



Institiúid Mercer
um Aosú Bisiúil

Mercer's Institute
for Successful Ageing
(MISA)

Ospidéal San Séamas
St. James's Hospital

Mercers Institute for Research on Ageing

Annual Report 2016



Index

Introduction	4
Falls & Syncope Service	5
Bone Health & Osteoporosis Service	10
Mercer's Memory Clinic	21
Neurovascular Research and Clinical Services	25
Medical Physic & Bioengineering (MPBE)	26
Local Asset Mapping Project (LAMP)	31
TILDA – The Irish LongituDinal Study on Ageing	32
TUDA	39
Publications	41
Personnel	53
Partnerships	54

Introduction

2016 saw the opening of the new Mercer's Institute for Successful Ageing which is a culmination of over thirty years of planning. The construction of the New Building was enabled thanks to the tremendous generosity and support of Mr. Chuck Feeney and Atlantic Philanthropies together with matching funding from the Department of Health and the HSE.

Our new building has 116 beds, four wards each consisting of 29 beds, 20 single rooms in each ward and 3 three bedded rooms. It also has state of the art Units in Bone Health, Falls and Syncope, Memory, Stroke and General Medical Services for the older person. All of these Units are extremely busy and serve not only the local population but act as a secondary and territory referral centre for patients from other hospital clinics in Ireland.

We now have a significant upgrading of our Research resources and facilities in Medical Physics and Bioengineering, Memory, Bone Health, Falls and Syncope as well as the transfer of a large proportion of the TILDA Research Centre to MISA from the Trinity Campus. We have a Board Room and three Lecture Theatres on the first floor as well as a Lecture Theatre and Case Conference Room on the top floor of the building.

Trinity has moved its Medical Gerontology Department offices from the old stone building to the top floor of MISA and the Dementia Services Information and Development Centre has also transferred to MISA from Hospital 4.

The Opening Ceremony of the New Mercer's Institute was performed by President Michael D. Higgins on the Wednesday 7th December 2016 and was a tremendous success. The President spoke of the opportunities as well as the challenges of ensuring that Elderly citizens enjoy active and fulfilled lives. "In a World where we can expect to see more and more people leading significantly longer lives, innovative and creative thought around the ageing process will become increasingly important". The New MISA building has made a huge positive contribution to raising the morale not only of the Department of Medicine for the Elderly and the MedEL Directorate but also the entire Hospital in setting a new standard of excellence in the construction and provision of patient facilities.



Prof Rose Anne Kenny invites Michael D Higgins, President of Ireland to formally open MISA.

We would like again to thank everyone who has contributed towards the building of the New Mercer's Institute in particular Mr. Chuck Feeney and Atlantic Philanthropies, the Department of Health and the Chairman and Governors of the Mercer's Hospital Foundation Board, St. James's Hospital Board and the HSE.

We would like to express our sincere thanks for the support of all previous Chairmen of St. James's Hospital, Professor Ian Howie, Professor Tom Mitchell, Professor Derry Shanley and the current Chairman Mr. Paul Donnelly. Previous CEO's of the Hospital, Mr. Liam Dunbar, Mr. John O'Brien, Mr. Ian Carter, Mr. Brian Fitzgerald and the current CEO Mr. Lorcan Birthistle have all been unstintingly in their support for MISA. Our sincere thanks also to the MISA Project Team with a special words of thanks to Mr. Paul de Freyne HSE Chief Architectural Advisor, Mr. Niall McElwee Project Manager and Mr. Tim Magee.

We wish to thank BAM Construction for the high quality and standard of their work and for their excellent communications and courtesy at all times during the construction.

A special word of thanks to the hundreds of staff in MIRA and MISA without whose total commitment to the care of the older person none of this would be possible. Carol Murphy our Operations Manager and Judy Oxley our Senior Administrator deserve special mention for their dedication to MISA and MIRA.

We particularly wish to thank the President Michael D. Higgins for giving of his time and making the official opening day such a success.



Prof Davis Coakley presents the President Higgins with a bound copy of his book entitled 'Medicine in Trinity College'

J Bernard Walsh

Prof J Bernard Walsh

Director

Mercer's Institute for Research on Ageing

Davis Coakley

Prof Davis Coakley

Chairman of the Steering Committee

Mercer's Institute for Research on Ageing

Rose Anne Kenny

Prof Rose Anne Kenny

Director

Mercer's Institute for Successful Ageing

Falls and Syncope Unit

At some point in their lives, 40% of individuals will have an episode of blackout or faint. For the majority of younger individuals this represents a benign faint and they do not need to be assessed by a doctor. However, if this proves recurrent or if a blackout occurs in an older individual this does require investigation, due to the risk of underlying cardiovascular aetiology.

The Falls and Syncope Unit (FASU) is an out-patient assessment clinic that runs five days a week where patients with unexplained falls, syncope and presyncope are investigated using state of the art cardiovascular technology. The FASU operates a one stop assessment clinic and allows for a detailed investigative work-up. It is endeavoured that all tests are carried out on the day and a diagnosis often made with only one visit being required by the patient. The FASU aims to negate the need for hospital admission in those presenting with syncope and falls. Once diagnosed patients can link into existing hospital resources (including referral to MedEL Day hospital for gait and balance retraining or referral to cardiology services) but the vast majority are dealt with solely by the clinic and discharged back to the community.

The clinic commenced in 2003 with Dr Conal Cunningham and with the arrival of Professor Rose Anne Kenny, moved to a new expanded site beside the Emergency Department in 2005. An increase in staff and space allowed for a rapid increase in the numbers of patients assessed. Activity continues to increase significantly every year with the main source of referrals coming from the Emergency Department, Inpatient Referrals within St James, GP's, Cardiology services, Neurology Services, MedEL services and Peripheral Hospitals from all around the country. It provides the largest syncope clinic service in Ireland. In 2016 FASU moved to the new MISA building with the addition of new technologies such as NIRS (near infrared spectrometry), video recording and gait assessment laboratory.

