



MERCERS INSTITUTE for RESEARCH on AGEING



New Mercer's Institute for Successful Ageing building

Annual Report
2014



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MIRA Personnel

Steering Committee Members

Prof Davis Coakley (Chairman)
Prof J Bernard Walsh (Director)
Prof Rose Anne Kenny
Prof Brian Lawlor
Prof Jim Malone
Dr Conal Cunningham
Dr Miriam Casey
Prof Joseph Harbison
Dr Elaine Greene
Dr David Robinson
Mr Paul Gallagher
Ms Carol Murphy (Administrator)

Watt's Clinical Research Fellow

Dr Avril O'Beirne

Memory Clinic Research Fellows

Dr Aíne Ní Mhaolain
Dr Eileen Sweeney

Lecturer

Dr Bláithín Ní Bhuacalla

Falls and Osteoporosis Unit Clinical Research Fellows

Dr James Mahon
Dr Rosaleen Lannon
Dr Najia Siddique

Clinical Neuropsychologists

Dr Robert Coen
Dr Marie McCarthy

Clinical Nurse Manager

Ms Irene Bruce

Senior Social Worker

Mr Matthew Gibb

Biostatistician

Prof Cathal D. Walsh

IT Consultant and Technology Adviser

Mr Vincent Quinn

Falls and Osteoporosis Clinical Nurse Specialists

Ms Niamh Maher	Ms Kara Fitzgerald
Ms Nessa Fallon	Ms Georgina Steen
Ms Kara Fitzgerald	Ms Dympna Hade
Ms Lisa Byrne	Ms Ciara Rice

Ms Patricia Hall	Ms Ona McGoey
Ms Aoife Dillon	

Senior Radiographer

Ms Claire Leo

Medical Physics and Bio-Engineering

Dr Gerard Boyle	Dr Christopher Soraghan	Ms Emer Kenny
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The Irish Longitudinal Study of Ageing (TILDA)

Project Team:

Prof Rose Anne Kenny, Lead Principal Investigator

Dr Anne Nolan, Research Director

Dr Orna Donoghue, Project Manager

Ms Lliana D'Emidio, Finance & HR Manager

Ms Margaret Foley, Data Manager

Dr Hilary Cronin, Medical Director

Dr Ann Hever, Research & Development Manager

Dr Hugh Nolan, Biomechanical Engineer

Dr Belinda King-Kallimanis, Epidemiologist

Dr Christine McGarrigle, Social Epidemiologist

Dr Cathal McCrory, Social Epidemiologist

Dr Siobhan Leahy, Health Researcher

Research Fellows:

Dr Aisling O'Halloran	Dr Yuanyuan Ma	Dr Catriona Murphy
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Dr Celia O'Hare	Dr Irene Mosca	Dr Patrick Moore
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Dr Matthew O'Connell

Executive Officers:

Ms Jacinta O'Grady	Ms Pauline Walsh	Ms Gemma Kelly
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Academic PA to Professor RA Kenny

Ms Deirdre O'Connor

Research Nurses Managers:

Ms Laura Dunne	Ms Lorna Greene
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Research Assistants/Research Nurses:

Ms Nollaig Baker	Ms Caroline Cullen	Ms Emily Egan
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Ms Laura Freeman	Mr John Lynders	Ms Sophie Martin
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Ms Roisin Nevin	Ms Mary O'Shea	Ms Aoife Pearson
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Ms Anne Powell	Ms Claire Reilly	Ms Judy Sweeney
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Technical Officer:

Ms Ruth Dooley

HRB Translational Study Team

Prof Michael Rowan, Department of Pharmacology TCD

Dr Christian Kerskens, Research Fellow

Ms Sheila Dillon, Clinical Research Nurse

Ms Catherine Brien, Executive Officer

The Trinity, University of Ulster and Department of Agriculture Study (TUDA)

Project Team:

Principal Investigators: Dr Conal Cunningham, Dr Miriam Casey, Prof JB Walsh,

Prof Anne Molloy

Research Fellow: Dr Kevin McCarroll, Dr Rosaleen Lannon

BIOMARKAPD Study

Principal Investigator: Prof Brian Lawlor

Scientific Project Manager: Dr Ann Marie Miller

Study Clinician: Dr Sarah O'Dwyer

Research Assistant: Mr Garret Rochford

NILVAD Study

Principle Investigator: Prof Brian Lawlor

Scientific Project Manager: Ms Fiona Cregg

Study Clinician: Dr Sarah O'Dwyer/Dr Fiona Campbell

Study Nurse: Ms Lisa Crosby

Project Assistant: Ms Sinead Larkin

Enhancing Care in Alzheimer's Disease Study (The ECAD Study)

Dr Avril O'Beirne

Adjunctive Protein Supplementation in Osteoporotic Patients**Treated with Recombinant Parathyroid Hormone**

Principal Investigator: Dr Miriam Casey

Research Fellow: Dr Najia Siddique

Clinical Nutritionist: Ms Caoimhe McDonald,

Secretaries

Ms Deirdre Cummins

Ms Martha Gavin

Ms Rachael Farley

Ms Nicola Doherty

Ms Lisa Masterson

Ms Claire Dooley

Past Personnel

(Whose published work was carried out while working in the Mercer's Institute for Research on Ageing details of which appear in this year's annual report or in recent reports produced by the Mercer's Institute)

Research Registrars

Dr C Connolly
Dr A Denihan
Dr R Doyle
Dr A Eustace
Dr C Fallon
Dr R Mulcahy
Dr M Kirby
Dr H Lee
Dr A Lynch
Dr C Maguire
Dr M Moran
Dr D Gallagher
Dr R Romero-Ortuno
Dr L Cogan
Dr S. Ni Bhrian
Dr H O'Connell
Dr D O'Mahony
Dr G Swanwick
Dr D Hennelly
Dr H Cronin
Dr T Coughlan
Dr S. Kennelly
Dr D Robinson
Dr C O'Luanaigh
Dr N Collins
Dr S Squires
Dr G Choon Chan
Dr C O'Dwyer
Dr J Browne

Research Psychologists

Dr A Blanco
Ms B Cullen
Mr N Kidd
Ms S O' Doherty
Ms E Palombella
Ms L Carolan
Mr I Evans
Ms F Hamilton
Ms E Tehee
Ms S Callinan
Ms D Finnegan

Medical Social Worker

Ms M Headon

PhD Student

Ms M O'Reilly

Senior Radiographer

Ms Eilish McDermott
Ms Zsofia Toth

Physiotherapist

Ms M O'Sullivan

Social Scientist

Ms C Somerville

Medical Physics & Bio Engineering Research Assistants

Dr M Al-Kalbani
Ms V Buckley
Ms B O'Dea
Mr C Wynne

Watt's Fellow:

Dr David Robinson
Dr. Kevin McCarroll
Dr Avril Beirne

Research Nurses:

Ms Helen Toohey,

Ms Sinead McNiffe

Introduction

The Mercer's Institute had a very successful year in 2014.

We saw the first sod turned on our new **MISA Building** by Minister Kathleen Lynch and as can be seen from the photos on the cover and below, the building is well underway and is due for completion at the end of 2015.



Minister of State, Dept of Health, Kathleen Lynch at the cutting of the first sod



The new development will provide facilities and resources unequalled internationally on any other major teaching hospital campus. It will include “State of the Art” diagnostic, treatment, educational and research facilities for care of the older person. It’s ambulatory diagnostic and treatment units will include Fall and Blackouts, Bone Health and Osteoporosis, Memory and Brain Health, Stroke and Cerebrovascular disease.

Inpatient facilities will include acute assessment, rehabilitation and stroke wards. Research and Educational facilities will be extensive and will continue to focus on clinical research with the principle objective of optimising best care for the vulnerable and sick older person.

The Mercer Institute for Successful Ageing (MISA) development is well underway with the four storey structure completed on the research block. The external envelope; windows, stone cladding and external doors are currently being fitted bringing the building shape and appearance very visible within the St James Hospital campus.

The construction development team are working intensively to deliver the project on schedule with the out patient and ward block quickly rising up into the skyline. The stair and lift cores are now at level five of the seven storeys main block. The ward floors are also now taking shape among the forest of scaffold, temporary formwork and shuttering and serviced by two 120m high cranes.

Currently, the internal finishes are being selected with care and consideration of the regulatory requirements for buildings for elderly, persons with dementia, stroke and those requiring rehabilitation. This process has great importance as it creates the safe, healthy environment for the care and treatment of our patients, providing and encouraging dignity and independent living to achieve a successful ageing population.

The research, technology and training block of this development which is directly connected to the clinical and ward accommodation will provide a central location to further develop the speciality and innovative technological research for a varieties of areas such as Memory, Neurology, Bone and Syncope. The research and clinical ward areas are connected by way of an entrance reception Atrium with a bespoke designed art wall commission.

The MISA development is also one of the significant developments which have begun the change in planning in St James Hospital to open south access to the hospital from the linear park in the future. The new development will provide southern aspect and relate to the community requirements to remove physical boundaries between the local community and the hospital campus.

Our research and educational output continues to be very rewarding with many postgraduate students working in the different units on their MD's and PhD's.

Deirdre Robertson successfully completed her PhD "The Influence of Perceptions of Ageing on Objective Physical and Cognitive Outcomes" Supervised by Prof. Rose Anne Kenny and completed a weekly placement as an Assistant Psychologist with Dr. Coen in MIRA from Oct 2013 to May 2014.

Dr Kevin McCarroll graduated with a Doctorate in Medicine from Trinity College, Dublin in Nov 2014 based on a comprehensive study which examined the relationship between vitamin D and cognition, blood pressure, falls and mood in participants of TUDA. "Vitamin D in Older Adults and Its Relationship to Cognition, Blood Pressure, Mood and Falls" found a positive association between higher vitamin D status and cognitive performance and mood in a subset of "younger" older adults.

Arising from the above thesis there was also the largest study to date to examine the prevalence of vitamin D deficiency and its determinants in older and frail Irish adults, and which is now in the final stages of journal peer review.

Dr Najia Siddique also successfully submitted her MD to TCD during the year. Dr Siddique's thesis was titled "*Treatment of Osteoporosis with Recombinant Parathyroid Hormone, its Effect on Bone, Total Body Muscle and Fat Composition and Factors Determining Response to this Therapy*"



Niamh Maher Clinical Nurse Specialist in Bone Health showed remarkable dedication and commitment by successfully completing and being awarded her PhD by Trinity College while being fully active in her clinical role in our bone health and osteoporosis unit. Her thesis was titled

“Post Hip Fracture in Older Adults: interventions and strategies for improving outcomes. The role and function of the Clinical Nurse Specialist and Bone Health Unit in the Management of Hip Fracture Patients”.



This study highlights the devastating effect hip fracture can have on the life of an older person. The results of this study highlighted that an early review of hip fracture patients by the clinical nurse specialist with onward referral to a consultant led bone clinic can improve outcomes for elderly hip fracture patients.

Michelle Sybring successfully completed an MSc in Bioengineering under the supervision of Dr. Ciarán Finucane with co-supervisors Prof. Rose Anne Kenny and Dr. Hugh Nolan. This project builds on previous work in developing a novel community based screening test for vasovagal syncope suitable for younger and older adults. Two journal papers and an invention disclosure have been submitted as part of this project to date.

Dr Avril Beirne, our Watt's Fellow was awarded a Presidential Medal for her work on advanced PET imaging in Patients with Neurodegeneration and Dementia at the recent Irish Gerontological Annual Scientific meeting in Galway. Since 2010, over 180 PET Brain scans have been performed in St James's Hospital in the evaluation of cognitive conditions where neurodegeneration is suspected. PET Scans performed were reviewed to evaluate the utility of PET scans in clinical practice and the concordance rate between initial clinical diagnosis and PET scans. The concordance rate between PET and initial clinical diagnosis was 70 % (126/181). There was a change in diagnosis based on PET result in 10 % of cases. Thus PET scans are a helpful tool in evaluating cognitive disorders and can impact significantly on clinical diagnosis.



Prof J Bernard Walsh
President of the Irish
Gerontological society
presenting a Presidential Medal
to the Watt's Fellow Dr Avril
Beirne.

Prof Cathal Walsh, who has contributed hugely to MIRA research over the last 19 years as statistical advisor to the Mercer's Institute was recently appointed to the Full Chair in Statistics in the University of Limerick. His research interests include Bayesian modelling, evidence synthesis, disease and epidemic models, and biomedical statistics. He has published over 100 journal publications in these areas.

Cathal Walsh is also a HRB Research Leader in Health Decision Science. He contributes to the statistical societies in the UK and Ireland and is currently a member of the Council and Theme Director for the Royal Statistical Society. He is a Statistical Editor for the Cochrane Collaboration and has served as Associate Editor for statistics journals. He is an advisor to the National Centre for Pharmacoeconomics on statistical methodology for Health Technology Assessment and on the Scientific Advisory group for HTA for the Health Information and Quality Authority. He is a Fellow of Trinity College Dublin and he will continue his work with MIRA and TILDA. We wish to congratulate Cathal on his great achievement and we wish him every success in his new post.



Royal Irish Academy Membership

Professor Rose Anne Kenny was recently admitted as a member to the Royal Irish Academy. Royal Irish Academy membership is keenly competed for as the highest academic honour in Ireland. Membership of the Royal Irish Academy continues a 229 year Academy tradition of public recognition of outstanding academic achievement. Those elected are entitled to use the designation 'MRIA' after their name.



“When the Royal Irish Academy elects members, it does so, on the basis of a candidate’s publications and research record – the sole criterion is quality. This research may help in the treatment of disease, or it may enhance our understanding of a past civilisation. Members of the Academy should not shirk from their responsibility to tell people that basic research is important and that government support for fundamental research is a hallmark of a civilised society”, stated President of the Royal Irish Academy, Professor Mary E. Daly at the ceremony during which Professor Kenny was admitted.

TILDA (led by Prof Rose Anne Kenny) is a large-scale nationally representative study of over 8,500 people aged 50 and over, and is one of the most ambitious studies on ageing ever carried out in Ireland. TILDA, through its extensive database of the health, social and economic characteristics of older persons in Ireland, is establishing a comprehensive and accurate picture of the ageing process, including prevalence and incidence of disease; physical, mental, cognitive, behavioural and biological health, the socio-economic determinants of health and wellbeing and the underlying genetic factors that influence or are influenced by this process.

TILDA is now recognised internationally as the gold standard for longitudinal studies on ageing and plays a significant leadership role advising developing studies worldwide. TILDA is one of the leading international producers of research in this area. TILDA research has provided important evidence on the current pension provision of the over 50s in Ireland. TILDA research has demonstrated that approximately 50 per cent of current retirees have supplementary pensions (i.e., occupational or private)- over a third of current retirees have an income replacement rate of less than 50 per cent. These findings have directly influenced the recommendations made by the OECD in their major review of Irish pension policy. The resulting policy options put forward by the OECD to expand private pensions coverage and retirement savings which were partly based on TILDA research are informing the development of the proposed universal supplementary pension saving scheme.

Recruitment for the **NILVAD** study in MIRA has been very successful. This is a European Multicentre Double-Blind placebo controlled trial of Nilvadipine in Mild to Moderate Alzheimer's disease.

NILVAD is an investigator led trial investigating the efficacy of Nilvadipine to treat mild to moderate Alzheimer's disease. The trial is funded by the Framework 7 Programme and is being coordinated in MIRA. St James's Hospital is the sponsor for the trial. The Phase 3 trial will perform a double-blind, placebo controlled study to test the efficacy and safety of Nilvadipine in 500 subjects with mild to moderate Alzheimer's disease over a treatment period of 18 months.

The trial which commenced in January 2012 is being conducted in 23 study sites in 9 EU countries and will close to recruitment on the 31st March 2015. The **NILVAD** Project Office is based in MIRA and the work is being led by Prof. Brian Lawlor who is the European lead and principal investigator in the study.

BIOMARKAPD Ireland Project is led by Prof Brian Lawlor and started in June 2012 and runs for 43 months ending in Dec 2015. The core project is a pilot study which focuses on the utility of cerebrospinal fluid (CSF) and blood biomarkers in the delineation of the aetiopathology of cognitive impairment and in the prediction of conversion of mild cognitive impairment to dementia. To achieve this patients will be followed longitudinally over 3 years with CSF and blood samples and neuropsychological data being collected each year.

Our **Bone Health and Osteoporosis** unit continues to provide an every increasing service to the local population for the ongoing treatment of osteoporosis and the follow up of all patients who present with peripheral fractures due to osteoporosis. 3599 patients were seen in bone health clinics in 2014 and 3643 DXA's were carried out making a total of 7242 patient visits in all. The unit also participated in international studies on PTH and Romosozumab both of which increase bone formation and bone density in patients with osteoporosis.

The **Local Asset Mapping Project (LAMP)** expanded its scope in 2014, mapping the wider St James' catchment to include every business, service or amenity in the districts of Ballyfermot, Crumlin, South Circular Road and Drimnagh. In total over 3,400 assets were recorded and classified for their potential benefits to health.

