



## RACP Foundation Research Awards

### FINAL REPORT

<b>Project / Program Title</b>	First seizure assessment and management	
<b>Name</b>	Dr Emma Foster	
<b>Award Received</b>	2018 Vincent Fairfax Family Foundation Research Entry Scholarship	
<b>Report Date</b>	20 March 2019	
<b>Chief Investigator / Supervisor</b>	Professor Patrick Kwan	
<b>Administering Institution</b>	Monash University	
<b>Funding Period</b>	Start Date:	5 February 2018
	Finish Date:	11 February 2019

#### PROJECT SUMMARY

Seizures are a common neurological problem, with almost 10% of people having at least one seizure in their lifetime, and over 14,000 Australians experiencing a first ever unprovoked seizure each year. Despite this large burden, very few studies have systematically explored the true impact of first seizures, both with regards to morbidity and mortality, and with regards to associated costs to individuals, caregivers and society. The RACP Foundation Research Award provided funding for two scoping review papers that explored these areas, and these have been published in international, peer-reviewed journals which underscores the importance of research in this area. In addition, we examined the management of first seizures at a large metropolitan hospital and described differences in patient and clinical characteristics between people presenting with first seizures from the community, and those whose first seizures occurred while in hospital. These data have been published in an international, peer-reviewed journal and also were featured in an American Academy of Neurology podcast, highlighting the novelty and clinical significance of these findings.

#### PROJECT AIMS / OBJECTIVES

Aim 1: A review of the current literature with regards to the impact of first seizures on patients, families and our community, in terms of morbidity, mortality and costs.

Aim 2: Determination of the current management of patients presenting with a first diagnosed seizure to a large metropolitan hospital, as well as differences in patient and clinical characteristics between those presenting from the community with a first seizure compared to those whose first seizures occurred while hospitalised for a non-seizure related diagnosis.

## SIGNIFICANCE AND OUTCOMES

- 1) Morbidity and mortality associated with first seizures review paper: This article reviews the impact and implications of first seizures beyond the scope provided in current guidelines which tend to focus on assessment and management. It examines the effect of first seizures on the wellbeing of patients; assesses morbidity and premature mortality in first seizure; and discusses current and future directions to optimise safety and health of people with first seizures, with a focus on adult patients. Recognition of these issues is essential to provide adequate care for people with first seizures.
- 2) Costs associated with first seizures review paper: We reviewed the literature with regards to the costs of first ever seizures, newly diagnosed epilepsy and established epilepsy; described the various ways in which first ever seizures cost patients, families and our healthcare system; and recommend directions and strategies for future research. Additionally, we consider the importance of capturing the effect of first ever seizures on quality of life, as assessed through patient reported outcome measures. We emphasised that future research in this area is essential, as healthcare systems operate within limited resources and detailed information on the economic burden of disease and cost effectiveness of interventions are necessary for health budget planning and providing optimal care.
- 3) Retrospective review of first seizure presentations to a large metropolitan hospital: Our findings revealed that hospitalised, elderly patients are at an increased risk of provoked seizures, and caution should be exercised when prescribing potential proconvulsant medications and procedures. A more standardized approach to antiepileptic drug prescribing is needed. Further, we recommend that future studies should consider morbidity, mortality, and health economic effects of first seizures and assess optimal management to improve outcomes in this cohort.

## PUBLICATIONS / PRESENTATIONS

1. Foster E, Carney P, Liew D, Ademi Z, O'Brien TJ, Kwan P. First seizure presentations in adults: beyond assessment and treatment. JNNP 2019; <http://dx.doi.org/10.1136/jnnp-2018-320215>.
2. Foster E, Ademi Z, Lawn N, Chen Z, Carney P, Liew D, O'Brien T, Kwan P. Determining the cost of first ever seizures: a narrative review and future directions. *Epilepsy & Behavior* 2019;90:291-4.
3. Foster E, Holper S, Chen Z, Kwan P. Presentation and management of community-onset vs hospital-onset first seizures. *Neurology: Clinical Practice* 2018;8(5)1-8.
4. Foster E, Holper S, Kwan P. First seizures in emergency department vs ward: study in an elderly population. *J Neurol Neurosurg Psychiatry* 2018;89:A30.
5. Holper S, Foster E, Kwan P. First come, first served: a comparison of first-ever seizure patients and those presenting after recurrent-untreated seizures. *J Neurol Neurosurg Psychiatry* 2018;89:A42-A43.
6. Foster E. *Neurology: Clinical Practice: Presentation and management of community onset vs hospital onset first seizures. Neurology @ Podcast. Published Oct 8, 2018. Available from: <https://www.aan.com/rss/?event=feed&channel=1>*
7. Foster E. First seizures in the community vs hospitalised populations. *Epilepsy @ MBC 2018, Melbourne. Mar 28.*
8. Foster E, Holper S, Chen Z, Kwan P. Presentation and management of community onset versus hospital onset first seizures. *Epilepsy Society of Australia Annual Scientific Meeting 2018, Brisbane. Oct 31-Nov 2.*

9. Holper S, Foster E, Chen Z, Kwan P. Differentiating between the first seizure and recurrent undiagnosed epilepsy. Epilepsy Society of Australia Annual Scientific Meeting 2018, Brisbane. Oct 31-Nov 2.

10. Foster E, Holper S, Chen Z, Kwan P. First seizures in the community vs hospitalised populations. AMREP Research week 2018, Melbourne. Jun 18-22

11. Foster E, Holper S, Chen Z, Kwan P. First seizures in the community vs hospitalised populations. MH Research Week 2018, The Royal Melbourne Hospital, Melbourne. Jun 21-28.

12. Holper S, Foster E, Kwan P. First come, first served? A comparison of new-onset vs newly-diagnosed seizure care. MH Research Week 2018, The Royal Melbourne Hospital, Melbourne. June 21-28

13. Foster E, Holper S, Chen Z, Kwan P. First seizures in the community vs hospitalised populations. Australian and New Zealand Association of Neurologists Annual Meeting 2018, Darwin. May 29-Jun 2.

14. Holper S, Foster E, Kwan P. First come, first served? A comparison of new-onset vs newly-diagnosed seizure cases. Australian and New Zealand Association of Neurologists Annual Meeting 2018, Darwin. May 29-Jun 2.

15. Holper S, Foster E, Kwan P. First come, first served? A comparison of new-onset vs newly-diagnosed seizure cases. Epilepsy @ MBC 2018, Melbourne. Mar 28-29.