Clinic Staff

Consultants

Professor Roseanne Kenny (Director)
Dr Conal Cunningham (Co-Director)
Dr Declan Byrne
Dr Joseph Browne

Specialist Registrars / Registrars

Dr Susie O'Callaghan (Lecturer in Medical Gerontology)
Dr Robert Briggs (TILDA Research Registrar)
Dr Triona Mc Nicholas (TILDA Research Registrar)
Dr Cunningham is Clinic Registrar (rotated)
Dr Michael Durand (Research registrar – shared post with CAMI)

Specialist Nurses

Ms Ciara Rice
Ms Dymphna Hade
Ms Lisa Byrne
Ms Lynn Dato

Administrative Staff

Ms Michelle Doyle

Ms Clare Dooley

Allied Health

2016 saw the expansion of FASU staff to include OT and Physiotherapy

Ide O Shaughnessy provides OT to FASU inpatient referrals

Sinead Carton and Lucinda Edge provide a physiotherapy service to FASU day case patients on Wednesday and Friday from 11-13.

Investigations undertaken routinely in the FABU include:

- Electrocardiogram
- Active stand (finometer allows for continuous beat to beat blood pressure and heart rate to be recorded).
- Head up Tilting: Italian Protocol and Front-loaded.
- Carotid Sinus Massage
- 24-hour blood pressure monitors (N = 16)
- Cardiac event monitors (N=16)
- Holter monitors (N=1)
- Internal loop Recorder Monitoring
- Hallpike and Epley Manoeuvres (diagnostic test and particle repositioning therapy for BPPV)
- Autonomic Function Test
- Gait Assessments
- Vestibular Assessments
- Blood Testing.
- 24 Hour Urine Collection (Urine Volume and Electrolytes)
- FABU accepts referrals for persons (in-patients and out-patients) for:
- Falls (mechanical and unexplained)
- Syncope
- Transient Loss of Consciousness
- Vertigo
- Dizziness
- Blackouts
- Faints

Outpatient referrals may be made by General Practitioners within the St James's catchment, St James's Hospital Consultants and other hospitals and agencies, via Consultant Neurologists, Cardiologists and Geriatricians.

Consultant-led Clinics

Clinics take place on Monday, Tuesday, Wednesday and Fridays accepting referrals from age 16 upwards. Wednesday clinic is a national tertiary referral service. On all clinic days, inpatient referrals are seen in addition to booked appointments if possible. In the event an inpatient referral has not been reviewed prior to discharge, it is prioritized as an outpatient. All referrals originating within the hospital are electronic via EPR.

Nurse-led Clinics

- Autonomic Function Testing
- Ambulatory Blood Pressure Monitoring
- Holter Monitoring
- Cardiac Event Monitoring
- Internal Loop Recorder Monitoring

This system allows for quick assessment of blood pressure and heart rate on a 24 hour or seven day basis. Downloading of results and reporting are carried out by nursing staff.

Nurses within the clinic act as a direct line of contact for patients, who phone in on a 07.30-16.30 basis and are able to advise and instigate conservative measures often preventing unnecessary A&E attendances. This is in addition to the following activities amongst others; routine and non-routine phlebotomy e.g. synacten testing and patient education regarding internal loop recorder insertion and remote monitoring via Carelink.

Falls and Blackout Clinic:

Summary of Attendances Clinics in Falls and Blackout Unit: Monitor Clinic Falls and Blackout Unit:

Falls & Syncope Unit	2015	2016	
Waiting List Activity	2400	2341	↓ 59 Patients March - 3 Bank Holidays May - 1 week - Clinics cancelled to facilitate MISA
AFS Autonomic Function Tests	43	21	↓ 12 Patients
Monitor Clinics	1471	1656	↑ 185 Patients

Carelink

In 2010 a remote monitoring system for Implantable Loop recorders was established. This service provides a facility where patients can send heart recordings for immediate review by nursing and medical staff, thereby improving efficiency and safety for these patients. To date 431 patients across Ireland have availed of this service. The service allows for immediate review of heart rate activity thereby reducing the number of hospital visits required for that patient by 75%.

Teaching and Audit

2016 saw graduation of the 2nd year of students from the diploma in Syncope and Related Disorders in collaboration with the RCPI. Students attend the FABU for a week clinical placement. The course will next run in 2018.

Graduates from Syncope Diploma 2016

Dymphna Hade

Helen O'Brien

Ruth Mc Donagh

Declan Byrne

Joseph Browne

Robert Briggs

Ikwhan Marion

Róisín Nevin

Ciara Rice organized the 5th National Syncope Training Day –which took place on the 15th January 2016 in the Durkan Lecture Theatre in the Trinity Health Sciences Building. The course directors are Professor Rose Anne Kenny and Dr Conal Cunningham. This was a well-attended and successful training event.

Training of both medical and nursing students occurs on an ongoing basis along with visiting nursing staff from centres in other hospitals where syncope units are in the early stages of development. Audit occurs on an ongoing basis in the FABU, with particular focus on improving service provision.

Presentations to other departments within the hospital such as cardiology and emergency room staff occurs intermittently, as a means of providing training and developing awareness of the service, in addition to facilitating interdepartmental collaboration, both clinically and in terms of research.

A Clinical Case Conference in FASU regularly. This is a forum for all staff in the FABU to present and discuss clinical cases and review literature relevant to falls and syncope. Presentations:

Ciara Rice presented at the EuroHeart Care Conference in Athens in April 2016 and was winner of the Award for Excellence in Cardiovascular Care 2016.

Research

Dr Susie O'Callaghan has recently finished her training in Geriatric Medicine and General Internal Medicine. She is currently an Assistant Professor of Medical Gerontology in the School of Medicine and was recently nominated for the Provost Teaching Award. She is also a TILDA fellow. She has published in the area of neurocardiovascular instability and is focussing on the association of orthostatic hypotension and falls for her PhD.

