and lung function decline in adults with remitted asthma: a population-based cohort study' Thoracic Society of Australia and New Zealand ASM, 2020 (Melbourne, Australia)
- Perret JL, Vinendese D, .. **Tan DJ** et al. 'Predicting post-bronchodilator airflow obstruction in middle-age: development of a comprehensive risk prediction model' Thoracic Society of Australia and New Zealand ASM, 2020 (Melbourne, Australia)

Manuscripts:

- **Tan DJ**, Bui DS, Dai X et al. 'Does the use of inhaled corticosteroids in asthma benefit lung function in the long-term? a systematic review and meta-analysis' (under review)
- **Tan DJ**, Lodge CJ, Lowe AJ et al. 'Bronchodilator reversibility as a diagnostic test for adult asthma: findings from the Tasmanian Longitudinal Health Study' (under review)

ACKNOWLEDGEMENTS

Award acknowledged in all above abstracts / manuscripts