MISA Annual Lecture 2014 - Presented by Professor Ian Robertson

"The five horsemen of Cognitive Reserve – How environments delay dementia"

Ian Robertson holds the Chair in of Psychology at Trinity College Dublin and was previously a Fellow at Hughes Hall, Cambridge. He has visiting professorships at UCL and was a Visiting Professorial Chair of Columbia University New York. He was the founding director of Trinity College Institute of Neuroscience and is Co-Director of the Neuroenhancement for Independent Lives (NEIL) Programme. His research on the brain's attention systems has led to new ways of measuring how humans pay or fail to pay attention.

He has also developed new therapeutic methods which have improved cognitive function in people with attention difficulties and he has applied these studies in recent years to the challenges of cognitive ageing and in the search for methods to delay dementia.



L-R Prof RA Kenny, Prof Ian Robertson, Dr J Cooney



Professor Ian Robertson

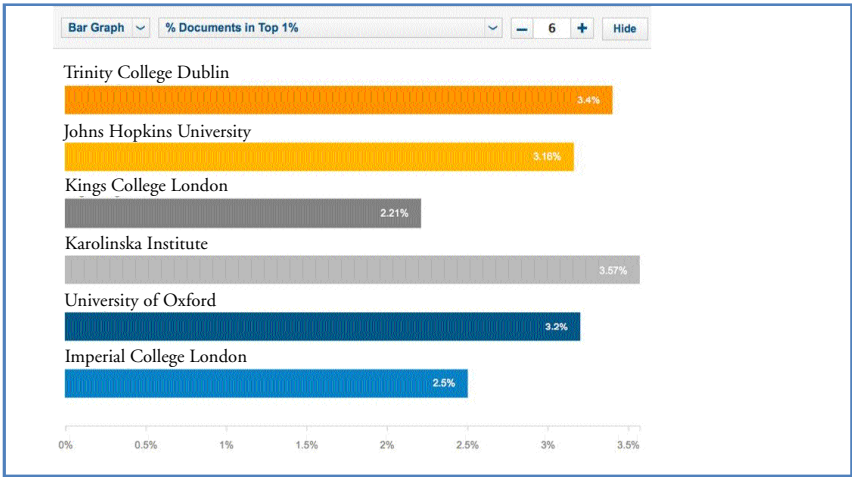


L - R: Prof B Lawlor, Dr J Cooney, Prof D Shanley, Prof RA Kenny, Prof I Robertson, Prof JB Walsh, Prof D Coakley

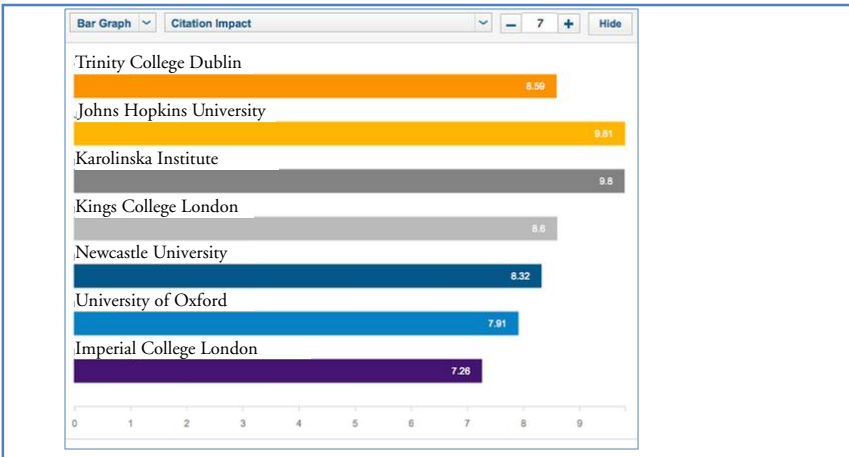
International Recognition of Publications from Trinity College Dublin on Ageing.

The Research published internationally in the area of Geriatrics and Gerontology from departments in TCD including combined work from TILDA and MIRA / MISA showed that we can be very proud of TCD’s recent high ranking in the top tier internationally on percentage of published papers in the Top 1% and on the International Citation impact — cf graphs below and in the main body of the report.

Geriatrics & Gerontology International: Percentage of Papers in World Top 1%



Geriatrics & Gerontology International: Citation Impact

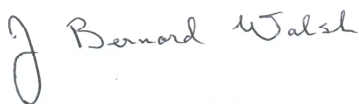


We wish to sincerely thank everyone over the past 30 years who have supported the work and the research of the Mercer’s Institute. Today we can be very proud of the huge service provided by the Institute and the vast volume of research which have been produced over the years. We are also extremely proud that so many doctors, nurses, bioengineers and health care professionals who are so involved in advancing the care of the older adult in Ireland and abroad have received their training and acquired their higher qualifications while in Mercer’s.

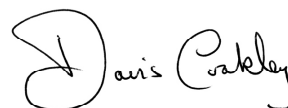
It is also a cause of great joy to see the Mercer’s Institute for Successful Ageing Building already at an advanced phase of construction on the St James’s Hospital Campus. We wish to thank sincerely everyone who has helped bring us to this great moment. Of particular mention is the late Prof Bill Watts and the current Chairman Graham Heather, Secretary Richard Ensor and fellow Directors of the Mercer’s Hospital Foundation Board who have been “Stalwarts” in their

support year in year out over this time and they still remain the main source of our day to day revenue. We wish to particularly thank Chuck Feeney and Atlantic Philanthropies for their vision and enormous generosity which enabled the recruitment of key personnel and the building of our new centre.

Thanks also to the Department of Health who have been huge supporters of the work of our unit over the years and especially to Minister Mary Harney and Secretary Generals Michael Kelly and Michael Scanlon who supported the work of Atlantic Philanthropies and co-funded the Mercer's developments and our new building. The HSE deserve very special thanks for giving us their full backing at crucial moments and for their invaluable support and expertise in helping us plan the new centre. The Board, executive and staff of St James's Hospital need very special acknowledgment and thanks as they have fully supported Mercer's work and enabled the new building on site despite knowing that they would have to work close to a building site for nearly two years. A very special thanks to the Chairmen of the St James's Hospital Board Prof Ian Howie, Prof Tom Mitchell and Prof Derry Shanley who have been taken the lead on many occasions over the last 30 years to ensure that the new Mercer's development would be at the forefront of the Hospital Boards' agenda at all times. To all of the above and many many more we wish to thank you sincerely for where we are today.



Professor J. Bernard Walsh
Director
Mercer's Institute for Research on Ageing



Professor Davis Coakley
Chairman
Mercer's Institute Steering Committee



Professor Rose Anne Kenny
Director
Mercers Institute for Successful Ageing

The Memory Clinic continued its wide range of clinical work and original research in 2014. Below we list a number of these projects.

NILVAD: A European Multicentre Double-Blind placebo controlled trial of Nilvadipine in Mild to Moderate Alzheimer's disease.

NILVAD is an investigator led trial investigating the efficacy of Nilvadipine to treat mild to moderate Alzheimer's disease. The trial is funded by the Framework 7 Programme and is being coordinated in MIRA, St James's Hospital is the sponsor for the trial. The Phase 3 trial will perform a double-blind, placebo controlled study to test the efficacy and safety of Nilvadipine in 500 subjects with mild to moderate Alzheimer's disease over a treatment period of 18 months.

The trial which commenced in January 2012 is being conducted in 23 study sites in 9 EU countries and will close to recruitment on the 31st March 2015. The NILVAD Project Office is based in MIRA and work is being coordinated by Prof. Brian Lawlor (Project Coordinator), Ms Fiona Cregg (Scientific Project Manager), Ms Sinead Larkin (Project Assistant), Dr Sarah O'Dwyer (Study Clinician) and Dr Sean Kennelly is the Medical Advisor for the trial.

The project office is responsible for managing the trial across Europe in accordance with ICH GCP which includes providing medical advice to study sites, organizing supplies for participating centers, recruitment and retention and maintaining the central study files. As of January 28th 2015, 429 of the 510 subjects have been recruited into the study.

The Memory Clinic in MIRA is also one of the 23 recruiting centres. Recruitment is being led Ms. Lisa Crosby, NILVAD study nurse supported by Dr Sarah O'Dwyer. Patient recruitment began in April 2013 and there are currently 64 patients randomized to the study. The current recruitment target for the Memory Clinic is 69 patients.

International Dementia Alliance (IDEAL) Study

Dr Mirjam Schepens and Irene Bruce Clinical Nurse Manager carried out an observational cross-sectional study research project in the Memory Clinic (1) To assess reliability and validity of the IDEAL Dementia Severity Scale in Ireland and (2) To examine the ability of the IDEAL Dementia Severity Scale to identify the burden on informal caregivers Study rationale: As the prevalence of dementia will increase exponentially, there is an urgent need for a more efficient way to organise dementia care. The IDEAL (International Dementia Alliance) Dementia Severity Scale is developed for this purpose, and has been tested for its reliability in several European countries. One aspect of the IDEAL Dementia Severity Scale is the measurement of the burden on the patient's caregiver, an aspect which is important in the determination of the best type of care. Subjects (n=35) with varying degrees of cognitive impairment and their caregivers were recruited from the Memory clinic and the Old Age Psychiatry outpatient clinic. The recruitment and interview phase of the study is now complete and the study report will be published in 2015.

Memory Clinic Patients - 2014	
Total number seen	546
New Patients	334
Return Patients	212
Breakdown by Diagnosis	
Vascular Dementia	2
Alzheimers Dementia	96
Alzheimers Dementia is possible	4
Alzheimers Disease Mixed	38
Lewy Body Dementia	1
Fronto Temporal Dementia	11
Subcortical Dementia	1
Semantic Memory Impairment	64
Functional	22
Vascular Cognitive Impairment	14
Minimal Cognitive Impairment	253
Misc	87
Unsure	32

BIOMARKAPD and IN-BIND

The BiomarkAPD Ireland project started in June 2012 and runs for 43 months ending in Dec 2015. The core project is a pilot study which focuses on the utility of cerebrospinal fluid (CSF) and blood biomarkers in the delineation of the aetiopathology of cognitive impairment and in the prediction of conversion of mild cognitive impairment to dementia. To achieve this, patients will be followed longitudinally over 3 years, with CSF and blood samples and neuropsychological data being collected each year.

The project seeks to recruit patients aged 45-90 years with early possible Alzheimer's disease (AD), mild cognitive impairment or early onset neurodegeneration. The recruitment phase of the project commenced in July 2013 and is on-going with 53 patient and control subjects recruited to date through 4 clinical centres.

As well as coordinating the central research programme, BIOMARKAPD Ireland drives the Irish Network for Biomarkers in Neurodegeneration (IN-BIND).

The IN-BIND network seeks to create a functional network in Ireland to develop basic and clinical research in biomarkers in neurodegenerative disorders. The network, in the first instance, aims:

- to develop standard operating procedures for the collection, storage and use of blood and CSF biomarkers for a range of neurodegenerative disorders (Alzheimer's and Parkinson's Diseases in particular)
- to create a biobank with samples from well characterised Alzheimer's and Parkinson's disease patients, as well as neurologically healthy controls.
- to develop new and better assays and to test new and better biomarker candidates.
- to develop certified reference materials that can be used to harmonise assays that are used to measure the different biomarkers.

To achieve these goals IN-BIND members meet regularly to examine feasibility and agree core areas of activity to leverage existing resources to further establish itself and identify partners in Industry or funding opportunities to support, develop and sustain biomarker research into the future.

The continuing development of **IN-BIND** will accelerate the development and use of biomarkers for neurodegeneration in Ireland and create a strong platform for Ireland's participation in collaborative research in Europe in the coming years.

Deliverables:

- a) Control and patient biosample/neuropsychological test acquisition
- b) BiomarkAPD virtual and central biobank contribution
- c) IN-BIND supported neurodegenerative biosample registry development and population
- d) Development of standardised biosample/neuropsychological testing protocols for sample/data acquisition / processing / storage / analysis and interpretation
- e) Support / promotion and coordination of Irish network for biomarkers in Neurodegeneration (IN-BIND) network
- f) Design and launch of IN-BIND website
- g) Secure funding to support future biomarker research in Ireland and further promote collaborative research and networking amongst IN-BIND members
- h) Implementation and roll out of standardised ADNI proofed MRI protocol in clinical centres
- i) Optimisation and validation of 3 CSF neurodegeneration biomarker assays (A₄₂ / Total and Phospho Tau) for dementia and make these assays available to clinical facilities nationwide through St. James's Hospital
- j) Coordination of multicentre pan European validation of novel biomarker assay (NfL) – produce paper based on results
- k) Project ethics approval acquisition and subsequent dissemination/implementation amongst partner sites
- l) Development of training manuals/materials for those working in field of neurodegenerative biomarkers Development/roll out of certified online training programme for basic researchers/clinicians involved in neurodegenerative biomarker research
- m) Develop and distribute survey on the standardised use of CSF biomarkers for dementia diagnosis in clinical practice - produce paper on results
- n) Develop and distribute survey on the interpretation and disclosure of CSF biomarker results in clinical practice – produce paper on results
- o) Develop and distribute an IN-BIND driven national consensus paper/document on CSF biomarker use and interpretation in clinical practice

Key outputs to date:

- a) Study ethics approval obtained and disseminated to partner sites for implementation
- b) Project protocol implemented in several participating sites (Bon Secours, Kerry; Sports Surgery Clinic, Dublin; St. James's Hospital Dublin; St. Vincent's Hospital Dublin; Dublin Neurological Institute, Mater Hospital Dublin).
- c) Control and patient sample/neuropsychological test data initiated at the central study site (St. James's Hospital) and partner institutions - acquisition on-going
- d) CSF biomarker assay (A₄₂ / Total and Phospho Tau) optimisation and validation underway in central pathology laboratory, St James's Hospital; INAB review for accreditation scheduled for April 2015
- e) National reference range for CSF (A₄₂ / Total and Phospho Tau) biomarker in train with 20 of 30 control subjects recruited
- f) NfL biomarker validation project progressing with data acquisition nearing completion and report / paper write up expected to begin February 2015.

- g) Contributions to the BIOMARKAPD central (4) and virtual biobank (102) initiated and ongoing
- h) IN-BIND meetings held ~ every 4 months
- i) IN-BIND neurodegenerative biosample registry in development in collaboration with the TCD Biobank and the CRF, St. James's Hospital
- j) IRC funding secured to support the first IN-BIND symposium on biomarker research held UCC Cork, June 2014 – successful applicant Dr. Barry Boland, UCC
- k) IN-BIND website completed and launched Jan 2014 (www.tcd.ie/research/inbind)
First IN-BIND coordinated / supported grant application submitted to HRB HRA October 2014
- m) Standardised ADNI proofed MRI protocol initiated in St. James's and St. Vincent's Hospitals, Dublin
- n) National CSF biomarker training course in development following attendance and certification on JPND BIOMARKAPD CSF Biomarker course, Ulm, Germany (September 2014)
- o) IN-BIND supporting a national consensus meeting comprising relevant stakeholders such as the Alzheimer's Society of Ireland, bioethics advisors, clinicians and basic researchers. Objective to produce a national consensus statement and paper which will inform clinical practice and decision making around the appropriate use of CSF biomarker analysis. The Alzheimer's Society has indicated their support of this initiative and an application to the IRC for funding to support the coordination of the meeting has been made.
- p) Survey on use of CSF biomarkers for dementia diagnosis in clinical practice distributed, data collected and collated – results under review prior to producing a paper
Survey on the interpretation and disclosure of CSF biomarker results in clinical practice distribute and data collection is in progress

Dr Catherine Dolan, Research Fellow in Psychiatry, MIRA Memory Clinic is undertaking a doctorate in MIRA through Trinity College Dublin under the supervision of Professor Brain Lawlor. Her research area is in Type 2 Diabetes Mellitus and Brain Health in Older Adults.

Primary data collection exploring the current level of knowledge of the potential for brain health complication of type 2 diabetes among the general public, nursing staff in the Department of Medicine for the Elderly and diabetic patients attending the Diabetic Outpatient Department in St. James's Hospital has been completed. Secondary analysis of the Irish Longitudinal Study on Ageing (TILDA) dataset to explore the relationship between diabetes and cognitive impairment in older Irish adults both cross-sectionally and longitudinally is ongoing.

Sarah McGuire, Psychologist in Clinical Training, NUI Galway Doctoral Programme in Clinical Psychology completed her part-time Specialist Clinical placement with Dr. Coen from May to October 2014 and has since qualified as a Clinical Psychologist.

Deirdre Robertson, successfully completed her PhD ("The Influence of Perceptions of Ageing on Objective Physical and Cognitive Outcomes", Supervisor Prof. Rose Anne Kenny) in TCD Dept. of Psychology and completed a weekly placement as an Assistant Psychologist with Dr. Coen from Oct 2013 to May 2014.

Carotenoid supplementation in age-related macular degeneration (AMD).