Dr Helen O'Brien is a TILDA Research Fellow and is finishing her PhD on the impact of hospitalisation and surgery on cognition, frailty and mood in the older person. She has published a review paper in Annals of Surgery titled "Mind over Matter? The Hidden Epidemic of Cognitive Dysfunction in the Older Surgical Patient." In the past year she successfully completed the Diploma in Syncope with the Royal College of Physicians of Ireland and the Postgraduate Certificate in Statistics in Trinity College Dublin. She has also presented her research at the

International Training Programme on Ageing: Dementia and Memory Impairment and at the Irish Gerontological Society National Meeting. One of her research papers on resuscitation orders is currently under review with the BMJ journal, The Journal of Medical Ethics.

Dr Triona McNicholas is the Davis Coakley research fellow who is working as part of the TILDA team. She is undertaking a PhD under the guidance of Professor Rose Anne Kenny and her research focuses on cardiovascular ageing and autonomic function, and its impact on cognition and falls. Her work within the TILDA project has been presented at both national and international conferences and she has used her clinical experience in FASU in a publication on the management of vasovagal syncope. Last year she also successfully completed the Diploma in Syncope and related disorders in the Royal College of Physicians.

Dr Robert Briggs is a specialist registrar in Geriatric Medicine with a clinical and research interest in cognition and mental health in later life. He is currently working as research fellow in TILDA completing a PhD focusing on the association between neurocardiovascular instability and depression in later life.

Dr Michael Durand is an Assistant Professor of Radiology in the School of Medicine and previous winner of the Eamonn O'Coine award for his contribution toward the academic and social development of the school. He works with both the Falls & Syncope Unit and Centre for Advanced Medical Imaging in St James's Hospital and is currently undertaking an MD focussing on neuroimaging changes in the setting of neurocardiovascular instability.

Bone Health & Osteoporosis Unit

Similar to other Departments within the Mercer's Institute, 2016 has been a time a huge development, expansion and positive change for the Bone Health and Osteoporosis Unit.

The last twelve months has seen not only the historic and momentous move of the Service from Hospital 4 to the new MISA Building, but also growth in its activities of assessment, diagnosis and management of patients with osteoporosis and fractures. In addition the Unit 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. Dr Brendan McCarthy is also a Clinical Fellow in the Unit.

Summary of Unit:

- Clinical Nurse Specialist (CNS) led Pre-Assessment Clinic
- GP advice
- 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
- Vertebral 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:

- i. External referrals from general practitioners or other hospitals
- ii. General medicine, surgery and other clinics within St James's Hospital including the MedEL Department
- iii. Fracture Liaison Service
- iv. Referrals from DXA Service based on severely low bone density results or the presence of vertebral fractures

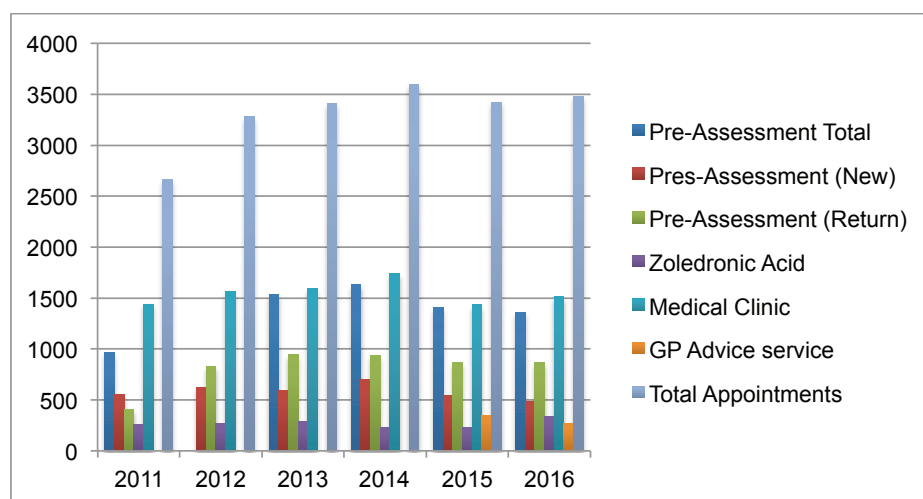
A comprehensive assessment is performed on all patients. This includes review of risk factors for osteoporosis, risk factors for falls and advice on diet, lifestyle modifications and education on treatments. On a patient's first attendance at this clinic an extensive screen is undertaken. This includes a DXA scan, a calcaneal bone ultrasound and 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 2016 a total of 1357 patients were seen in the Pre-Assessment Clinic, this represents a similar number to 2015. The number of patients making return visits also 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 summary of numbers of patients seen in the various osteoporosis assessment clinics is as follows:

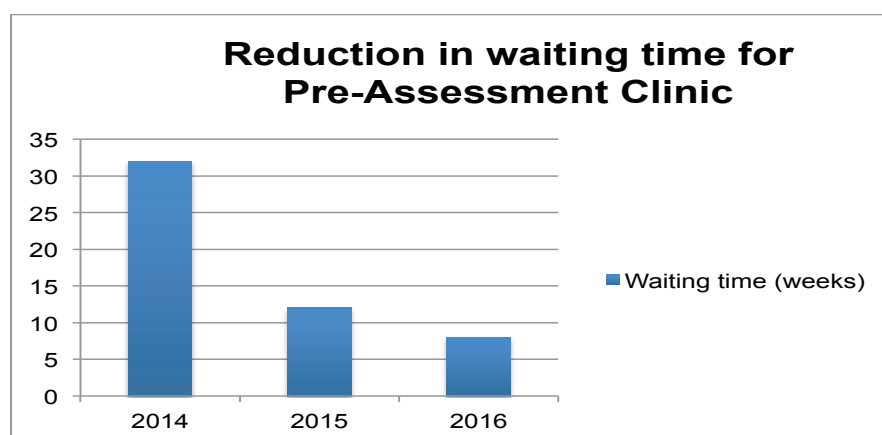
Summary of patient appointments for the Bone Health and Osteoporosis Unit

	2011	2012	2013	2014	2015	2016
Pre-Assessment Clinic Total	961	1454	1537	1631	1410	1357
Pre-Assessment Clinic New	553	626	594	697	544	489
Pre-Assessment Clinic Return	408	828	943	934	866	868
IV zoledronic acid	261	266	284	230	233	342
Osteoporosis and Bone Health Medical Clinic	1441	1560	1589	1738	1433	1514
GP advice service	-	-	-	-	348	267
Total appointments	2663	3280	3410	3599	3424	3480



