

2015/2016 Summer Studentship Project Application Form

Send to: Research Office, University of Otago Christchurch, PO Box 4345, Christchurch, by 5pm on **3 July 2015**

Supervisor Information (First named supervisor will be the contact):

Supervisor's Name and Title(s): Dr Hamish Jamieson

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Research Category (Choose one category only – to be used for judging the students' presentations):

Clinical

Laboratory

Community COMMUNITY

Project Title (20 words MAXIMUM):

Pilot study – developing a frailty scale from the interRAI

Project Description:

Research team: Dr Hamish Jamieson (OUC), Prof Philip Schluter (UC), Prof Jennifer Brown (UC), Prof Tim David (UC), Dr Val Fletcher (CDHB), Dr Nigel Millar (CDHB)

Introduction:

To address the challenge of the ageing population, the Minister of Health has mandated a comprehensive standardised Older Persons assessment for all older people requiring assistance. The 236 item questionnaire is known as the international Residential Assessment Instrument (interRAI). As of 12th December 2014, a total of 60,145 standardised community assessments of Older People had been performed in New Zealand. This is anticipated to increase by a further 46,000 assessments per year. This pilot study examines this database with the aim of deriving a frailty scale

A measurement of frailty status for older inpatients may help target their care more appropriately. Frailty has, to date, proven challenging to quantify in clinical practice. Many patients are unable to complete the performance based tests integral to some frailty measures; the Frailty Index approach has been criticised as complex and time-consuming. Integration of frailty quantification into an existing standardised National Older Persons Assessment, which serves other clinical and administrative purposes, could optimise clinical utility and minimise costs, without losing fidelity. Our ability to achieve this, and to ensure that it is of value to health professionals, is the essence of this proposal.

A Frailty Index can be derived from a Comprehensive Geriatric Assessment is used in geriatric medicine to capture relevant information about the health and function of an older person. It is the essential tool for health professionals when managing complex patients. It facilitates accurate diagnosis, holistic management and effective communication within the multi-disciplinary team. The community interRAI collects data on function, co-morbidities and cognitive/ psychological status; all this can be coded as deficits so as to derive a Frailty Index score. In community-dwelling participants of the Canadian Study of Health and Ageing, the frailty index score was a valid and reliable means of quantifying health status, stratifying patients' risk of institutionalisation and death. In this proposal we plan to analyse the New Zealand interRAI data and associated medium term follow up to derive a frailty index.

Aim:

To derive a frailty index from the interRAI homecare data

Method:

Ethics permission has been obtained for this study. The dataset includes 60,145 interRAI 9.1 Homecare assessments completed. The interRAI homecare screens a large number of domains. Previous work among community-dwellers suggests that variables can be considered as deficits and contribute to the frailty index if they accumulate with age, are associated with adverse outcomes, cross a range of systems and are not ubiquitous (1).

However, the selection and coding of deficits has not yet been undertaken systematically in the interRAI homecare assessment, and this pilot study aims to address these important gaps in methodological knowledge. The face validity and discriminatory utility of cut-offs for deficits will be determined by repeated analysis of each deficit. The process will be more complex for some questions than for others. For example, mobility is recorded on an ordinal scale from 0 to 8. Cut-offs for 0/0.5/1 deficits will depend on the distribution of the data. The optimal number of deficits contributing to the interRAI home care frailty index will also be explored. The interRAI homecare comprises more the 60 potential deficits but an index with 30-40 variables may be sufficiently accurate for predicting adverse outcomes. A frailty index score will be calculated for each patient by adding their deficits and dividing this number by the total considered.

The construct validity of the frailty index will be investigated by exploring its association with adverse outcomes.

The mean value of the frailty index will be related to adverse outcomes (recurrent hospital admissions, admission to residential care and mortality); then stratified by sex. Kruskal-Wallis ANOVA will be used to analyse the relationships between the frailty index and discharge destination. For individual risk analysis, we will apply multivariate logistic regression for each outcome with the frailty index as an independent variable, adjusted for age and sex. In Received Operation Characteristic (ROC) analysis, the area under the ROC curve will be used to characterize the predictive ability of the multivariate model. In addition, survival analysis will be carried out (Kaplan-Meier survival analysis and multivariate Cox regression) after checking for the assumption of proportionality of the hazards.

References:

1. Searle S.D. (2008): A standard procedure for creating a frailty index. *BMC Geriatr* 8:24.

Student Prerequisites (eg. Medical Student) if applicable:

None