In collaboration with Principal Investigator Dr. John Nolan, Waterford IT, Dr. Coen is an active advisor / collaborator on two major studies evaluating cognitive outcomes following Carotenoid supplementation: (i) Enrichment of Macular Pigment and its impact on vision and blindness: Central Retinal Enrichment Supplementation Trials (CREST) (ii) Carotenoids and Age-Related Dementia Study (CARDS). Data collection has been completed and papers have been published with others in preparation (see publication list).

Cognitive Impairment in patients with HIV Infection.

In conjunction with Dr. Colin Doherty, Consultant Neurologist and others, Dr. Coen provided supervision for Dr. Patricia McNemara's PhD research on Cognitive Impairment in patients with HIV Infection. Her research has been completed and has been written up. A longitudinal strand has been commenced (Dr Lilia Zaporozhan under Dr. Doherty's supervision) again with input from Dr. Coen.

Neuropsychological functioning and prosthetic rehabilitation outcomes.

In collaboration with Dr. Fiadhait O'Keefe, NRH and colleagues in DCU and NUI Maynooth, Dr. Coen is a co-investigator in research being undertaken by Richard Lombard-Vance for his PhD investigating neuropsychological functioning in lower limb amputees. Many will have lost their limbs due to peripheral vascular disease or other medical difficulties, such as Diabetes Mellities. These conditions are linked with a decline in cognitive function, and can lead to vascular cognitive impairment. The aim of this research is to compile a cognitive profile of lower limb amputees and investigate how their cognitive abilities relate to rehabilitation outcomes. Data collection was completed in 2014 and is currently in the analysis and write-up stage.

NEIL Memory Research Unit, TCIN

NEIL (Neuro-Enhancement for Independent Lives) was established to create a research infrastructure to accelerate the development of methods to delay dementia. The NEIL programme for cognitive enhancement and dementia prevention comprises both research and intervention initiatives. In November 2011, NEIL established a Memory Research Unit (MRU) under the direction of Prof Ian Robertson, Prof Brian Lawlor and Dr. Sabina Brennan. The purpose of this unit is to collect rich and comprehensive data from a large number of healthy adults aged 50+, with the aim of furthering understanding memory and related processes, and the aspects of people's lives that influence these processes as they age. As a NEIL Research Associate Dr. Robert Coen provides on-going consultancy and advice support for various studies and developments in NEIL and MRU (see publications list).



DemPath Project

Development of an “Integrated Care Pathway” for people with dementia in St. James’s Hospital

Background and Project Set Up

DemPath is an innovative and ambitious care model for people with dementia in SJH. DemPath’s overarching aim is to create an effective ‘dementia friendly’ integrated care pathway (ICP) for all people with dementia, irrespective of age, who are admitted and discharged from St. James’s Hospital by improving the care environment, and by increasing awareness of dementia and associated care needs through education and training.

Genio Funding (HSE & Atlantic Philanthropies) grant of €500k was received in April 2014 and resourcing of project manager, teams for each workstream and team leads were established. Terms of reference for the project was formalised and the DemPath project plan was completed. The three core workstreams include creation of an integrated care pathway (ICP) for people with cognitive impairment, dementia education and “dementia friendly” environmental design. Stakeholder mapping was carried out and a high level work plan for each workstream was established. A DemPath Expert Advisory Group was established and the DemPath Steering Committee convenes on a monthly basis.

Integrated care pathway (ICP) for people with cognitive impairment

The ICP is currently being developed using the DemPath consortium’s multidisciplinary expertise following a process of discussion and consultation with relevant stakeholder groups. As part of the process of ICP development an analysis of the “As-Is” practice and the “To-be design” was carried out to define the gaps and to develop a plan of how these plans will be bridged. Dementia Integrated Care Pathway Driver Diagram has been developed through community healthcare providers and SJH stakeholder consultation, the detailed high level “To-be design” was completed at the end of January 2015. Creation of the SOP is currently in progress. The ICP will be piloted and evaluated according to agreed key performance indicators in 2015.

Environmental Design

One of the key aims of the DemPath Project is the Development of ‘dementia friendly’ design for people with dementia or those who are cognitively impaired in SJH. Agreement was obtained from key stakeholders for the development of a “dementia friendly” design in two cubicle/bed bays in Zone 3 of the Emergency Department(ED) in SJH. Currently an “As-Is” audit of existing design features in Zone 3 of ED, including light, sound and signage, is in progress. Also, DemPath has produced a high level dementia design specification that will be incorporated in the new MISA building in SJH.

Education and Awareness

DemPath aims to deliver basic training in dementia awareness to all staff in SJH. DemPath will develop and deliver education and training programmes on dementia to community and hospital stakeholders. DemPath in partnership with NILVAD and NEIL Programme held a

Brain Awareness Day on May 27th 2014 in SJH which was well received by staff and public alike. DemPath on July 4th 2014 launched the first *Human Resources Corporate Induction on*



Dementia Awareness in St. James's Hospital and to our knowledge is the first HR Corporate Induction on Dementia Awareness in the Republic of Ireland. To date over 100 new SJH staff members have received training on dementia awareness through the Corporate Induction Programme and Centre for Learning and Development staff in SJH are committed to the



Top: Members of the DemPath Team with Prof. Helen Kales, University of Michigan
Below: DemPath Education Team with the first SJH staff members to participate in the Human Resources Corporate Induction on Dementia Awareness Course July 4th 2014

continued roll out of this programme past the life-time of the DemPath Project. DemPath hosted a lecture by Prof. Helen Kales (University of Michigan) on *Management of Responsive Behaviours in Dementia* on July 11th 2014 in SJH. The lecture was very well received by over 100 attendees including members of SJH staff, carers, person with dementia and community healthcare providers in South Inner City Dublin.

DemPath in partnership with MISA organised a lecture for SJH staff on “*Exercise and Ageing*” by Dr. Stefan Schneider University of Cologne on December 5th 2014 which was attended by over 40 members of SJH staff.

Cognitive Stimulation Therapy Training of staff in Hollybrook has commenced. DemPath aims to evaluate the roll out of this programme and then potentially roll out this programme to community healthcare workers.

Life Story/Activities Programme was generated and first workshop rolled out to SJH staff in September 2015

DemPath Dementia Awareness Surveys

In order to ascertain the baseline awareness and knowledge of dementia from all SJH staff online and hard copy surveys was disseminated to staff over a three week period November 17th-December 7th 2014. Promotion through-out this period included DemPath stand at staff canteen, advertisements using pull up banner, posters, and use of the SJH intranet site. Over 1200 healthcare and non-healthcare staff members completed the surveys and to our knowledge this is the largest dementia awareness survey of this type ever conducted in the Republic of Ireland. Analysis of the data is in progress.

TUDA (Trinity, Ulster, Dept of Agriculture) Study

The TUDA (Trinity, Ulster, Dept of Agriculture) study is the largest cross sectional study of it's type on the island of Ireland and represents a collaboration between the Mercer's Institute for Research on Ageing, MedEL Directorate at St James's Hospital, Dublin, Trinity College, Dublin and the University of Ulster.

The TUDA study database is now complete and comprises 5186 adults aged over 60 recruited into three disease defined cohorts. Those with brittle bones (1394) and cognitive impairment (1699) represent the respective bone and cognitive cohort and were recruited from St James's Hospital, Dublin. Those with high blood pressure comprise the hypertensive cohort (2093) and were recruited from GP practises in Northern Ireland.

The TUDA database provides a rich source of valuable clinical information profiling patients medical history, psychosocial status, nutrition, frailty and includes comprehensive cognitive testing and validated functional and mood scales. In addition, numerous serum biomarkers have been measured as well as blood bio-banked for future genetic analysis. As the cohorts are disease defined, it provides a unique insight into the potential role and interaction of several pathogenetic factors in older adults.

Dr Kevin McCarroll graduated with a Doctorate in Medicine from Trinity College, Dublin in Nov 2014 based on a comprehensive study which examined the relationship between vitamin D and cognition, blood pressure, falls and mood in participants of TUDA. This found a positive association between higher vitamin D status and cognitive performance and mood in a subset of "younger" older adults.

Arising from the above thesis was also the largest study to date to examine the prevalence of vitamin D deficiency and its determinants in older and frail Irish adults, and which is now in the final stages of journal peer review.

Dr Robert Coen in conjunction with Dr Kevin McCarroll have also established normative data for the Frontal Assessment Battery (FAB) based on participants in the TUDA which they aim to publish in 2016.

Dr Coen in collaboration with Dr Kevin McCarroll is continuing to investigate performance on the Frontal Assessment Battery (FAB, paper in preparation). Further in-depth analysis of performance on the Repeatable Battery for Assessment of Neuropsychological Status (RBANS) is also ongoing, concerning which Trainee Clinical Psychologist Mary Keating (UCD Doctoral Programme in Clinical Psychology) is undertaking research in part fulfillment of her Degree with supervision and input from Dr McCarroll and Dr Coen.

Dr McCarroll and Dr Conal Cunningham are working with Prof Anne Molly and Dr Eamon Laird at Trinity College, Dublin who are exploring the relationships between serum vitamin B12, holo-transcobalamin, anaemia and other factors in subjects from TUDA.

Dr Onte Ntlholang is currently analysing the relationship between body mass index/adiposity and cognitive function in TUDA participants as part of his MSc. Provisional results show a robust inverse relationship between waist hip ratio and cognition suggesting that it is an important modifiable risk factor.



The Local Asset Mapping Project

The Local Asset Mapping Project (LAMP) expanded its scope in 2014, mapping the wider St James' catchment to include every business, service or amenity in the districts of Ballyfermot, Crumlin, South Circular Road and Drimnagh. In total over 3,400 assets were recorded and classified for their potential benefits to health. In the context of the Children's Hospital developments, the project was presented to local commercial and community stakeholders on behalf of St James's Hospital as part of a wider vision to develop a life sciences district.

By surveying a selection of health-related assets, LAMP determined that many of the health service providers in the area feel disconnected from the hospital, each other, or the Health Service Executive. Despite this disconnectedness, LAMP identified a wide variety of services available locally, from HIV and addiction services to opportunities for exercise or healthy eating. This survey was presented in an oral presentation at the 62nd Annual Scientific meeting of the Irish Gerontological Society and won a Presidential prize.

Bone Health & Osteoporosis Service

The Bone Health and Osteoporosis Unit is based in Hospital 4 and – in keeping with previous years – has seen a consistent increase in its activities of assessment, diagnosis and management of patients with osteoporosis and fractures. In addition the Unit also sees patients with hyperparathyroidism and other conditions relating to bone metabolism. Professor J Bernard Walsh, Dr Miriam Casey and Dr Kevin McCarroll are the principal consultants in the Unit and coordinate research activities and the overall running of the service.

Summary of Unit:

- Clinical Nurse Specialist (CNS) led Pre-Assessment Clinic
- Osteoporosis and Bone Health Medical Clinic
- Fracture Liaison Service (Incorporating Orthogeriatric Service and Hip Fracture
- Integrated Care Pathway)
- Colles (wrist) Fracture and Peripheral Fracture Clinic
- Recombinant Parathyroid Hormone therapy (PTH) patient monitoring
- IV Zoledronic acid administration and monitoring
- Denosumab injection administration and monitoring
- DXA (Clinical Densitometry) Service
- Inpatient Falls and Fracture Prevention Service
- Research
- Audit
- Service development and education

Clinical Nurse Specialist (CNS) led Pre-Assessment Clinic

The CNS-led Pre-Assessment Clinics which occur twice weekly continue to be the first point of contact for patients who are referred for assessment of their bone health and risk of fracture. Patients attend from 4 sources:

External referrals from general practitioners or other hospitals

General medicine, surgery and other clinics within St James's Hospital including the MedEL Department

Fracture Liaison Service

Referrals from DXA Service based on severely low bone density results or the presence of vertebral fractures

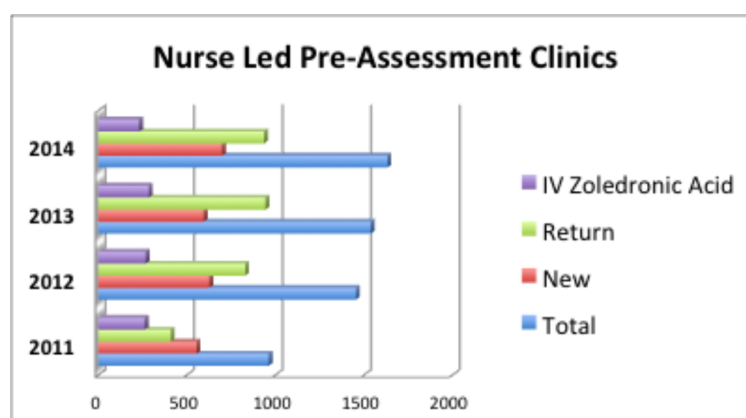
A comprehensive assessment is performed on all patients. This includes review of risk factors for osteoporosis, risk factors for falls and advice on diet, lifestyle modifications and education on treatments. On a patient's first attendance at this clinic an extensive screen is undertaken. This includes a DXA scan, a calcaneal bone ultrasound, a full biochemical and haematological work-up including serum bone turnover markers.

When results of the screening are completed and reviewed by CNSs and the Clinical Fellow in Bone Health, a full summary report and a detailed individualised management plan is sent to the patient's GP. Many patients are sent a subsequent appointment to the Bone Health and Osteoporosis Medical Clinic for further review and management, often for the purpose of offering IV Zoledronic acid therapy or PTH therapy.

In 2014, a total of 1631 patients were seen in the Pre-Assessment Clinic, which is an increase of 6.1% from 2013 and continues to reflect the demand for this specialised service. Indeed the rate of increase in activity is higher than in 2013. The bulk of this increase comes from a rise of 17.34% in the number of new patients attending, reflecting the dedicated work of CNSs in creating additional appointment slots to cater for increasing demand. The number of patients making return visits remains stable, highlighting the essential role of the CNS in monitoring the efficacy of treatments as well as promoting adherence and managing side effects. The breakdown of patients seen in the various osteoporosis assessment clinics is as follows:

Summary of patient appointments for the Bone Health and Osteoporosis Unit Osteoporosis and Bone Health Medical Clinic

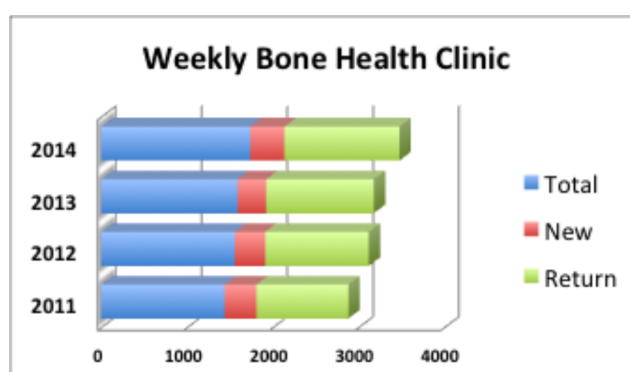
Nurse Led Pre-Assessment Clinics				
	2011	2012	2013	2014
Total	961	1454	1537	1631
New	553	626	594	697
Return	408	828	943	934
IV Zoledronic Acid	261	266	284	230
Osteoporosis & Bone Health (1441	1560	1589	1738
Total Appointments	2663	3280	3410	3599



The weekly medical osteoporosis clinic has been in operation for more than a decade. It caters for patients already seen in the Pre-Assessment Clinic, who have been identified as requiring additional input and monitoring, often due the severity and complexity of their osteoporosis. This clinic is staffed by 3 consultants, 2 clinical fellows, 3 registrars and 2 CNSs. Patients attending for new and return visits can be commenced on treatments such as IV zoledronic acid therapy, recombinant parathyroid hormone therapy or may be referred onwards to our colleagues in Radiology for procedures such as vertebroplasty if required. This clinic also provides opportunity for performing additional blood tests, giving real-time education sessions to patients and administering therapies such as Ergocalciferol for loading doses of Vitamin D replacement.

As with other branches of the service, the weekly medical clinic saw an increase in patients attending (9.4%), with numbers increasing from 1589 in 2013 to 1738 in 2014.

Weekly Bone Health Clinic attendance:



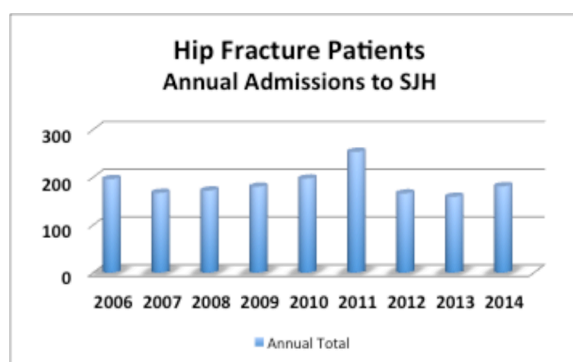
	2011	2012	2013	2014
Total	1441	1560	1589	1738
New	371	351	335	398
Return	1070	1209	1254	1340

Fracture Liaison Service (Incorporating Orthogeriatric Service and Hip Fracture Integrated Care Pathway)

All older patients presenting to St James's Hospital with a peripheral fracture are identified and offered assessment and follow-up at the CNS-led Pre-assessment Clinic. This service incorporates a weekly orthopaedic ward round where patients in need of the service are identified. These patients are commenced on appropriate bone protection therapy at an early juncture.