GP Advice Service

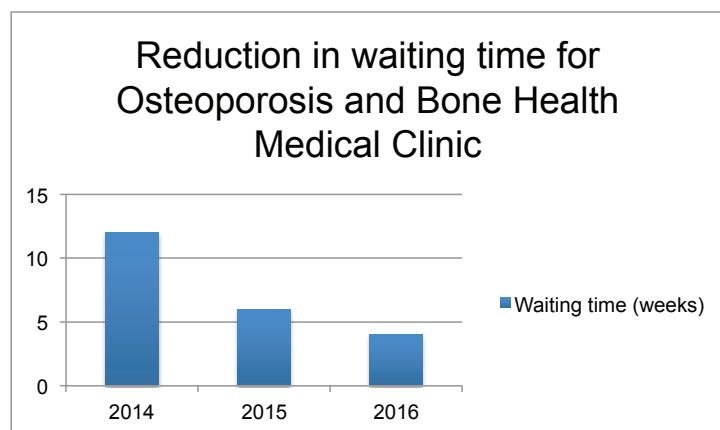
Due to the increasing number of referrals to the Bone Health Unit in recent years, new initiatives were sought in 2015 to improve speed and quality of access to our specialist services. One such programme commenced was the GP Advice Service. This allows for external (mainly GP) referrals to be rapidly triaged and acted upon by the Bone Health Fellow. Based on clinical need, the patient is either listed for a rapid PAC appointment, or alternatively has a comprehensive, immediate and individually-tailored long-term management plan sent to the referring doctor within a week of receipt of referral. Since commencing this programme, waiting times for the pre assessment clinics have dropped from 32 weeks in 2014 to 12 weeks in 2015 and further to 8 weeks in 2016.



Osteoporosis and Bone Health Medical Clinic

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, 2 CNSs and one secretary. Patients attending for new and return visits can be commenced on treatments such as IV zoledronic acid, 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 education sessions to patients and administering therapies such as Ergocalciferol for loading doses of Vitamin D replacement.

In keeping with the programme of providing rapid-response advice to GPs for less complex cases, and fast-tracking of more complex patients to the Bone Health Medical Clinic, we saw total numbers of attendees reduce slightly in 2015, but the waiting times for clinic appointments was decreased by half. This allowed us to ensure that all patients get speedy access to the Bone Health management they need, and that the most complex patients have a minimal waiting time. In 2016, the number of clinic attendees increased slightly. However, we still achieved a further 33% reduction in waiting time, with duration of time to appointment now only 4 weeks.



Osteoporosis and Bone Health Medical Clinic annual numbers

	2011	2012	2013	2014	2015	2016
Total	1441	1560	1589	1738	1433	1514
New	371	351	335	398	218	234
Return	1070	1209	1254	1340	1215	1280

Fracture Liaison Service

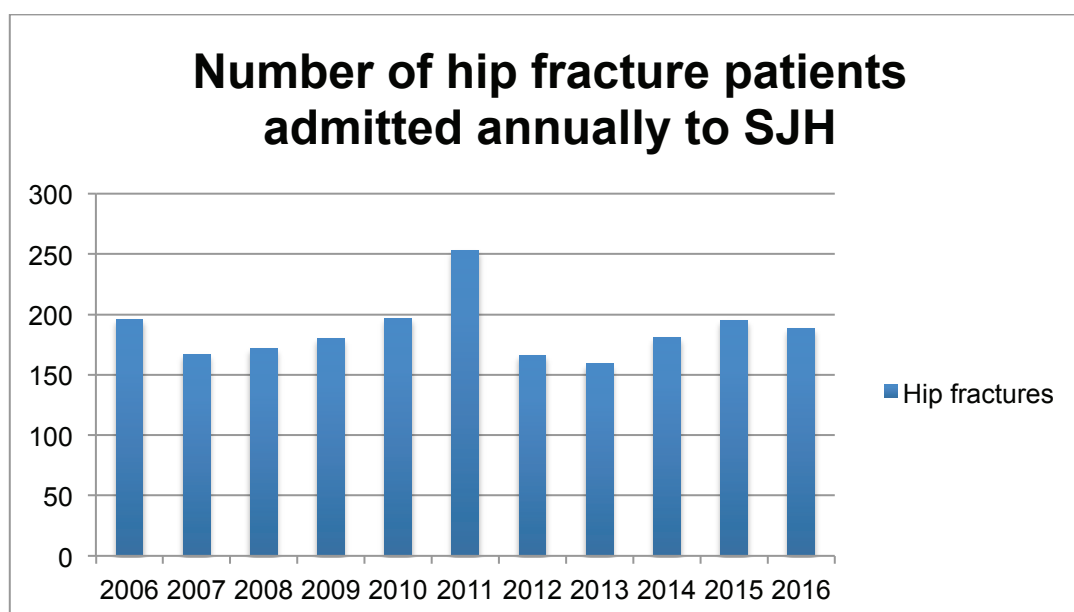
(Incorporating Orthogeriatric Service and Hip Fracture Integrated Care Pathway)

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 2016, 188 patients with 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.

Annual numbers of hip fractures in SJH

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total	196	167	172	180	197	253	166	159	181	195	188



A new and central 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 orthogeriatric review. As part of this service a new Trauma Nurse Specialist was appointed in SJH in 2016 to assist in managing the Irish Hip Fracture Database and care of patients with hip fractures.

An audit of 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 and have improved continue to improve each year.

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 nurse-led osteoporosis clinic, which occurs every 2nd Thursday morning. This clinic reviews risk factors for falls and osteoporosis. Patients are commenced on treatment as indicated by their assessments.

Vertebral Fracture Clinic

While the Unit has assessed and cared for patients with vertebral fractures for many years, most patients relied on a retrospective referral from their GP following fracture or an incidental finding on routine DXA. In 2016, a nurse-led initiative commenced in the Unit whereby the

hospital's electronic databases are interrogated on weekly basis to identify all patients with new vertebral fractures. These patients are all offered an appointment for full assessment in the Unit. It is hoped that this new initiative will result in earlier treatment for this vulnerable patient group and hence improve their healthcare outcomes.

Recombinant Parathyroid Hormone therapy (PTH)

796 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.

IV zoledronic acid infusions were formerly given in the Robert Mayne Day Hospital, but since February 2016 this service has moved entirely to the Bone Health CNSs consultation rooms (initially in Hospital 4; now in MISA), with assistance from Med El interns. There were 342 infusions administered in 2016, an increase of 47% compared to 2015. This highlights the importance of this therapy – which can reduce the chance of vertebral fractures by up to 70% – in treating frail patients with severe osteoporosis.

Denosumab injection administration and monitoring

In late 2010 denosumab was introduced for the treatment of osteoporosis. To date over 900 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 and convenient treatment option in our older population.

DXA (Clinical Densitometry) Service

Our DXA service carried out 3051 scans in 2016, which represents a slight decrease from the number of scans carried out in 2015, but is still higher than in 2013. The slight reduction in number of scans performed in 2016 was necessitated by the fact that in mid-2016 the Unit acquired and installed two new Hologic Horizon A DXA scanners, which required a period of testing and calibration to ensure the highest standards of clinical diagnosis. In the medium-to-long term, these new machines will facilitate a very significant potential increase in the number of DXAs the Unit can perform annually. In addition, the new Horizon machines provide more

detailed clinical assessments than were previously available, as they have the capability to perform full femoral imaging to screen for atypical femoral fractures. The new DXA machines also facilitate extended research activities, as they are able to assess lateral spine bone mineral density, which may be of benefit to patients with conditions such as ankylosing spondylosis.

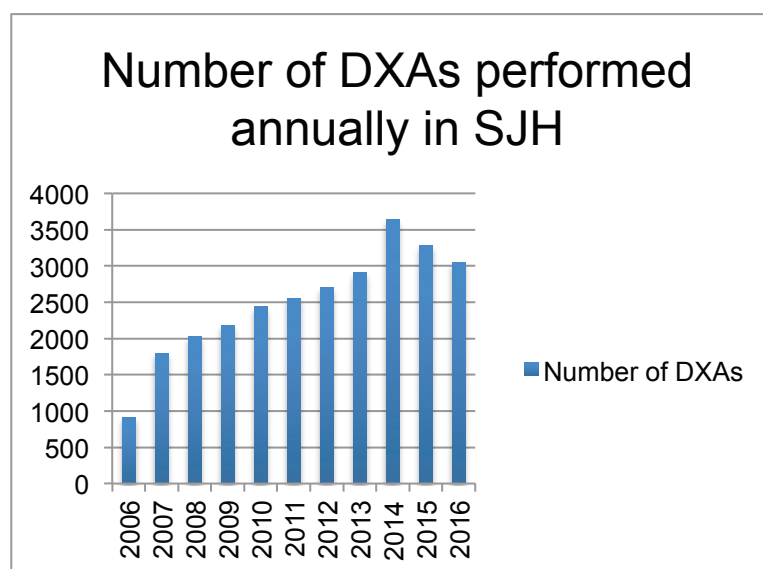


Ms. Irena Tomita in the new DXA Scanning area.

This service is open to referrals from general practitioners in the local community and further afield as well as other consultants within the hospital. Patients who have significant osteoporosis on DXA will be offered assessment in the Bone Health Clinic.

Annual numbers of DXA scans performed in SJH

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total	917	1794	2025	2184	2434	2554	2705	2906	3643	3285	3051



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 began in February 2015 to trial a modified falls assessment and MDT intervention record, and following its initial success, was instituted hospital-wide from early 2016. The Bone Health CNSs liaise with ward staff nurses and provide ongoing falls-prevention education through the hospital and meet with the Hospital Falls Management Group on a 2-monthly basis.

Research

Continuous research forms an integrated part of the Bone Health and Osteoporosis Unit. Below we detail recent ongoing research in our Bone Health 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 - graduated PhD Degree in 2015 for this work

Supervisors: Prof J Bernard Walsh

Dr MC 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, coordinated 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

Dr Najia Siddique has been awarded 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 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 studies were presented 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

Supervisors: Prof JB Walsh
Dr MC Casey

This study looks at 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 is currently recruiting acute hip fracture patients in SJH for one year to 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 2016 have been conducted on 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. Audit results are discussed and actioned upon at bi-weekly meetings in the Unit.

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 2016 have entailed increasing capacity for total number of patients assessed as outlined above. 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 MISA's Bone Health Medical Team at the AGM of the Irish Osteoporosis Society
L-R Dr J McMahon, Prof JB Walsh, Dr K McCarroll and Dr B McCarthy.

Members of the Bone Health Unit have provided osteoporosis teaching sessions to medical and nursing students and interns 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 in October 2016.

Doctors and radiographers from the Bone Health Unit have attended the International Society for Clinical Densitometry DXA course and academic conference in Galway in May-June 2016. Attendance at this world-class event is proving invaluable in the context of the acquisition and installation of two new Hologic Horizon DXA scanners.

Finally, technological advances are being embraced by the Bone Unit, with development of a new electronic database, which will aid in increasing the capacity for assessment of new patients and will be a valuable tool for analysing cumulative research data; this will be operational in the coming months.



Prof J Bernard Walsh receives a 'Life Time Achievement' award from Prof Moira O'Brien, President of the Irish Osteoporosis Society.



Bone Health Nurses attending the Irish Osteoporosis Society AGM 2016
L-R Ms N Fallon, Ms. G Steen, Ms. M Fox and Ms C Ryan

Mercer's Memory Clinic

The memory clinic provides a diagnostic service for patients concerned by cognitive decline. A multi disciplinary team assess each patient with each assessment taking at least two hours. At a weekly multi disciplinary team meeting each patient's assessment is discussed and a treatment plan is formatted. Further tests and investigations may be ordered depending on the patient's initial results and following these subsequent investigations the patient is re discussed and finally when a consensus diagnosis is reached the patient is given an appointment for a feedback clinic where members of the team meet with the patient and their family and the diagnosis and plan are discussed in detail.