Hip fractures are the most common fracture seen on the orthogeriatric ward round. Hip fractures are associated with increased morbidity and mortality and tend to occur in older patients. These patients require significant input from the multidisciplinary team including nurses, physiotherapists, occupational therapists, social workers and the medical team. Hip fractures account for nearly 10% of all non-vertebral fractures and for a higher proportion of fractures in the elderly. In 2014, 181 hip fractures were assessed on a weekly round by a Specialist Registrar and CNS, and a bone protection programme commenced. All patients are then offered an appointment in the Pre-Assessment Clinic.

Hip Fracture numbers:



	2006	2007	2008	2009	2010	2011	2012	2013	2014
Annual Total	196	167	172	180	197	253	166	159	181

A new and integral aspect to the Fracture Liaison Service has been the rolling out of both an Integrated Care Pathway for hip fracture patients and the Irish Hip Fracture Database.

In conjunction with our colleagues in ED, Orthopaedics and allied health care, we are working to ensure targets are met for the six key performance indicators in the care of hip fracture patients: Time to surgery; time to admission to ward; pressure ulcer and skin care assessment; bone health review; falls assessment; and ortho-geriatric review.

An audit of 159 hip fracture patients in SJH – conducted by the Bone Health and Osteoporosis Service in conjunction with Orthopaedic and allied health colleagues – has confirmed that figures in SJH for all key performance indicators compare favourably with the national average.

Patients who sustain a fracture not requiring an admission to the hospital are also followed up and monitored after their discharge from the Emergency Department.

Colles (Wrist) Fracture and Peripheral Fracture Clinic

Colles fractures are important to identify as their presentation may be an early indicator of osteoporosis. These patients are offered a follow-up appointment at a Specialised Osteoporosis Clinic which occurs every 2nd Thursday morning. This nurse-led clinic reviews risk factors for falls and osteoporosis. Patients are commenced on treatment as indicated by their assessments.

Recombinant Parathyroid Hormone therapy (PTH)

Approximately 600 patients have been prescribed recombinant Parathyroid Hormone treatment to date. These patients are often complex with severe osteoporosis and multiple fractures and have been refractory to other treatments. In patients with vertebral fracture international studies have shown a substantial improvement in bone quality and also in back pain following this treatment. All patients on Parathyroid Hormone therapy are regularly followed up in the CNS-led service to monitor bone biochemistry and to observe for any side effects, the occurrence of which are rare.

IV Zoledronic Acid Administration and Monitoring

Intravenous zoledronic acid is a useful treatment in the prevention of both vertebral and non-vertebral fractures in patients with osteoporosis. It has been shown to significantly reduce mortality in patients after hip fracture. It provides an alternative to oral bisphosphonates and is an option in patients who are deemed not suitable for PTH therapy and in patients post PTH therapy.

The infusion may be given at a standard (4mg) dose once yearly, or a lower (2mg) dose 6-monthly. Patients are assessed by the medical team at the Bone Health Clinic prior to administration of the drug. Serum calcium and vitamin D levels are measured within one week of the infusion by the CNSs in order to monitor for hypocalcaemia. This has led to a reduction in the incidence of complications from the infusion. A recent audit of 154 of our patients demonstrated that none experienced any significant level of hypocalcaemia following infusion.

There were 230 infusions administered in Robert Mayne Day Hospital in 2014. This is a 19% decrease compared to 2013. This decrease is likely accounted for by a higher proportion of patients attending for the once yearly standard dose infusion (rather than the twice yearly lower dose infusion) and an increasing number of patients being offered denosumab as an alternative therapy where appropriate.

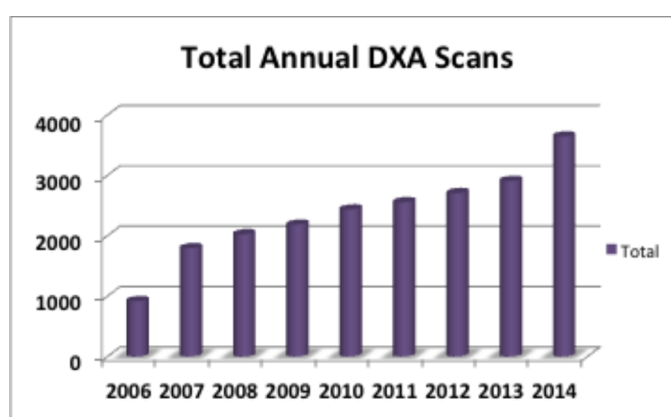
Denosumab injection administration and monitoring

In late 2010 denosumab was introduced for the treatment of osteoporosis. To date almost 600 patients have been prescribed the drug in our Bone Health Clinic. It is administered as a subcutaneous injection every 6 months either by the CNSs or in the community. Serum calcium and bone markers are measured 2 weeks post-dose. Reported side effects have been rare, making it a safe as well as convenient treatment option in our older population.

DXA (Clinical Densitometry) Service

Our DXA service carried out 3643 scans in 2014, which represents a 25% increase over the number of scans carried out in 2013. This service is open to referrals from general practitioners in the local community as well as other consultants within the hospital. Patients who have significant osteoporosis on DXA will be offered assessment in the Bone Health Clinic.

DXA numbers:



	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total	917	1794	2025	2184	2434	2554	2705	2906	3643

Inpatient Falls and Fracture Prevention Service

In early 2012 the falls and injury prevention programme was rolled out across the hospital. Since this intensive awareness drive, the risk management office has reported a reduction in the falls rates on all wards. The CNSs continue to work closely with the hospital falls management group in updating the falls risk assessment to reflect the need for a more cohesive MDT approach and incorporate HSE/NICE guidelines. A pilot project will begin in February 2015 to trial a modified falls assessment and MDT intervention record.

	2013	2014
Total	273	279
New Falls	151	130
Recurrent Falls	122	149
Injuries sustained	85 (31%)	70 (25%)

Inpatients reviewed by Nurse-led Falls and Fracture Prevention Service

As outlined in the table above, the total number of falls remained stable compared to 2013. There was a decrease in the number of new falls and injuries sustained, reflecting the success of ongoing programme development. However, there was an increase in the number of recurrent falls, which highlights the frailty of the ageing population in the catchment of SJH.

Research

Continuous research forms an integrated part of the Bone Health and Osteoporosis Unit. Below we detail recent ongoing research in our Bone Unit:

“Post Hip Fracture in Older Adults: interventions and strategies for improving outcomes. The role and function of the CNS and Bone Health Unit in the Management of Hip Fracture Patients”.

Niamh Maher, Clinical Nurse Specialist - awarded a PhD Degree in 2014 for this work

Supervisors: Prof JBernard Walsh

Dr Miriam Casey

Dr Finbar Sheerin

Introduction:

Hip fractures are an increasingly common, serious problem that occurs mainly in older people. They constitute not only a major clinical and financial burden on healthcare services but also have serious consequences for patients affecting life expectancy, recovery and quality of life.

A RCT (Random Controlled Trial) was carried out on consecutive patients attending St James's Hospital for hip fracture repair between June 2008 and June 2010. Patients under 60 years of age, with metastatic disease or cognitive impairment were excluded. The sample comprised two independent groups of 112 patients. The main aim of this thesis was to assess if a multidisciplinary bone health and falls assessment and intervention, co-ordinated by a Clinical Nurse Specialist at three months following fracture could improve post hip fracture outcomes, in elderly persons, over the course of one year. The secondary aim of this thesis was to prospectively investigate outcomes of elderly hip fracture patients in regard to mortality, recovery of function, quality of life, incidence of osteoporosis, osteoporosis knowledge, medication adherence and the nutritional status in this population of patients. The intervention group received a 3 month appointment in the nurse led pre assessment clinic (PAC) who were then fast tracked to a consultant run bone health clinic and referrals to the multidisciplinary team made as required. The control group received usual care which incorporated a PAC appointment as dictated by next available DXA scan appointment and then referred to bone health clinic.

Two hundred and twenty six patients were recruited into the study. A significant reduction in mobility and ability to self care at 15 months post fracture was noted for all participants as was a reduction in quality of life. A mortality rate of 12% at 12 months was measured for all hip fractures attending the study site with men in particular at increased risk with 21% dying within the year compared to 11% of women. The intervention group had better outcomes in some areas of recovery including mobility, fear of falling, anxiety, risk of malnutrition, quality of life and mortality than the control group.

This study highlights the devastating effect hip fracture can have on the life of an older person. From the results of this study an early review of hip fracture patients by the clinical nurse specialist with onward referral to a consultant led bone clinic can improve outcomes in some areas of recovery for elderly hip fracture patients. However, continuing efforts in preventing fractures with more research and improved treatment strategies for those who fracture is imperative. While there are some positive results from this study much is still needed to be done to improve outcomes for elderly people following hip fracture.

“Treatment of Osteoporosis with Recombinant Parathyroid Hormone, its Effect on Bone, Total Body Muscle and Fat Composition and Factors Determining Response to this Therapy”

Primary Investigators: Dr MC Casey
Prof JB Walsh
Dr N Kennedy

Clinical Investigator: Dr Najia Siddique – submitted for MD 2014

Dr Najia Siddique has submitted a doctoral thesis based on this two-year longitudinal study of patients on PTH therapy. 128 patients were recruited from the Bone Health Clinic with the following aims:

To elucidate the role of total body composition in elderly osteoporotic patients and to determine whether PTH therapy changes fat and muscle parameters

To identify factors predictive of an early response to PTH therapy

To define the role of Quantitative Heel Ultrasound (QUS) as an assessment of bone density in severely osteoporotic patients

Summary results showed:

Both muscle and fat mass were independently correlated to BMD

PTH therapy did not alter the cohort's muscle and fat composition

An early rise in measured 24-hour urinary calcium was predictive of an early increase in BMD while on PTH therapy

Low QUS T-scores were associated with a history of Colles fracture.

Four abstracts based on Dr Siddique's research have been accepted for presentation at the International Association of Gerontology and Geriatrics European Region Congress (Dublin, 2015); two as oral presentations and two as poster presentations.

“The Correlates of Osteoporosis and Bone Health in an Irish Community Dwelling Population”

Dr Rosaleen Lannon, MD Thesis

This study has looked at bone health parameters in a group of older community dwelling adults recruited for the bone cohort of the TUDA study.

The University of Ulster Department of Agriculture Study (TUDA) is a large collaborative cross sectional study that aims to create a database for 3 cohorts of community dwelling subjects over 60 years of age. Two of these cohorts each with a diagnosis of cognitive impairment or osteopenia/osteoporosis have been recruited from the outpatient services at the Department of Medicine for the Elderly at St James's Hospital. Subjects were recruited to the bone cohort if they were aged over 60 years of age and had a T score of -1 or less on bone densitometry.

This study population is ideal for providing more detailed information on bone health, fracture prevalence and risk factors in an older frailer community dwelling population. Outcomes such as future fracture, hospitalisation and mortality are also being assessed.

“Characteristics and Outcomes of Older Adults following Hip Fracture”

Primary investigators: Prof JB Walsh

Dr MC Casey

Dr K McCarroll

Clinical investigator: Dr James Mahon, Clinical Fellow in Bone Health – MD Thesis

This prospective study will recruit acute hip fracture patients in SJH for one year and compile cross-sectional data on this cohort, followed by a one-year longitudinal follow-up to measure functional and bone health outcomes after treatment with IV zoledronic acid and ergocalciferol. In addition the study will characterise patients’ progress through the hospital’s hip fracture integrated care pathway.

Audit

Internal audits in the Unit during 2014 have been conducted on side effects of IV zoledronic acid, sources and outcomes for clinic referrals, indications for DXA scan requests and outcomes for patients attending Pre-Assessment Clinic, as well as concordance with key performance indicators for care of hip fracture patients.

Service development and education

Bi-weekly departmental “Bone Club” meetings encompass a wide range of topics and formats including research discussion groups, osteoporosis educational lectures and business meetings to discuss service development.

Service provision initiatives in 2014 have entailed increasing capacity for DXA and nurse-led Pre-Assessment Clinics as outlined above, and developing a prospective model of providing early written advice to GPs in response to queries on behalf of individual patients. In addition, we work closely with our colleagues in specialist departments such as Radiation Oncology, Gastroenterology, GUIDE and Rheumatology to refine pathways of care for patients at high risk of osteoporosis.

Members of the Bone Health Unit have provided osteoporosis teaching sessions to medical and nursing students and physiotherapists in the hospital, as well as to wider medical audiences in the Royal College of Physicians and at SJH Grand Rounds.

Education was delivered by the CNSs to the Pulmonary Rehab group every two months, and for MSc in gerontology, FETAC for Healthcare Assistants as well as ongoing education on falls management throughout the hospital. Bachelor of Nursing students are also facilitated in the falls and osteoporosis service. The CNSs had an information stand in the Hospital Concourse to mark World Osteoporosis Day 20 October 2014.

Stroke, Research and Clinical Service

The St. James's Hospital Stroke Service has been very active again this year with over 350 stroke patients admitted to St James's Hospital. It has continued to provide a 24hr on-call service for stroke patients in St. James's. Developments in the service this year include the appointment of a new clinical nurse specialist, Rosin Kelly, to provide support to the service whilst our colleague Olivia Mahon remains on leave. Innovations in this service include the development of new protocols for admission and urgent CT scanning. We are currently developing a new hyper-acute stroke area for the hospital. We are continuing to plan towards the development of the new sub-acute and rehabilitation ward in the Mercers Institute for Successful Ageing on completion at the end of the year.

We are planning how to utilise funding raised through charitable endeavours over the last few years and how it can be used to equip and provide resources for the unit.

A new Consultant Dr Eugene Wallace has been appointed as a consultant Rehabilitationist at St. James's and we are engaging with him on the particular management of younger stroke patients. Dr David Bradley and Dr Wallace have established a spasticity clinic which is greatly to the benefit of stroke patients.

In terms of research, we have had a productive year with publications in the International Journal of Stroke and Quarterly Journal of Medicine. We have also been involved in collaborative work with Tallaght Hospital, Mater Hospital and Beaumont Hospital. Abstracts have been admitted and accepted to various meetings including the World Stroke Congress in Istanbul, The European Stroke in Nice and the IAGG in Dublin.

Prof Harbison remains the HSE Joint National Clinical Lead in Stroke and has been asked to stay in the post until June 2015. This has also produced a number of outputs that involve Mercers Institute. We have just completed the largest survey of atrial fibrillation ever carried out in Ireland and this should be released as a report and academic papers in the next few months. The new National Clinical Audit of stroke care has now commenced. Dr Paul McElwaine and Ms Joan McCormick have been appointed to help conduct this study. Initial reports should be released in quarter three, 2015 and it is intended that there will be an academic output from this also.

Studies of post-stroke fatigue, PTSD and Psychological distress, preliminary work by Claire Crowe, at that time a Psychologist in Clinical Training, TCD Doctoral Programme and subsequently fully qualified (see publications list), who developed a research project to investigate possible links between post stroke fatigue and PTSD with supervision for Dr. Coen and Dr. Joe Harbison, Stroke Consultant Niall Galligan, Psychologist in Clinical Training, TCD Doctoral Programme undertook further exploration of the influence of Psychological Distress on Post-Stroke Fatigue, working in close collaboration with Prof. Harbison's Clinical staff. He successfully concluded this work in part fulfillment of his Degree and has since qualified as a Clinical Psychologist. Papers have been submitted for publication and others are in preparation.

A number of other research programmes are also underway in the stroke service. We are about to commence a study looking at changes in bone density in patients who suffered acute stroke in coordination with Prof. JB Walsh and the Osteoporosis Service. We have continued our interest

in cannabis as a risk factor for arterial narrowing in young stroke patients and the paper is currently under production for this. Other studies that are continuing and should be published in the next few months include; atypical location of a lacunar infarction and how this relates to blood pressure variability and a further study looking at the extent of white matter disease and background cerebral vascular disease in subjects with variable blood pressure and cerebral vascular disease. We are also beginning a research programme into palliative care of dying stroke patients. Five abstracts have been sent from the department to the forthcoming European Stroke Organisation Conference in Glasgow.

We are continuing to work with TILDA and are collaborating in the new MR sub-study. The stroke review is also a collaboration in the new HRB supported National Stroke Research Network.

Medical Physics and Bio-Engineering

Introduction

The Medical Physics & Bioengineering Department (MPBE) at St. James's provides support to MIRA in the application and science of technology used in the care of older people. In preparation for the opening of the new MISA facility, MPBE allocated a dedicated Senior Physicist/Engineer position to consolidate and co-ordinate MPBE input to MIRA/MISA. Tim Foran was appointed to this role in April. The MPBE team at MIRA now comprises Tim Foran, Dr. Ciaran Finucane, Dr. Chris Soraghan and Dr. Mindaugas Norkus. Ciaran re-joined the group after a very productive secondment to TILDA and Mindaugas joined as an SFI



researcher in ocular microtremor. Additional direction to the team continues to be provided by Principal Physicists/Engineers Dr. Gerard Boyle and Fran Hegarty at MPBE.