In 2016 we assessed 513 patients (321 new and 192 return patients) in the clinic. Each patient had least two clinic visits while some had more as they needed further assessments.

The breakdown of the diagnosis of patients who attended the Memory clinic in 2016 are as follows:

Vascular dementia	1
Probable Alzheimer's dementia	80
Alzheimer's Mixed dementia	35
Lewy Body Dementia	2
Fronto -Temporal Dementia	15
Sub cortical dementia	5
Subjective memory complaints	93
Functional	5
Miscellaneous diagnosis	12
Diagnosis unclear	26
Vascular cognitive impairment	37
Mild cognitive Impairment	91

Lumbar Puncture Clinic

Sixteen patients underwent lumbar puncture to help clarify the diagnosis. Cerebral Spinal Fluid (CSF) is obtained to examine the Tau, pTau and A Beta levels, which are biomarkers for Alzheimer's disease.

The lumbar puncture clinic is held in the new Memory clinic and is a joint venture between Neurology and the Memory clinic. Previously the lumbar puncture clinic was held in Hospital 5 due to space restriction but now due to our increased clinical space in the new MISA building we are able to hold it in the memory clinic thus reducing stress for patients and families.

Nurse led Naturalistic Action Clinic (NAT).

Twelve patients underwent the Naturalistic Action Test at a nurse led assessment clinic. The NAT helps determine functional decline in patients particularly where there is discrepancy between patients reporting of function and neuropsychological testing

Nurse led Cognitive Rehabilitation Clinic.

Thirty-six patients attended the Cognitive Rehabilitation clinic. Each patient who receives a diagnosis of cognitive impairment is invited to attend the rehabilitation clinic.

Each patient and a relative attend a four -week course held for two hours each week. Topics include mindfulness, anxiety management, goal setting, problem solving and living well with cognitive impairment.

The course has proved very popular with patients and families enabling patients to meet others with a similar diagnosis and pool and share information to help people live well with cognitive impairment.

NeuroExercise Update

NeuroExercise is a European JPND funded multicentre RCT examining 'The Effects of an Extensive Exercise Programme on the Progression of Mild Cognitive Impairment'. Recruitment at Trinity College Dublin commenced in March 2016. All study assessments and exercise interventions take place in the Clinical Research Facility at St. James's Hospital. To date, 32 participants with Mild Cognitive Impairment have been enrolled and randomised to an exercise intervention or control group. 7 external sites around the Dublin area with established memory clinics also refer suitable participants to the study team. Recruitment is due to remain open until the end of June 2017.

Family Members Attitudes Towards Alzheimers Disease

Dr Michelle O'Brien, Specialist Registrar in Geriatric Medicine, is currently engaged in research regarding the attitudes of family members around the disclosure of a diagnosis of Alzheimers disease to a loved one. This is a repeat of a study performed 20 years ago and published in the BMJ. We wish to explore whether attitudes and perception has changed in the intervening two decades. Data collection is currently ongoing with an aim to forthcoming publication.

6th Annual Memory Clinic Conference Friday 17th June 2016

Dementia: Addressing the Risk Factors

The 6th Annual Memory Clinic Conference took place on Friday 17th June 2016 in the Trinity Sciences Centre, St James's Hospital. The conference was jointly hosted by the Mercer's Institute for Successful Ageing (MISA) and the Dementia Services Information and Development Centre (DSIDC), the conference entitled "Dementia: Addressing the Risk Factors," focused on the potential to address the modifiable risk factors with a view to prevention of dementia. Professor Nick Fox gave the keynote address for the day with a thought provoking account on the prospects for presymptomatic treatment trials. Professor Richard Cheston explored the importance of recognising existential concerns and how this knowledge helped inform post-diagnostic support. The morning was rounded off with a "mini-symposium" based around the three Genio-funded hospital dementia projects. Dr Siobhan Kennelly (Connolly Hospital, Blanchardstown) discussed the Memory Assessment Support Clinic and Telementoring service; Dr Suzanne Timmons presented on environmental changes that have been made in Mercy Hospital, Cork; and Dr Geraldine McMahon talked about the development of a dementia care pathway for patients accessing the Emergency Department in St James's Hospital, Dublin. In the afternoon we were delighted to welcome Professor Sarah Lamb who discussed designing and evaluating exercise interventions for people with dementia; John Costello, solicitor, who informed the audience of the Assisted Decision-Making (Capacity) Act 2015. Dr Anne Marie Miller presented on the clinical use of spinal fluid biomarkers in the diagnosis of Alzheimer's Disease. The conference was attended by over 120 healthcare professionals and feedback from the audience was extremely positive.

Psychiatry Research Fellow

Dr. Clodagh Power, Psychiatry Research Fellow, is undertaking a doctorate in Clinical Medicine through Trinity College Dublin under the supervision of Dr. Elaine Greene and Prof. Brian Lawlor. Her research area is dementia care in the acute hospital. She presented the findings of her study examining the prevalence and outcomes of dementia amongst the St. James's hospital inpatients at the IPA Congress in San Francisco in September 2016. She carried out a hospital-wide review of the antipsychotic prescribing practices amongst over-65s and the preliminary results are due for presentation at the EPA Congress in April 2017 as are the findings of a review of the phenocopyFTD patients attending the Memory Clinic. She is also working towards the completion of a project looking at the end of life care practices for dementia patients in St. James's. She plans to bring these projects to completion and submit the findings as part of her thesis for her doctorate in clinical medicine.

Watts Research Fellow

Dr Oisín Hannigan was recruited as the new Watts research fellow and commenced his post in July 2016. His research interests are based around quality of life in the elderly. Some of the areas he hopes to investigate include: morbidity and mortality in those listed for long-term care from a hospital setting, overall statistics on mortality in those who are living in long term care, the effects of socioeconomic background and social deprivation on admission to long term care, and the feasibility of the use of virtual reality software as both a recreational tool and a possible behavioural aid the elderly. His hope is to develop these projects and submit findings as part of his thesis for a doctorate in clinical medicine through Trinity College Dublin, under the supervision of Dr David Robinson.

Dr Avril Beirne is a Specialist Registrar in Medicine for the Elderly currently working in AMNCH and prior Watts research fellow. Data analysis is currently being performed on a number of studies undertaken during her time as Watts research fellow. One such study is evaluating the association between Vitamin D and cognitive decline in two TUDA sub-populations, those with Vitamin D sufficiency and those with Vitamin D deficiency at baseline. Participants have undergone repeat TUDA evaluation including cognitive and mood assessments, biophysical markers and serological testing of 25-hydroxyvitamin D, with 130 participants recruited. Other research projects undertaken include prospective studies looking at the extra-osseous effects of Vitamin D including mortality, hospitalisation and resource utilisation. Results and findings of these studies are being submitted as part of her thesis for the Doctoral Programme in Clinical Medicine in 2016.

Dr Robert Coen. Senior Neuropsychologist.

Summary of activities / developments in MIRA – 2016

Primary duties relate to the Neuropsychological assessment of clients referred to the MIRA Memory Clinic and overseeing assessments undertaken by Nurse Irene Bruce and additional staff as appropriate including discussion of all cases at our weekly Consultant led Multi-Disciplinary Consensus Meetings. Duties also include Clinical supervision of Trainee Clinical Psychologists who undertake specialist placements in MIRA as part of their Clinical Training, teaching / training on programmes for Trainee Clinical Psychologists and Medical Students, and research supervision / collaboration on a variety of studies and research programmes, plus active participation in Global Brain Health Institute (GBHI) initiatives. Below is a summary of Clinical and research-related activities in 2016:

The Irish Longitudinal Study on Ageing (TILDA).

Having assisted with the development and implementation of the cognitive battery used in TILDA (PI Prof Rose Anne Kenny), Dr. Coen in collaboration with TCD Psychology Dept. staff, post-grads and TILDA staff continues to consult on TILDA developments and was a Collaborator on the successful submission for continued funding for TILDA Phase II to fund Wave 5 and Wave 6 to 2022. Publications in 2016 include factor structure and interpretation of the Montreal Cognitive Assessment (MoCA) and an investigation of category / phonemic verbal fluency discrepancies in ageing (with Dr. Roisin Vaughan, Clinical Supervisor Prof. Brian Lawlor) – see publications list.

The Trinity, University of Ulster and Dept of Agriculture (TUDA) Cohort Phenotype / Genotype database.

Dr. Coen in collaboration with Dr. Kevin McCarroll continues to investigate cognition related aspects of the TUDA data. Dr. Coen undertook an in-depth analysis of the Frontal Assessment Battery (FAB) and a paper has now been published – see publications list. Others are in preparation.

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

In collaboration with Principal Investigator Prof. John Nolan, Waterford IT, Dr. Coen is an active advisor / collaborator on three 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). (iii) a study of carotenoid supplementation in Mild Cognitive Impairment (MCI) was designed and has now commenced, with Supervision of the PhD Researcher (Rebecca Power) shared by Dr. Coen and Prof. Nolan. Publications are in preparation.

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 is being written up. A book chapter has now been published (see publications list). A longitudinal strand has been commenced (Dr Lilia Zaporozhan under Dr. Doherty's supervision, again with input from Dr. Coen).

Viral Hepatitis C Associated Neurocognitive Dysfunction in Ireland in the DAA era.

Dr. Coen was a co-applicant on this HRB funded research project (PI Prof Suzanne Norris, co-applicants Prof Rose Anne Kenny, Dr. John Gormley, Dr. Colin Doherty, Dr. Kelly O'Brien). The first aim of this study is to determine the prevalence and pattern of neurocognitive function in HCV-infected patients. The second is to determine if cognitive impairment can be stabilised or ameliorated through two differing interventions (i) viral eradication with DAA antiviral therapy (DAA treatment intervention study) (ii) a formal exercise programme to investigate the effects of exercise on cognitive function in this cohort (Exercise intervention study). Dr. Coen provides training and supervision for the Neuropsychological aspects of this research which has now commenced. The Neuropsychological strand is being researched by Orla Strahan and will form the basis for her PhD with joint supervision by Dr. Coen, Dr. Paul Dockree TCD and Dr. Colin Doherty.

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

NILVAD is an investigator driven Phase III Clinical Trail funded by the European Commission

under FP7 (Principal Investigator Prof. Brain Lawlor). It entails a multicenter European trial in 8 different languages in 9 countries. Dr. Coen is the Work Package Leader for Education and Training and also took the lead in acquiring and developing for use across 8 European countries the primary and secondary outcome measures (ADAScog, SMMSE, CDR and DAD). Data collection was completed at the end of 2016 and is currently being analysed. A publication on additional NILVAD protocols has been published – see publications list.

Irish Network for Biomarkers in Neurodegeneration (IN-BIND).

Dr. Coen has been involved as a member of the IN-BIND working group including overseeing the Neuropsychological aspects of the Joint Programming in Neurodegenerative Diseases (JPND) Biomarkers for Alzheimer's disease and Parkinson's disease (BIOMARKAPD) neurodegenerative CSF biomarker assay validation project to assess the performance of assays measuring CSF protein concentrations of amyloid- 42 (A 42), total tau (t-tau) and phospho tau (p-tau). This study resulted in neurodegenerative CSF biomarker tests being made available clinically for the first time in Ireland in 2015. A working group consensus statement formulating guidelines for clinicians and other professionals working in the dementia field as to the appropriate use and interpretation of CSF biomarker data in clinical settings in Ireland has now been published – see publications list.

The effects of an extensive exercise program on the progression of mild cognitive impairment (MCI).