The MBPE team from left: Fran Hegarty, Ciaran Finucane, Mindaugas Norkus, Gerard Boyle, Tim Foran and Chris Soraghan

Hospital and Clinical Support

Team members engaged with the MISA planning teams in 2014 to formulate the electromedical equipment management strategy for the new MISA building. A review of existing and transferrable equipment was undertaken along with an appraisal of innovative patient monitoring systems.

Support to the LAMP Programme from BioEngineering

Dr. Chris Soraghan has adapted the LAMP technology platform for collection of further 'assets' in the community in 2014. Almost 2000 more assets in the St. James's hospital catchment were mapped by Geographical Information System (GIS) expert Luis Dominguez-Villoria (working with LAMP) using the adapted platform on an iPad. Luis also developed a prototype computer program to identify assets close to an individual user's own location. Ultimately the technology will be used to assist healthcare professionals in pointing patients to appropriate services close to their own homes. . The current geographical area mapped is over 22km², representing a population of just under 120,000 people. Chris gave a presentation at the MIRA research day on the capabilities now available at MIRA for analysing and visualising the distribution of assets and health related information on a geographic basis. Piloting of a clinical interface for

social prescribing will be carried out in 2015 with LAMP lead Dr. David Robinson, Dr. Gerard Boyle and Dr. Chris Soraghan.

Ocular Microtremor

Development of contactless Ocular Microtremor (OMT) measurement technology is continued by Dr. Mindaugas Norkus and Dr. Gerard Boyle under an SFI TIDA (Technology Innovation and Development Award) grant. This novel technology has the potential to fulfil a clinical need for a quantitative measure of level of consciousness and for the assessment of brainstem status. The commercialisation potential of this “i-tremor” technology was recognised and won awards at the ‘Get Started Technology Venture Programme’, following completion of entrepreneurship training by the MIRA/MPBE researchers with SFI and the DCU Ryan Academy in August 2014. These awards were presented for the best ‘pitch’ on the commercial potential of a TIDA project, as judged by a panel of commercialisation experts. The award will allow the researchers join the Irish Technology Leadership Group (ITLG) and visit Silicon Valley in California to network with potential investors and pursue market opportunities for the technology. Collaboration with the National College of Art and Design (NCAD) on the usability of the OMT technology led to the design of an improved housing concept for the device.

As a primary application niche of OMT technology, research into its use for the assessment of comatose patients in critical care was presented at the State of the Art meeting organised by the Intensive Care Society in London in December 2014. Additionally, the technology is being explored as a potential tool for depth of anaesthesia monitoring.

Innovation Activity

App Development

Activity in App development has grown considerably over the past year in MPBE. An app for assessing frailty in the community has been developed by Dr. Chris Soraghan with Dr. Roman Romero-Ortuno, and is due to be released to the App Store in 2015. As part of the Connected Health initiative between The Digital Hub and St James’s Hospital Foundation, Chris and Anthony Edwards (Snr. Clinical Photographer) secured a digital health award of €2,500 for the development of a hospital navigation app of the SJH campus. An app designed to assist MS patients has been prototyped (paper based) by Chris with an external developer and tested with a number of users as part of a usability assessment prior to full scale app development. A communication app for patients with stroke presenting with aphasia continued to be developed by Chris with the Speech and Language Therapy department, with assistance from Clinical Photography. Chris published an article in the Biomedical Engineering Association Spectrum magazine on the potential and benefits of developing apps in hospitals.

Falls and Gait Research

A grant of €2,500 was awarded by the SJH Foundation to Dr. Chris Soraghan to purchase additional bed and chair occupancy sensors for the hospital to assist in reducing falls risk. Work will continue in 2015 with a DCU intern to continue the development of a bespoke occupancy sensor to target shortcomings in the hospital market.

Tim Foran presented on his gait research at the International Society for Posture and Gait Research (ISPGR) on the correlation between nonlinear features of gait patterns and falls history in older adults. Current data analysis is focussing on the association of high variability in gait with the clinical characteristics of community dwelling older adults. The data was

previously collected on 400 community dwelling older adults attending the MIRA TRIL geriatric research clinic and utilised novel body worn inertial sensor technology in the data collection.

Frailty

A new frailty algorithm has been created by Dr Roman Romero-Ortuno called SHAREFI75+ specifically for persons over the age of 75 with potentially greater accuracy and is based on the SHARE study. Dr. Chris Soraghan collaborated by developing the HTML/webpage and Excel based calculators for frailty. The work has been published (along with a free to use download of the calculator) in a journal article in BMJ Open.

Design and Older People

Dr. Chris Soraghan delivered a presentation at the MIRA research day on his work with the National Disability Authority and Centre of Excellence for Universal Design on assessing technology in older people's homes in the community. Chris also published a book chapter on an engineer's perspective of how to engage older users in their homes in the assessment of the usability of consumer technology. MPBE collaborated with the National College of Art and Design (NCAD), on projects concerned with improving the design of medical technology. Dr. Chris Soraghan and Tim Foran collaborated with an M.Sc. student in Medical Device Design from NCAD (Stephen Tyrrell) in designing falls sensors that meet the human factors and ergonomic requirements of hospital staff and patients, in particular older patients. The group examined the context, needs, and preferences of the users of the device and how this could be translated into the design and aesthetics – while also considering manufacturability, packaging and branding.

MIRA Memory Clinic Electronic Referral

In collaboration with Memory Clinic staff, Dr. Chris Soraghan developed a specification for an electronic referral system to replace the currently used paper based one. A detailed review of the workflow practices of memory clinic referrals at the MIRA memory clinic was carried out. A number of GPs were consulted in a feedback session and medical consultants using an electronic referral system at St. James's were interviewed to determine pros, cons, and potential design features. From this, a conceptual eReferral system was designed with MIRA Memory Clinic staff with close collaboration with Matthew Gibb (Snr. Medical Social Worker). The potential to implement this system as a national memory clinic referral system is now being investigated.

Research and Education

Neurocardiovascular Instability and Autonomic Function: Its Relationship to Health in Older Adults

In collaboration with colleagues, Dr. Ciarán Finucane continued his work on the theme of Neurocardiovascular Instability and Autonomic Function focussing on understanding its mechanisms and relationship to health outcomes in older adults and exploring the development and /or use of technology to enhance clinical and research activities in this area.

The autonomic nervous system is responsible for control of the body's internal environment, and governs a wide range of functions from heart rate and blood pressure control to stress and relaxation responses of all internal organs. Impairment is common in conditions associated

with ageing and leads to adverse symptoms and a reduction in the quality of life of older adults. Autonomic dysfunction plays a significant role in unexplained falls, cognitive impairment, Parkinson's disease, and diabetes in older adults. Neurocardiovascular instability refers to impairment of the neural regulatory centres that govern blood pressure control. This instability often leads to low blood pressure, cerebral hypoperfusion, dizziness, faints and falls. A brief summary is given detailing research, collaboration, educational and clinical engineering activities completed in 2014 under this theme.

Research: New Knowledge Generation - BioEngineering

This year proved very fruitful, with the culmination of a number of projects conducted in collaboration with the TILDA team, resulting in 19 publications in **international journals** and presentations at a number of **international and national conferences**. Of note, an original article was recently published in the **top international cardiology journal, Circulation** (<http://circ.ahajournals.org/content/130/20/1780.abstract>), which examines for the first time the characteristics of postural blood pressure control in older adults at the population scale.

Other papers and conference proceedings published examined the effects of various physiological factors (stress and social status, medical use) on neurocardiovascular instability and the effects of neurocardiovascular instability on a number of important clinical outcomes (falls, and cognitive impairment, depression) leading to a greater understanding of the importance of autonomic function in older adults (See reference section). Finally a paper describing a novel software framework for the analysis of postural blood pressure was presented at the IEEE International conference on Biomedical and Health Informatics (BHI) by Dr. Chris Soraghan, Dr. Ciarán Finucane and Tim Foran.

International Collaborations

Collaborative studies with international partners from the **Amsterdam Medical Centre in Holland**, and the **Schlegel Research Institute for Ageing in Waterloo, Canada** (<http://www.the-ria.ca/>) also progressed significantly. These international collaborations have to date resulted in a **Royal Irish Mobility Grant** (<http://www.ria.ie>) awarded to Dr. Ciarán Finucane to fund a visiting Professorship to Waterloo, Canada which took place during Summer 2014. A study investigating the relationship between measures of cerebral perfusion and falls was established during this visit, with recruitment currently on-going in nursing homes throughout Ontario Canada in collaboration with Professor Richard Hughson and PhD candidate Laura Fitzgibbon-Collins. Work with our European partners in Amsterdam has also proven very successful with an international journal paper recently published in *Age and Aging* (Jansen et al., 2014) and a number of presentations given at top European conferences (*European Society of Cardiology*) by PhD candidate Dr. Sofie Jansen.

Educational Activities

Educational activities also continued in this area. Michelle Sybring successfully completed an MSc in Bioengineering under the supervision of Dr. Ciarán Finucane with co-supervisors Prof. Rose Anne Kenny and Dr. Hugh Nolan. This project builds on previous work in developing a novel community based screening test for vasovagal syncope suitable for younger and older adults. Two journal papers and an invention disclosure have been submitted as part of this project to date. In addition, Conal O'Griofa, (DIT MSc student) successfully presented his work at the IEEE conference on Medical Measurements and Applications in 2014 and successfully completed his MSc thesis under supervision of Dr. Jane Courtney and Dr. Ciarán

Finucane. This work has created novel software for tracking blood vessel parameters for use in aneurysm detection and quantification. MIRA/MPBE hosted a trainee Clinical Engineer, Ms. Aisling Barry, from the University of Liverpool on a project supervised by Tim Foran on improving the technology used to regulate oxygen flow for patients on oxygen support.

Clinical Engineering in Syncope and Falls: Cerebral Perfusion Measurement

As part of ongoing clinical engineering support activities in Mercer's Institute for Successful Ageing (MISA), novel cerebral perfusion measurement systems were trialled in St. James's Hospital, Falls and Blackout unit by Dr. Ciarán Finucane and Dr. Chris Soraghan. Results of this trial suggest that this approach will provide a better understanding of pathophysiological mechanisms underlying falls in older adults and may result in more sensitive methods of diagnosing causes of syncope and falls. A business case has been developed to support the purchase of this device for the new MISA clinic.



The Irish Longitudinal Study on Ageing (TILDA)

The role of research in responding to the challenges and opportunities of an ageing society requires a multidisciplinary multi-centre, and integrated approach. TILDA is a large-scale nationally representative study of over 8,500 people aged 50 and over, and is one of the most ambitious studies on ageing ever carried out in Ireland. TILDA through its extensive database of the health, social and economic characteristics of older persons in Ireland is establishing a comprehensive and accurate picture of the ageing process, including prevalence and incidence of disease; physical, mental, cognitive, behavioural and biological health, and the socio-economic determinants of health and wellbeing, and the underlying genetic factors that influence or are influenced by this process.

The 2014 Annual report presents highlights and TILDA's impact. 2014 was characterised by a focus on engagement, knowledge translation of findings to policy-makers, non-governmental agencies, government staff, healthcare practitioners, institutions of higher learning, industry and the general public. This has resulted in policy impacts and changes to clinical practices in addition to ongoing contributions in the areas of teaching, learning, healthcare provision, technological innovation and national/international collaborations.



Professor Rose Anne Kenny and the TILDA Team

Policy Impacts

TILDA data is embedded within the following policy documents and mapped against strategic plans moving forward, including:

Healthy Ireland, the National Framework for Improved Health and Wellbeing 2013-2025

This national framework recognises the importance of improved health and wellbeing not only for individual welfare but also for society in terms of increased productivity and improved quality of life. A key feature of Healthy Ireland is its 'focus on research, to ensure that goals, programmes and funding decisions are based on robust evidence about the determinants of health and best practice approaches in addressing them. TILDA data was utilised in the development of the framework and in the development of the Healthy Ireland Outcomes Framework presently under development.

National Positive Ageing Strategy/Healthy and Positive Ageing Outcomes Initiative (HaPAI)

TILDA is a key component of the recently-established National and Positive Ageing Outcomes Initiative (HaPAI), a joint initiative between the Department of Health, the Atlantic Philanthropies, the Health and Wellbeing Division of the HSE, and Age Friendly Ireland to monitor and promote older people's health and wellbeing in Ireland. This initiative is intended to measure the implementation of the National Positive Ageing Strategy (NPAS). A dedicated member of the TILDA team is involved in extracting data with which to monitor progress towards the goals and objectives of the NPAS. The first interim report of HaPAI is due to be published in February 2015.

TILDA's Influence on Retirement and Pensions Provisions

The National Pensions Framework projects an increase in public pension spending in Ireland from approximately 5.5 per cent of GDP in 2008 to almost 15 per cent of GDP in 2050. The Framework highlights the need for increased supplementary pension coverage and higher contribution rates among those covered in order to ensure the sustainability of the public pensions system and an adequate standard of living for future retirees. TILDA research has provided important evidence on the current pension provision of the over 50s in Ireland. TILDA research has demonstrated that approximately 50 per cent of current retirees have supplementary pensions (i.e., occupational or private). Over a third of current retirees have an income replacement rate of less than 50 per cent. There are substantial differences in supplementary pension cover between men and women, between former public and private sector workers and between those with different levels of education. These findings have directly influenced the recommendations made by the OECD in their major review of Irish pension policy. The review, commissioned by the Department of Social Protection, provided an international perspective on Ireland's retirement income provision and in particular reviewed the viability and long-term impact of proposed changes in pension policy. The resulting policy options put forward by the OECD to expand private pensions coverage and retirement savings, which were partly based on TILDA research, are informing the development of the proposed universal supplementary pension saving scheme.

The Irish National Dementia Strategy

Launched by the Department of Health, Healthy Ireland and Patient Safety First the Irish National Dementia Strategy utilises TILDA data within the strategy to improve the lives of people with dementia through clear clinical pathways and guidelines, better information about community supports, improved linkages between healthcare systems, greater public awareness and research.

Dublin Age Friendly City Strategy

Adequate crossing times at pedestrian crossings are included in the WHO's Checklist of Essential Features of Age Friendly Cities. In many countries including Ireland, pedestrian light crossings require a minimum walking speed of 1.2 metres per second (m/s). TILDA data shows that one third of Irish adults aged 65-74 years and 61 per cent of the over 75s walked slower than 1.2 m/s. When walking while carrying out another task (e.g., talking on the phone), 76 per cent and 91 per cent of the 65-74 year olds and the over 75s respectively walked slower than 1.2 m/s. This difficulty may lead to reductions in physical activity, social interactions and functional independence. TILDA researchers have met with the Dublin Age Friendly City committee to highlight TILDA findings and these research findings and interactions have informed the development of the Dublin City Age Friendly Strategy 2014 - 2019 which was launched in September 2014. TILDA are also working with Michael Phillips (Director of Traffic and City Engineer, Dublin City Council), and Brendan O'Brien (Head of Technical Services, Dublin City Council Road and Traffic Department) to analyse data on current pedestrian crossing light settings being used in Dublin City and to examine the potential to implement an intervention study in conjunction with Age Friendly Cities to assess the impact of changes to the pedestrian light settings. Additionally, the TILDA team is working with Age Friendly Ireland on life-long learning strategies around successful ageing to inform their Dublin Age Friendly City Action Plan 2015-2017.

Health Reform

Analyses of the determinants of healthcare utilisation by TILDA researchers have shown the importance of medical card eligibility, in addition to health need. The availability of longitudinal data from TILDA allows us to follow the same individuals through time, observing how their demand for health and social care services changes in response to a change in their medical card eligibility and/or private health insurance cover. In the context of the current proposals around universal GP care and universal health insurance, information such as this is essential for costing these proposals accurately. TILDA researchers are currently working with the Department of Health and Economic and Social Research Institute (ESRI), using TILDA data to forecast the likely demand implications of a movement towards universal GP care.

Childhood and Later Life Health and Wellbeing

Better Outcomes, Brighter Futures, the new national policy framework for children and young people recognises that what happens early in life affects health and wellbeing in later life. Improving health and wellbeing, raising education levels and reducing inequality bring significant economic returns to society. TILDA contains information on early life circumstances and experiences. TILDA research has demonstrated the key role that early life circumstances play in shaping later life outcomes across a wide range of domains, from relationships, physical and mental health, social engagement, educational outcomes and economic conditions. Of direct relevance for policy is current TILDA research which is examining whether social mobility can ameliorate the effect of disadvantage. In collaboration with the Growing up in Ireland study and the joint initiative the Centre for Longitudinal Studies in Ireland, the two studies are providing an invaluable evidence base from which to develop policy with respect to children and young people in Ireland.

Trinity Leadership Serving on the Horizon 2020 Advisory Board

TILDA Director Rose Anne Kenny was selected as a member of the Health, Demographic Change and Wellbeing Advisory Group of Horizon 2020. The advisory group provides consistent and consolidated advice to the Commission during the preparation of the Horizon 2020 work programme policy.

TILDA is a Leader in the Harmonisation of Longitudinal Studies

TILDA is recognised internationally as the gold standard for longitudinal studies on ageing and plays a significant leadership role advising developing studies worldwide while actively engaging in research within the ‘family’ of international longitudinal studies on ageing. Currently, TILDA is involved in a harmonisation exercise with other longitudinal studies of ageing led by the HRS in the US. Harmonised datasets are available, for free, to researchers via the ‘Gateway to Global Aging’ repository. This approach maximises the external and international use of TILDA data, promotes international collaborations and increases the scope of the subsequent analysis. It also facilitates the long-term availability and use of TILDA data. One key objective of TILDA is to inform the development of a mobile health assessment by refining and developing tests and measurements to make these compatible with smart technology. This will enable a pared-down version of the comprehensive TILDA health assessment which will be especially valuable to longitudinal ageing studies in the developing world with large geographic areas such as India, China, and Brazil. In addition, the TILDA team is currently involved in the development of the TILDA app, which will allow for the dissemination of TILDA research findings to a broad range of audiences both nationally and internationally.

Pharmaceutical Costs

Over the period of the economic crisis, the high cost of pharmaceuticals, and the consequent level of public spending on pharmaceuticals in Ireland was the subject of much debate. TILDA is unique in Ireland in containing information on the use of pharmaceuticals including those paid for privately in a nationally-representative sample of the 50s in Ireland. It also contains information on the use of over-the-counter medications, as well as food or dietary supplements. Research by TILDA has demonstrated high rates of polypharmacy among the over 50s in Ireland. Polypharmacy, i.e., use of 5 or more medications concurrently was reported by 19 per cent of TILDA respondents and this group accounted for 54 per cent of the annual cost of pharmaceuticals for the entire over 50s group in 2010. TILDA researchers estimated that if these individuals switched to using generic pharmaceuticals annual cost savings of approximately €29.5 million could be achieved. However, this research highlighted that the cost savings were limited due to the high cost of generics in Ireland and the consequent small difference in price between proprietary and generic pharmaceuticals at ATC level 5 at the time of the research (2010). Partly as a result of the TILDA findings, a system of reference pricing and generic substitution was implemented in Ireland in late 2013 and throughout 2014 there have been substantial falls in the prices of many high-volume pharmaceuticals and increasing use of generics (REF).

Economic Cost of Cardiovascular Disease in Ireland

Cardiovascular disease (CVD) remains the primary cause of mortality in Ireland accounting for almost a third (32.1 per cent) of all cause mortality in 2012. TILDA researchers are currently involved in a study to estimate the economic burden of CVD in Ireland with a view to identifying the critical pressures on the health and social care systems as a result of current rates of prevalence of CVD in Ireland.

Clinical Impacts

TILDA and MISA integrate evidence-based research and clinical expertise, ensuring proficiency in patient care, relevance of research, a patient-centred approach and the ability to evaluate the efficacy of treatment over time. Clinicians recognise that caring for patients requires access to evidence-based research and researchers recognise that clinical settings provide the real-world settings in which to apply research findings. Examples of the integrated pathway for ageing research and patient care between TILDA and MISA include:

Assessment, Treatment, Guidelines and Research for Blood Pressure Management

TILDA researchers have reported for the first time that blood pressure behaviour significantly changes as people age such that standing up leads to an abnormal drop in blood pressure in 40 per cent of people over 75 and these people are at significantly increased risk of cognitive impairment, depression, falls and blackouts. This has changed clinical practice for the assessment and treatment of hypertension in the Falls & Blackout Unit (FABU) at St James's Hospital, altered management of blood pressure behaviour in patients in the Stroke Service and led to further clinical research in stroke patients. The work was deemed of sufficient importance when published in September 2014 in the American journal, *Circulation*, that it was accompanied by a special editorial on the findings from TILDA on blood pressure behaviour and ageing. Furthermore, the work led to additional research in the Stroke Unit which has shown that low blood pressure can cause stroke in 6 per cent of adults over 50 attending the Emergency Room with new onset stroke. This has further led to new processes for blood pressure management in stroke, memory and mental health clinics. Additional research studies in cohorts of attendees to the Memory Clinics in MISA have further confirmed that patients who have mild cognitive impairment but drop blood pressure on standing are four times more likely to convert to established dementia than those whose blood pressure behaviour is higher.

TILDA & MISA Launch New Screening & Awareness Programmes:

Atrial fibrillation: For the first time TILDA has shown that atrial fibrillation is under diagnosed or inadequately treated in two thirds of the older population who have this potentially fatal arrhythmia. Furthermore for the first time atrial fibrillation has been shown to be a significant risk factor for falls and for risky alterations in walking patterns. Atrial fibrillation screening has now been incorporated into routine FABU and Day Hospital assessments. Additionally, TILDA findings, in particular those in relation to the high levels of unawareness of AF in the over 50s, were included in an awareness campaign for atrial fibrillation by the Irish Heart Foundation (IHF) in 2014:

<http://www.irishheart.ie/media/pub/advocacy/leafletafib.pdf>

http://www.irishheart.ie/iopen24/atrial-fibrillation-awareness-campaign-2014-38_1339.html

Current work is underway by the TILDA team to calculate projections of how many lives have been saved and to quantify the reduction in morbidity and health care expenditure as a result of the TILDA findings and subsequent IHF campaign.

Falls Risk with Common Medication Use: TILDA reported that the risk of falls is significantly increased in people who use commonly prescribed anti-cholinergic drugs such as eye drops for glaucoma, treatment for ulcers, Parkinson's disease, irritable bowel, prostate symptoms, painkillers, and antihistamines. This association has been embedded into new screening processes in the FABU, the Day Hospital services and Local Asset Mapping Programme (LAMP) assessment programme.

Osteoporosis: TILDA research has shown that 100 per cent of men and 60 per cent of women over 50 who have objective evidence of osteoporosis are unaware of the diagnosis and therefore not receiving treatment to prevent fractures. This has informed new guidelines in the Bone Health and Osteoporosis Unit and new screening programmes for osteoporosis in the FABU and Day Hospital.

Obesity Awareness Programme: TILDA has shown that nearly 80 per cent of over 50 year olds in Ireland are overweight or obese. This has led to obesity awareness programmes in patient cohorts attending MISA outpatient facilities and inpatient care.

Longitudinal Impact of Surgery: Research in MISA has noted a significant number of older frail patients who undergo general anaesthesia for surgical procedures do not make a full cognitive recovery afterwards and are often more physically frailer after the procedure. In response to this research, TILDA is now exploring the longitudinal impact of surgery on body and brain function to inform ongoing pre- and post-op assessments in MISA cohorts.

New Walking Assessment Tool: TILDA has informed the development of a new walking assessment tool developed by bioengineers in MISA and TILDA, for use in family practices and clinical settings through the LAMP programme.

Outreach & Educational Programmes

The combined research efforts from MISA and TILDA have led to new educational and training programmes and widespread dissemination and engagement activities. In addition to the activities highlighted below, findings from TILDA and MISA research are regularly presented at weekly grand rounds on St. James's Hospital campus to ensure translation of findings to a wider audience of clinicians in all specialties (i.e. oncology, haematology, emergency, respiratory, cardiology, orthopaedic, and cardiothoracic, which is important given that 60 per cent of adult hospital attendees are over 65). Other outreach and educational programmes include:

Diploma in Syncope and Related Disorders

November 2014 saw the introduction of a Diploma in Syncope and Related Disorders - A joint collaboration between the Royal College of Physicians of Ireland (RCPI) and the Falls and Syncope Service in St. James's Hospital. This Diploma is the first of its kind world-wide and is designed to equip doctors and clinical nurse specialists with the skills to effectively diagnose, treat and manage syncope and related disorders in a range of clinical settings.

3rd Annual Syncope Training Day

Professor Gert Van Dijk, Leiden University Medical Center, The Netherlands, and Dr Nicholas Gall, King's College Hospital, London, joined with Professor Joseph Harbison, St. James's Hospital, Dr Norman Delanty, Consultant Neurologist, Beaumont Hospital, and TILDA Director Rose Anne Kenny to lead the 3rd Annual Syncope Training Day.

TILDA Nurse Study Day

A research study day was organised for the TILDA research nurses. The nurses play a vital role in TILDA as they are responsible for the day-to-day collection of all health assessment data. The purpose of this event was to update the nurses on the status of the study and to give insight into the breadth of research that is being produced in TILDA. Ten researchers presented their findings on a range of topics including voting in Ireland, health care utilisation and the impact of being a carer.

Lunchtime Educational Programmes for Practice Nurses

TILDA have worked with the HSE Mid-Leinster Professional Development Co-ordinators for Practice Nurses to run a number of lunchtime educational sessions on hypertension, initially on a pilot basis across Dublin and Kildare. These sessions have been approved by the Nursing and Midwifery board for Continuing Professional Development points (Category 1).

TILDA is Establishing National Excellence in Ageing Research

TILDA collaborates nationally with an inter-disciplinary panel of scientific researchers, with expertise in various fields of ageing, from eight research institutions: Dundalk Institute of Technology; Economic and Social Research Institute; National University of Ireland, Galway; Queen's University Belfast; Royal College of Surgeons in Ireland; University College Cork; University College Dublin; and Waterford Institute of Technology.

TILDA is Establishing International Excellence in Ageing Research

Trinity College Dublin has joined a European-wide consortium of exceptional global leaders in ageing, including 50 core partners 90 associate partners in business, research, healthcare and institutions of higher education from 9 EU countries. The focus is on healthy living and active ageing with an emphasis on advancing smart technologies from research to market. The InnoLife Knowledge Innovation Community (KIC) aims to advance innovation in health promotion, early diagnoses, treatment of common conditions and diseases, and utilisation of new technologies for independent living for older persons. Existing KICs have trained more than 2,000 entrepreneurs, secured 77 new patents, and launched 144 new start up ventures.

Public Engagement Events

TILDA researchers have attended a number of public engagement seminars including *Care-Giving Mini-Symposium*, *Be Brain Aware*, 2014 Trinity Week's 'Science of Happiness', Dublin's Annual Festival of Curiosity and TEDMed LIVE.

TILDA Seminars

Throughout the year, TILDA provide a series of monthly research seminars which advance multi-disciplinary and cross institution collaborations and information-sharing. In 2014, research seminars included:

Dr Sarah Barry, Health Policy & Management, TCD – Measuring, Mapping and Making Sense of Resilience in the Irish Health System at a Time of Economic Crisis

Dr Barbara Clyne, HRB Primary Care Research Centre, RCSI – OPTI-SCRIPT: A randomised control trial to address Potentially Inappropriate Prescribing (PIP) in older patients

Mr Martin Lawless, School of Public Health and Population Science, UCD – Early Predictors of Disability Retirement in the Third Age

Dr Olga Theou, Dalhousie University Canada – Frailty in Europe: Results from the Survey of Health, Ageing and Retirement in Europe

Dr Maeve Rea, Queens College Belfast – Successful Ageing: Findings from the Belfast Elderly Longitudinal Free-living Study (BELFAST) and the EU Genetics of Healthy Ageing study

Dr Cathal McCrory, TILDA – Inter-generational social class mobility and physical health functioning in mid-life and older ages

Mr Kevin Healy, Department of Zoology TCD – Lifespan variation in birds and mammals

Prof Simon Biggs Gerontology and Social Policy, University of Melbourne – Trends in International Social Policy

Dr Irene Mosca, TILDA – Retirement and Mental Health & Categorising continuous variables

Obesity in an Ageing Society

The TILDA report entitled '*Obesity in an Ageing Society*' was published showing that nearly four out of five adults over the age of 50 are overweight or obese and a similar proportion has an 'increased' or 'substantially increased' waist circumference. This means that just one fifth of the over 50s have a normal BMI or waist circumference. This report highlights the increased health risks and health services burden in older adults due to high rates of obesity and has received widespread coverage in the national press, including the front page of *The Irish Times*. Numerous articles have appeared in both print and online media and the report has also been covered extensively by national and local broadcast media, including *RTE News*, *Newstalk's The Right Hook* and *The Breakfast Show*, and *TV3's The Middy Show*. See Table 2 for press coverage of this TILDA report.

The Impact of the Economic Crisis on the Health and Well-Being of Ireland's Over-50s

The Economic and Social Research Institute (ESRI) research bulletin used TILDA and SHARE (Survey of Health, Ageing and Retirement in Europe) data to explore the impact of the economic crisis on the health and well-being of Ireland's Over-50s. The bulletin, authored by TILDA Economics Principal Investigator, Professor Alan Barrett and TILDA Research Fellow Dr Vincent O'Sullivan, finds that despite a large fall in wealth for the over-50s in Ireland between 2006/7 and 2012/13, no significant deterioration in the group's average health or well-being is evident. The findings were discussed in the Irish print media and Professor Barrett was

interviewed on RTÉ Radio 1's *Drivetime* and *Newstalk's The Breakfast Show*. The results have also been published in *Applied Economics Letters* under the title '*The wealth, health and well-being of Ireland's older people before and during the economic crisis*'.



Launch of the Over 50's Report
taking prescribed medications, which have the potential to interact with alcohol, still regularly consume alcohol during the course of their prescription. Alcohol can interact harmfully with certain prescription medications which are known as alcohol interactive medicines. The findings of the study have received coverage in the national press.

TILDA data used in Study of Alcohol Consumption & Prescribed Medication

Dr Grainne Cousins from the School of Pharmacy in the Royal College of Surgeons in Ireland published a study using TILDA data. This study found that 60 per cent of older Irish adults

TILDA data shows the long-term economic impact of childhood sexual abuse on survivors

An Economic and Social Research Institute (ESRI) / Trinity College Dublin (TCD) research bulletin used TILDA data to explore whether people who experienced childhood sexual abuse (CSA) suffered long-term economic consequences in terms of lower attachment to the labour market and/or lower incomes. The bulletin, authored by TILDA Economics Principal Investigator, Professor Alan Barrett and former TILDA Research Fellows Dr Vincent O'Sullivan and Dr Yumiko Kamiya, found that male survivors of CSA are three times more likely to be out of the labour force due to sickness/disability compared to other men.

TILDA Data Illustrates the Impact of Childhood Adversity

TILDA's key scientific publications in 2014 included a paper in *Health Psychology* by Dr Cathal McCrory which illustrated the lasting legacy of childhood adversity for disease risk in later life. In addition, Dr McCrory published in *Journals of Gerontology* on the relationship between early life circumstances and midlife functional mobility using the Timed-Up-and-Go (TUG) Measure.

TILDA Report on the Emigration of Adult Children and the Mental Health of their Parents
TILDA released a Topic Report entitled "*The emigration of adult children and the mental health of their parents*". The authors of this report, Dr Irene Mosca, TILDA Research Fellow in Economics and Dr Alan Barrett, ESRI. TILDA reported that the mental health of mothers suffered as a consequence of the emigration of their children during the recession. Specifically they experienced increased depressive symptoms and greater loneliness than mothers whose children did not emigrate. However, with the exception of fathers aged over 65, fathers did not suffer an equivalent decline in mental health following the emigration of one or more of their children.

CARDI/TCD Research on Frailty and Disability in Ireland

TILDA, in conjunction with the Centre for Ageing Research and Development in Ireland (CARDI), released a research report entitled "*Frailty and Disability in Ireland*" carried out by researchers at Trinity College Dublin and Queen's University Belfast. The study was led by Dr Matthew O'Connell, TILDA Research Fellow and Siobhan Scarlett, TILDA Data Manager and funded under CARDI's 2013 data-mining funding. The results are based on analysis of data from the Health Survey Northern Ireland and the first wave of data from TILDA. The results show that older people in Northern Ireland are three times more likely to be frail than those in the Republic of Ireland. Women, those from lower socio-economic groups and older people in both countries are also more likely to be frail. The authors highlight that frailty is a strong predictor of disability in older age. Rates of disability in older people in Northern Ireland are almost twice those in the Republic of Ireland.

TILDA Investigates the Links between Fear of Falling, Visual Impairment and Mobility

This research was led by Dr Orna Donoghue and details the findings from two previously published TILDA papers. This research found that older adults who are afraid of falling and especially those who restrict their activity as a result of this fear walked more slowly than those who were not afraid of falling. This was true even after taking physical and mental health and cognitive function into account. Mobility is particularly impaired in older adults with poor visual function combined with fear-related activity restriction. Long-term changes to normal walking patterns may increase the risk of falls, disability and other adverse outcomes. This paper has clinical implications in terms of the importance of recognising fear of falling, including a comprehensive walking and vision assessment for older adults and appropriate intervention.

TILDA Presents GP Utilisation in the Over 50s

A research brief entitled "*GP utilisation in the over 50s*" was led by Dr Anne Nolan and showed that, in comparison with those with 'no cover' for GP expenses (i.e., without a medical card or private health insurance), adults aged 50 and over with a medical/GP card, private health insurance or both, had an increased number of GP visits per annum. These effects account for different characteristics in the various entitlement groups that might explain their greater need for healthcare (e.g., age, health status, etc.). The results clearly demonstrate that the current

structure of healthcare entitlements in the Irish system impacts on use of GP services, even after controlling for health need. This analysis is particularly timely given the commitments in relation to free GP care that are contained in the current Programme for Government. In this context, analyses such as this one of the response to differential prices of care can inform policymakers in making decisions around adjusting healthcare entitlements in the Irish healthcare system.



TILDA Scientific Board

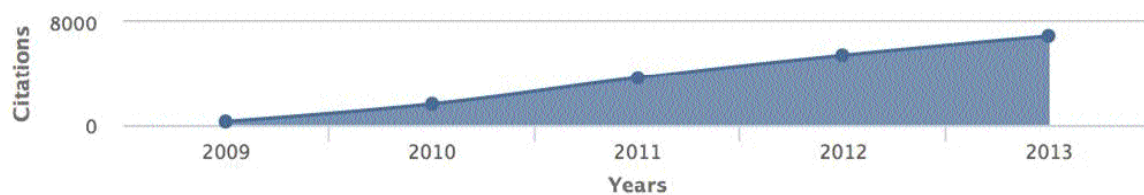
TILDA Advances Ireland-United States Comparative Studies

Dr Irene Mosca published in the *International Journal of Public Health* on the differences in the prevalence of diagnosed, measured and undiagnosed hypertension between Ireland and the United States of America. Dr. Orna Donoghue published in the *American Journal of Geriatric Psychiatry* on the relationship between antidepressants and gait deficits in older adults.

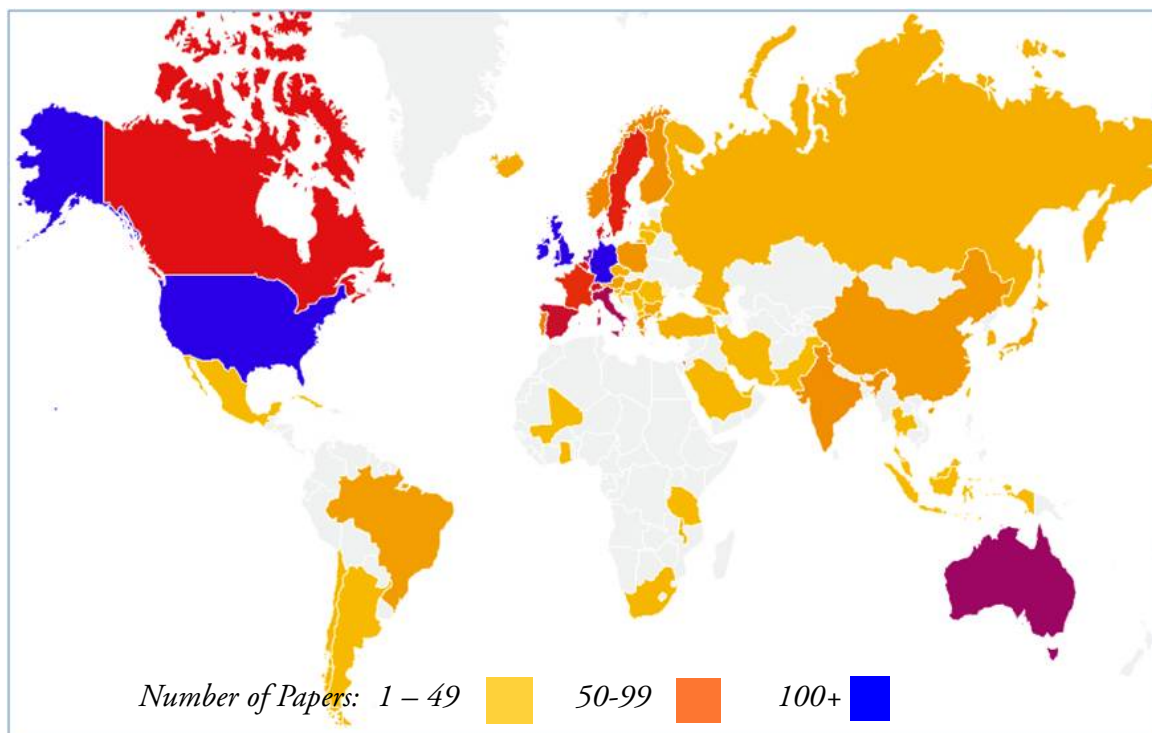
Trinity EngAGE Centre for Research in Ageing Track Record (2009-2013)

TILDA Director Rose Anne Kenny serves as Director of Trinity EngAGE Centre for Research in Ageing. As the leader of both programmes, her efforts have significantly advanced Ageing research in Ireland. The following bibliometrics present the Ageing theme track record for Trinity College Dublin researchers.

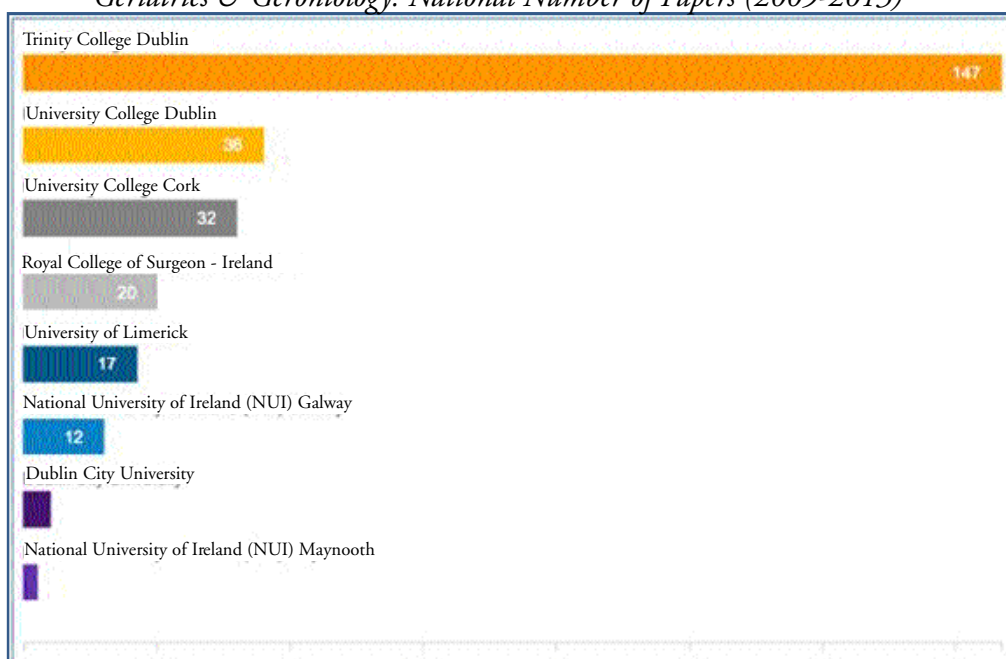
Ageing Citations by Year (Sources: InCites/Web of Science/Scopus)



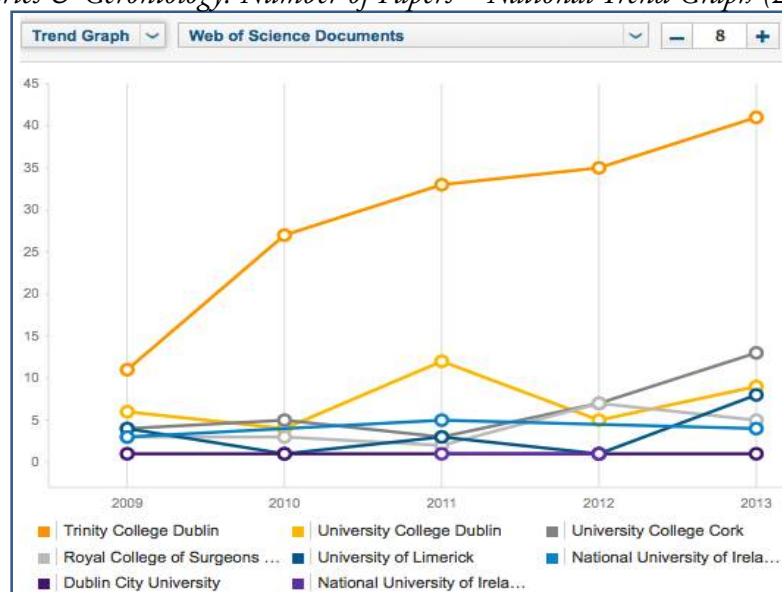
Ageing Collaborations – International Co-Authorship (2009-2013)



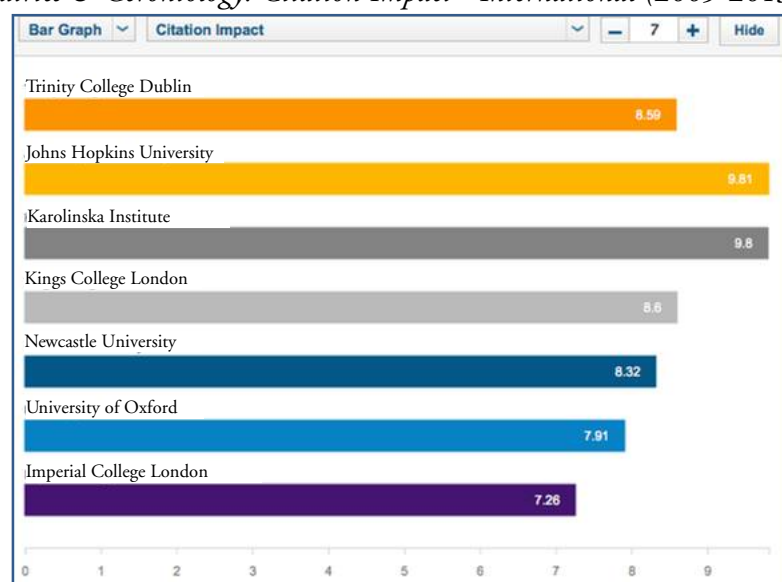
Geriatrics & Gerontology: National Number of Papers (2009-2013)



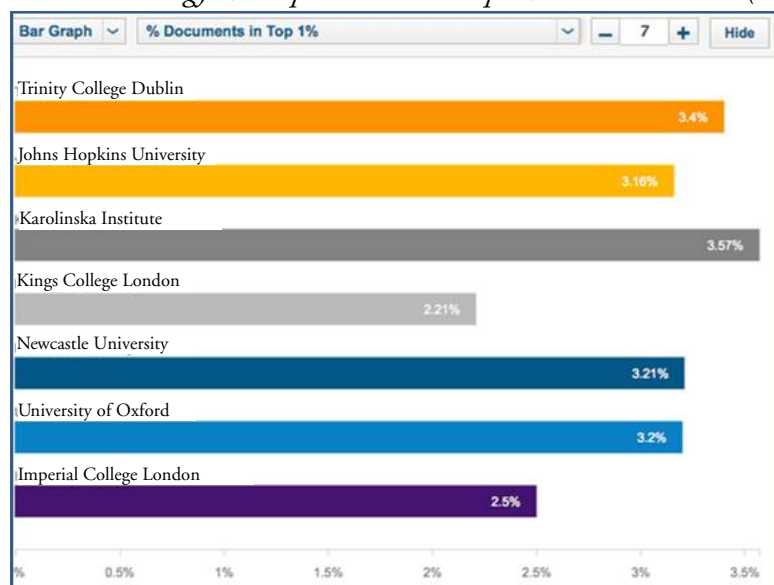
Geriatrics & Gerontology: Number of Papers – National Trend Graph (2009-2013)



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Published Abstracts

The Changing Physical Health of the Over 50s (2009–2012): Findings from The Irish Longitudinal Study on Ageing
Ciaran Finucane², Joanne Feeney¹, Hugh Nolan¹, Claire O'Regan¹, Hilary Cronin¹, Rose Anne Kenny¹ ¹TILDA, TCD, Dublin, Ireland, ²St. James's Hospital, Dublin, Ireland.
Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

Mapping Health Services to Meet the Needs of an Ageing Community: The Local Asset Mapping Project (LAMP)
David Robinson¹, Gerard Boyle¹, Jennifer Feighan¹, Chris Soraghan¹, Luis Dominguez-Villoria¹, Darren Clarke², Jan Rigby², Stacey Lindau³, Rose Anne Kenny¹ ¹St. James's Hospital, Dublin, Ireland, ²National University of Ireland, Maynooth, Meath, Ireland, ³University of Chicago, Chicago, USA.
Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

Frailty and Disability across the North and South of Ireland: A Data Harmonisation Study
Siobhan Scarlett, Bellinda King-Kallimanis, Jonathan Briody, Rose Anne Kenny, Matthew O'Connell The Irish Longitudinal Study on Ageing, Department of Medical Gerontology, Chemistry Extension Building, Trinity College, Dublin, Ireland.
Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

Prediction of Fracture Leading to Hospital Admission in Community Dwelling Older Adults
Rosaleen Lannon¹, Avril Beirne², Kevin McCarroll², Cathal Walsh³, Conal Cunningham²,
JB Walsh¹, Miriam Casey¹ ¹Bone Health Unit, Mercer's Institute for Research on Ageing, St
James's Hospital, Dublin 8, Ireland, ²Mercer's Institute for Research on Ageing, St James's
Hospital, Dublin 8, Ireland, ³Dept of Biostatistics, Trinity College Dublin, Dublin 2,
Ireland.

Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

Food Enjoyment is associated with Nutritional Status among Irish Older Adults living alone
Joanna McHugh, Olga Lee, Niamh Aspell, Emma McCormack, Michelle Loftus, Sabina
Brennan, Brian Lawlor NEIL Program, Institute of Neuroscience, Trinity College, Dublin,
Ireland.

Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

*Do We Tell GPs What They Need to Know? A Quality Assessment Review of GP Correspondence
from a Medicine for the Elderly Outpatient Clinic*

Avril M Beirne, Aisling Byrne, David J Robinson Department of Medicine for the Elderly, St
James's Hospital, Dublin 8, Ireland.

Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

Resource Utilisation in Older Patients Presenting with Falls to the Emergency Room

Patricia Hall, Jaspreet Bhangu¹, Ciara Rice¹, Geraldine McMahon¹, Rose Ann Kenny² ¹St.
James's Hospital, Dublin, Ireland, ²Trinity College, Dublin, Ireland.

Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

*Changing Patient Demographics and Diagnostic Profiles Attending a National Memory Clinic: A
Retrospective Review*

Avril M Beirne, Irene Bruce, Robert Coen, Kevin McCarroll, David J Robinson, Brian A
Lawlor, Conal J Cunningham Mercer's Institute for Research on Ageing, St James's Hospital,
Dublin 8, Ireland.

Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

The Utility of FDG PET Brain in the Diagnosis of Neurodegenerative Conditions

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Institute for Research on Ageing, St James's Hospital, Dublin 8, Ireland, ²Department of
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Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

*The Impact of Caring for Spouses on Depression and Health Behaviours in Over 50s in Ireland,
The Irish Longitudinal Study on Ageing*

Christine A McGarrigle, Cathal McCrory, Rose Anne Kenny Trinity College Dublin,
Dublin, Ireland.

Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

Bisphosphonate Related Osteonecrosis of the Jaws in the Osteoporotic Patient

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Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

FUSE: Falls and Unexplained Syncope in the Elderly. The Utility of Implantable Loop Recorders

Jaspreet Bhangu¹, Patricia Hall¹, Ciara Rice¹, Geraldine McMahon¹, Peter Crean¹, Richard Sutton³, Rose Ann Kenny² ¹St. James's Hospital, Dublin, Ireland, ²Trinity College Dublin, Dublin, Ireland, ³Imperial College, London, UK.
Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

Reduced Gait Speed in Community-Dwelling Adults with Atrial Fibrillation

Orna Donoghue¹, Sofie Jansen², Cara Dooley¹, Sophia de Rooij², Nathalie Van der Velde², Rose Anne Kenny¹ ¹The Irish Longitudinal Study on Ageing (TILDA), Trinity College Dublin, Dublin, Ireland, ²Academic Medical Center, Department of Internal Medicine, Section of Geriatric Medicine, Amsterdam, The Netherlands.
Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

Do Self-Reported Sensory Deficits Predict Recurrent Falls Over 2 Years?

Orna Donoghue¹, Annalisa Setti², Cara Dooley¹, Rose Anne Kenny¹ ¹The Irish Longitudinal Study on Ageing (TILDA), Trinity College Dublin, Dublin, Ireland, ²School of Applied Psychology, University College Cork, Cork, Ireland.
Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

Assessment of Functional Capacity in Metabolically Healthy Obese Older Adults

Cormac Kennedy¹, David Robinson², Roman Romero-Ortuno³, Diarmuid O'Shea¹, Rosanne Kenny³, Donal O'Shea¹, Jean O'Connell¹ ¹St Vincent's University Hospital, Dublin, Ireland, ²St James's Hospital, Dublin, Ireland, ³TILDA, Dublin, Ireland.
Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

Clinical experience of Denosumab at a Specialist Bone Health Unit

Rosaleen Lannon, Kevin McCarroll, Nessa Fallon, Miriam Casey, JB Walsh Bone Health Unit, Mercer's Institute for Research on Ageing, St. James's Hospital, Dublin, Ireland.
Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

A Study of Patients with Bilateral Colles Fractures Attending a Specialist Bone Health Clinic

Rosaleen Lannon, Niamh Murphy, Georgina Steen, Miriam Casey, JB Walsh Bone Health Unit, Mercer's Institute of Research on Ageing, St. James's Hospital, Dublin, Ireland.
Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

Vitamin D in Acute Hip Fracture

Rosaleen Lannon, Evelyn Lynn, Brendan McCarthy, Niamh Maher, Miriam Casey, Kevin McCarroll, JB Walsh Bone Health Unit, Mercer's Institute for Research on Ageing, St. James's Hospital, Dublin, Ireland.
Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

Setting Our Goals on a Gerontological Rehabilitation Unit from a Nursing Perspective

Joanne Larkin, Avril McKeag, Michelle Keane Cappagh National Orthopaedic Hospital, Dublin, Ireland.

Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

Non-Attendance at a Bone Health Clinic Following Hip Fracture

Niamh Maher, Nessa Fallon, Georgina Steen, Dymphna Hade, Rosaleen Lannon, Kevin McCarroll, Miriam Casey, JB Walsh St. James's Hospital, Dublin, Ireland.

Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

Cognitive Frailty in Older Irish Adults

K McCarroll¹, A Beirne¹, M Casey², H McNulty³, S Strain³, M Ward³, E Laird, A Molloy⁴, C Cunningham² ¹Mercer's Institute for Successful Ageing, Dublin, Ireland, ²Department of Gerontology, St. James's Hospital, Dublin, ³Northern Ireland Centre for Food and Health, Coleraine, Derry, NI, USA, ⁴Biomedical Sciences Institute, Trinity College Dublin, Dublin, Ireland.

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Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

Validation of the Picture Naming Task from the NIH Stroke Scale for an Irish Population

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Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

Taking the Service to the Community—Geriatrician—Primary Care Liaison Service

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Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

Outcomes of a Multi-Disciplinary Rehabilitation Consultation Team

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Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

Frailty as a Marker of Premature Biological Ageing: Preliminary Evidence from The Irish Longitudinal Study of Ageing (TILDA) and a Community-based Methadone Treatment Program

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Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

Extended Zoledronic Acid Treatment in Older Patients with Osteoporosis

Josephine Soh, James Foley, Miriam Casey, J Bernard Walsh, Rosaleen Lannon, Kevin McCarroll Medicine for the Elderly Directorate, St James's Hospital, Dublin, Ireland.
Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

Cognitive Interventions for Healthy Older Adults: A Systematic Review

Michelle Kelly¹, David Loughrey¹, Brian Lawlor¹, Ian Robertson¹, Cathal Walsh², Sabina Brennan¹ ¹The NEIL Programme, Trinity College Institute of Neuroscience, Dublin, Ireland, ²The Department of Statistics, Trinity College Dublin, Dublin, Ireland
P171 Exercise Interventions for Healthy Older Adults: A Systematic Review
Michelle Kelly, David Loughrey, Brian Lawlor, Ian Robertson, Cathal Walsh, Sabina Brennan Trinity College Dublin, Dublin, Ireland.
Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

Exploring the Impact of Frailty on the Health and Social Care System in Ireland

Lorna Roe¹, Aisling O'Halloran², Charles Normand¹ ¹Centre for Health Policy and Management, Trinity College Dublin, Dublin, Ireland, ²The Longitudinal Study on Ageing, Trinity College Dublin, Dublin, Ireland.
Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

Combining The Active Stand Test And Pattern Recognition Enables Vasovagal Syncope Prediction.

Carmody M, Nolan H, Fan CW, O'Dwyer C, Kenny RA, Finucane C.
Age and Ageing 43 (Suppl 2), ii21-ii21

Impaired Orthostatic Blood Pressure Control is associated with Falls in Community Dwelling Adults aged over 50: Findings from the Irish Longitudinal Study on Ageing.
Finucane C, Fan CW, Soraghan C, O'Connell MDL, Donoghue O, Cronin H, Savva GM, Kenny RA.

Age and Ageing 2014, 43 (suppl 2), ii17-ii17

Clinical Engineering and Successful Ageing at St. James's Hospital.

Foran T.

BEAI Spectrum, Sept. 2014

Cognitive Frailty in Older Irish Adults

McCarroll K, Beirne A, Casey M, McNulty H, Strain S, Ward M, Laird E, Molloy A, Cunningham C.

IGS Abstracts 2014 [Ir J Med Sci (2014) 183 (Suppl 7):S269_S387]

Non attendance at a Bone Health Clinic Following Hip Fracture

Niamh Maher, Nessa Fallon, Georgina Steen, Dymphna Hade, Rosaleen Lannon, Kevin McCarroll, Miriam Casey, JB Walsh.

Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

Mortality Rate and Associated Factors in Older Adults following Hip Fracture

Niamh Maher, Nessa Fallon, Georgina Steen, Dymphna Hade, Rosaleen Lannon, Kevin McCarroll, JB Walsh, Miriam Casey.

Ir J Med Sci (2014) 183 (Suppl 7):S269–S387

Presentations

World Health Summit in Berlin

Professor Rose Anne Kenny was invited to present insights from TILDA at the World Health Summit in Berlin. The World Health Summit is the annual conference of the M8 Alliance of Academic Health Centers, Universities, and Academies of Sciences, which brings together decision-makers from 80 countries to discuss pressing issues facing healthcare systems. TILDA is being recognised internationally for catalysing research findings to inform social, economic and healthcare policies, in addition to transforming clinical practices in Ireland. Other notable speakers at the World Health Summit included Germany's Federal Foreign Minister Frank-Walter Steinmeier, the 2005 Nobel Prize Laureate in Medicine Barry J. Marshall, Hon. President of the International Olympic Committee (IOC) Jacques Rogge, and Assistant Director General of the World Health Organization (WHO) Dr. Marie-Paule Kieny.

Launch of the Northern Ireland Cohort for the Longitudinal Study of Ageing (NICOLA)

Senior TILDA staff travelled to Belfast to support the launch of the Northern Ireland Longitudinal Study on Ageing (NICOLA). Based at Queen's University the NICOLA study is modelled on the TILDA study and consists of a CAPI interview followed by a health assessment. The study is hoping to provide vital information for the Government by following the lives of 8,500 over-50s as they grow older. Professor Rose Anne Kenny was a keynote speaker at the launch where she spoke about the potential for future research collaboration between the TILDA and NICOLA studies.

Survey of Health and Retirement in Europe (SHARE)

Wave 6 Meeting

TILDA Research Director Dr Anne Nolan attended the SHARE wave 6 post-pilot meeting in Ohalo, Israel. At the meeting, issues such as the future funding of SHARE, refreshment of the samples and new indicators were discussed. While Ireland does not participate in SHARE, collaboration continues between the studies. In addition, as SHARE is increasingly recognising the value of objective health information (and is piloting the collection of dried blood spots in wave 6), the experience of TILDA in collecting similar measures was instructive.

Presentation to the Qatar National Research Foundation, Brussels

Dr Anne Nolan and Dr Ann Hever were invited to Brussels to meet with the Qatar National Research Foundation (QNRF). The purpose of the visit was to introduce the QNRF to TILDA, to illustrate how longitudinal studies can inform policy in relation to ageing, and to discuss potential collaboration opportunities. An overview of TILDA was presented along with policy-relevant findings in the domains of health, social and economics. TILDA was recognised as a model for possible longitudinal studies in the Middle East region.

TILDA HRB ICE Grant Research Fellow in the US

Dr Celia O'Hare, an ICE Grant Research Fellow based in TILDA, began a three month research placement at the University of Pittsburgh where she has the opportunity to work with renowned experts in the area of brain ageing. Celia's research focuses on understanding the mechanisms underlying the complex associations between cognitive impairment, anxiety and depression.

CARDI Research Fellows Attend Annual Beeson Meeting in San Diego, California

CARDI Leadership in Ageing Programme Research Fellows, Dr Aisling O'Halloran and Dr Joanne Feeney were invited to attend and participate in the annual Beeson Meeting in San Diego, California. Aisling and Joanne are former TILDA researchers and both are using TILDA data in their current research.

World Congress of the International Health Economics Association

The World Congress of the International Health Economics Association (iHEA) was held at Trinity College Dublin. The theme of the biennial congress was 'Health Economics in the Age of Longevity'. Nearly 2,000 delegates from around the world visited Trinity during the four-day event. Professor Charles Normand participated in the panel keynote event, presenting key findings from TILDA that can inform future policies in relation to population ageing. The other plenary was given by Professor Jim Smith from the RAND Corporation in the US, who is chairperson of the TILDA Scientific Advisory Board. An organised session on 'Enhancing Research on the Economics of Ageing: Applications using the Irish Longitudinal Study on Ageing (TILDA)', chaired by Professor Charles Normand, included a number of presentations from TILDA researchers (Dr Cathal McCrory, Dr Patrick Moore, Dr Irene Mosca, Dr Anne Nolan) on topics such as chronic disease prevalence, the impact of childhood circumstances on later-life outcomes, use of generic medications and healthcare utilisation. In addition, Dr Anne Nolan and Dr Irene Mosca acted as discussants for papers in an organised session on 'Retirement and Health', organised by the English Longitudinal Study on Ageing (ELSA).

British and Irish Longitudinal Studies Conference (BILS), Glasgow

BILS is a consortium of four ageing research studies: TILDA, The English Longitudinal Study of Ageing (ELSA), the Northern Ireland Cohort for the Longitudinal Study of Ageing (NICOLA); and Healthy AGEing In Scotland (HAGIS). The annual conference was held in Glasgow in November with the aim of exchanging research findings and good practice. Keynote speakers included Professor Arie Kapteyn, University of Southern California who spoke about 'Financial Decision-making, Financial Literacy and Ageing' and Professor Ian Deary, University of Edinburgh who spoke about 'Healthy Cognitive Ageing'. TILDA was very well represented with eight researchers (Dr Orna Donoghue, Dr Joanne Feeney, Dr Siobhan Leahy, Dr Yuanyuan Ma, Dr Christine McGarrigle, Dr Anne Nolan, Dr Matthew O'Connell and Deirdre Robertson) presenting their findings across a range of topics including walking speed and traffic light signals, reliability of health measures, diabetes in older Irish adults, voter turnout in Ireland, the health impacts of caring for spouses, non-cognitive skills and preventive healthcare utilisation in Ireland and self-perceptions of ageing.

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The Frontal Assessment Battery (FAB): Older Adult Performance in the TUDA study.

Coen RF, McCarroll K, Casey M, McNulty H, Strain S, Ward M, Cunningham C.J. (2014) The Irish Psychologist 41(1),S4 [Presentation. Psychological Society of Ireland Annual Conference, Kilkenny, November 2014]

Pre-Frailty and Frailty as Markers of Cognitive Function in Community Dwelling Adults.

Journal of Frailty and Aging, [presentation (DR) International Conference on Frailty and Sarcopenia, Barcelona, March 2014.

Robertson DA, Savva GM, Coen RF, Kenny RA. (2014)

The Frontal Assessment Battery (FAB): Older Adult Performance in the TUDA study.

Coen RF, McCarroll K, Casey M, McNulty H, Strain S, Ward M, Cunningham C.J. (2014) The Irish Psychologist 41(1),S4 [Presentation. Psychological Society of Ireland Annual Conference, Kilkenny, November 2014]

The influence of lifestyle factors on cognitive performance in Irish adults aged 50 and over.

Hannigan C, Brennan S, Coen RF, Lawlor BA, Robertson IH. (2014).

Irish Journal of Medical Science, 183(7), S376. [Presentation. 62nd Annual and Scientific Meeting of Irish Gerontological Society, Dublin]

Anxiety and depression are associated with post-stroke fatigue (PSF).
Galligan N, Harbison J, Coen RF, Hevey D. (2014)
International Journal of Stroke, 9 (3), 41–331 [Presentation, 9th World Stroke Congress, Istanbul, October 2014]

Aspects of Osteoporosis and Osteoarthritis (Seville, 2-5 April 2014)
World Congress on Osteoporosis, Osteoarthritis and Musculoskeletal Disease; International Osteoporosis Foundation; European Society for Clinical and Economic Aspects of Osteoporosis and Osteoarthritis (Seville, 2-5 April 2014)

Vitamin D in Acute Hip Fracture
Lannon R, Lynn E, McCauley P, McCarthy B, Fallon N, Casey M, Walsh JB.
Bone Health Unit, St James Hospital, Dublin, Ireland

Developing a Baseline Picture of the Bone Health of Adults with an Intellectual Disability in Ireland
Burke E, Walsh JB, McCallion P, McCarron M.
School of Nursing and Midwifery Trinity College Dublin, Dublin, Ireland, Bone Health Unit, St James Hospital, Dublin, Ireland, Center for Excellence in Aging Services, University of Albany NY, New York, United States, Faculty of Health Science, Trinity College Dublin, Dublin, Ireland

The biology of social inequality: deconstructing the social patterning of resting heart rate.
C McCrory, C Finucane, J Frewen, H Nolan, C O'Hare, R Layte, P Kearney, RA Kenny.
ESRI internal seminar. 12/02/2014.

Awards

Dr. Ciarán Finucane was awarded a Royal Irish Academy Mobility Award in 2014.

TILDA PhD Researcher awarded the Deirdre McMackin Memorial Medal
Deirdre Robertson, a PhD student based in TILDA, received the Deirdre McMackin Memorial Medal through the Psychological Society of Ireland (PSI). The Deirdre McMackin Memorial Medal is awarded to an individual who has been judged, by the selection committee for the PSI's Division of Neuropsychology, to have made a significant contribution to the field of neuropsychology as evidenced by the submission of a research paper and delivery of a presentation at the PSI Annual Conference. Deirdre received the award for her research on the impact of poor perceptions of ageing on longitudinal physical and cognitive decline. She found that older adults with negative perceptions of ageing had a decline in walking speed and cognitive function over two years. This change was independent of other health changes that participants experienced in the same time period such as heart attacks, increases in blood pressure, chronic disease and increased medication usage.

TILDA Researcher Awarded Best Poster Prize at EuroPrevent 2014 Conference in Amsterdam

TILDA researcher Dr Catriona Murphy was awarded a prize for best poster at the EuroPrevent 2014 conference in Amsterdam. The conference theme was Global Cardiovascular Health and the research presented used TILDA interview and health assessment data to examine the gap between evidence-based guidelines and clinical practice in lipid modification in adults at high risk of cardiovascular disease mortality. The research concluded that despite strong evidence and clinical guidelines supporting the use of statins in those with clinical evidence of cardiovascular disease, a large gap exists between guidelines and clinical practice in Ireland in the cohort examined.

CARDI Postdoctoral Research Fellows Announced

The Centre for Ageing Research and Development in Ireland (CARDI) announced the appointment of five post-doctoral research fellows in a £1 million investment to develop future leaders in research on ageing and older people. The new CARDI Fellows, announced at the inaugural meeting of the CARDI Leadership Programme in Ageing Research in Belfast in September are: Dr Joanne Feeney, Dr Joanna McHugh, Dr Charlotte Neville and Dr Mark O'Doherty, who will be based in Queen's University Belfast, and Dr Aisling O'Halloran based in Trinity College Dublin. Joanne and Aisling are former TILDA researchers and Joanne, Aisling, Joanna and Charlotte will use TILDA data in their research. The Fellows will carry out research over the next three years into ageing issues with the aim of improving the lives of older people across the island of Ireland. Specific topics include physical frailty and ageing; diet and cognitive decline; the impact of stress on cognitive and cardiovascular health and the social determinants of cognitive decline and healthy ageing. This direct investment aims to support the development of a strong community of researchers in ageing focussed on policy-relevant research which can support effective policy-making for the ageing populations.

Partnerships

St. James's Hospital

Medicine for the Elderly

Psychiatry for the Elderly

Clinical Biochemistry

Clinical Medicine

Palliative Care

Infectious Diseases

Rheumatology

Orthopaedics

Gastroenterology

Hepatology

Haematology

Renal Medicine

Endocrinology

Histopathology

Dementia Services Information and Development Centre

Trinity College Dublin

Department of Medical Gerontology

Department of Psychiatry

Department of Old Age Psychiatry

Department of Psychology

Department of Bioengineering

Department of Mechanical Engineering

Department of Statistics

Department of Sociology

Department of Anatomy

Trinity College Institute for Neurosciences

Tallaght Hospital (AMiNCH)

Age Related Health Care, Adelaide and Meath Hospital

incorporating The National Children's Hospital, Tallaght, Dublin

Department of Psychiatry of Later Life, Adelaide and Meath Hospital incorporating

The National Children's Hospital, Tallaght, Dublin

Royal College of Surgeons in Ireland (RCSI)

Department of Anatomy

St. Patrick's Hospital

University College Dublin

Conway Institute

Department of Veterinary Medicine