Dr. Coen has been involved in an advisory capacity regarding the cognitive assessment aspects of this multicenter study in 3 countries (PI Prof. Stefan Schneider, Institute for Movement and Neurosciences at the German Sport University in Cologne). Sub-studies are being undertaken by Kate Devenney (TCD, Academic Supervisor Prof Brian Lawlor) towards a PhD with input from Dr. Coen. The study protocol has been submitted for publication and is under review.

Neurovascular Service

The stroke service in St. James's Hospital has continued to increase in activity over the last year. The opening of the George Frederick Handle Stroke Ward puts St. James's Hospital as the only hospital in the State that can care for all stroke patients throughout their entire length of stay on an organised Stroke Unit meeting the European Stroke Organisation standards for same.

In the last year 370 stroke patients were seen and treated. The Secondary Prevention Clinic and Neurovascular outpatient clinics continue to be successful and have had a positive role in preventing unnecessary admissions. St. James's now admits between one quarter and one half of the TIA's of its neighbouring hospitals because of its capacity to manage such cases as outpatients instead.

The research programme in the Neurovascular service has continued and Dr. Paul McElwaine has completed his MD research on the National Stroke Audit 2014 and comparisons in stroke care between North and South of Ireland. The first paper from this project has been accepted for publication in The European Stroke Journal.

Professor Harbison has been invited to join the International AF Screen Consortium, which advocates for the introduction of screening for the Common Cardiac Arrhythmia Atrial Fibrillation Internationally. A consensus opinion document co-authored by Professor Harbison has been accepted for publication in the Journal Circulation.

Professor Harbison remains in his role as National Clinical Lead for Stroke. The Stroke Programme continues to be associated with the declining mortality for stroke in Ireland. Since his appointment in 2009 the mortality for stroke has dropped by 15%.

The stroke service has submitted a large number of abstracts to various meetings and, for example, is involved in at least 15 submitted to this years European Stroke Organisation Congress in Prague. Dr. Anne Buckley, Research Fellow, is finalising her MD research looking at associations between cerebral vascular disease and neuro-cardiovascular instability in the Irish Longitudinal Study of Aging.

Medical Physics and Bioengineering (MPBE)

Introduction

Year 2016 saw the completion of the medical equipping project for the new MISA ward and outpatient areas led by Tim Foran, supported by the wider MPBE department. The clinical engineering team dedicated to supporting the Mercer's Institute for Research on Ageing took up residence in the new MIRA research facility in the MISA building, and established the MISA Biomedical Engineering Laboratory with capability for software, hardware and rapid prototyping development. The MPBE team at MISA comprises; Dr. Gerard Boyle, Dr. Tim Foran, Dr. Ciarán Finucane, Dr. Chris Soraghan and Dr. Mindaugas Norkus.

Clinical Engineering Support

A number of key initiatives were progressed to enhance the clinical service provided to patients in MISA.

Falls and Gait Research

A technology platform to assist with falls prevention management in MISA wards was introduced, to coincide with the transfer of patients to the MISA Building in April 2016. The new pager-based system facilitates alerts to Ward staff when patients at risk of falls arise from their bed or chair.

A grant of €2,500 was awarded by the SJH Foundation to Dr. Chris Soraghan and Dr Tim Foran on behalf of the Falls Management Committee to purchase bed and chair occupancy sensors for the hospital to assist in reducing falls risk.

In collaboration with Dr. John Gormley in the Discipline of Physiotherapy, TCD, and Professor Rose Anne Kenny, Dr. Tim Foran established a 3D gait analysis facility adjacent to the Falls and Syncope Unit which will allow quantitative assessment of gait and balance in fallers and in stroke rehabilitation patients.

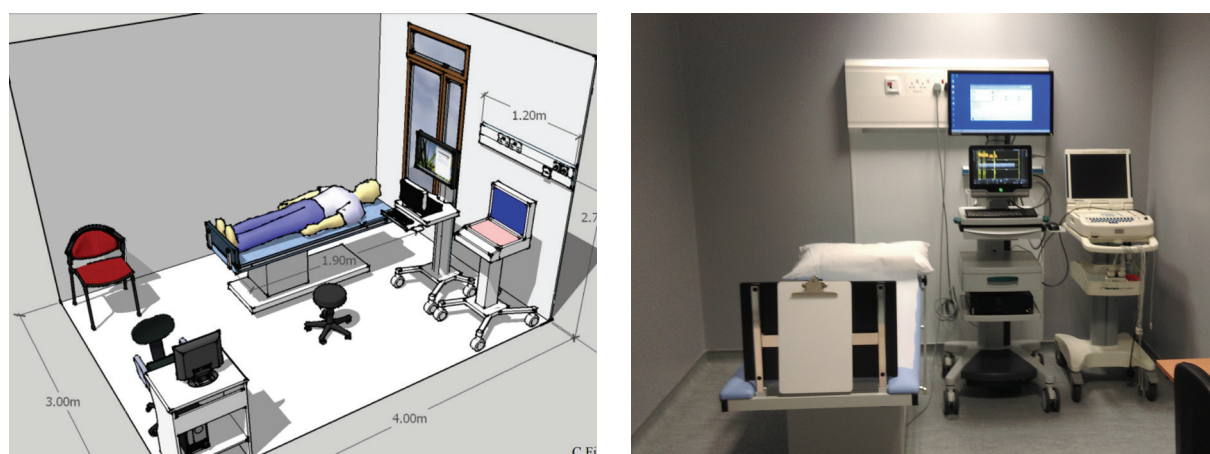
Falls and Syncope bay design

The new Falls and Syncope Unit in MISA houses eight dedicated syncope test bays. The engineering challenge was to accommodate increased clinical and research requirements to include state-

of-the-art beat-to-beat blood pressure monitoring, ECG, cerebral perfusion measurements (NIRS), HD video capture and integrated autonomic function assessment systems into a streamlined and patient friendly environment. Custom solutions were proposed by MPBE and a secure data support infrastructure was constructed to meet digital data requirements and installed by IMS Department. This new bay design and data management framework will support future research and innovation initiatives in FASU. The MPBE leads for this project were Dr. Tim Foran and Dr. Ciarán Finucane.

The design and development process began with clinical user need identification, which was followed by an iterative design process including 3D CAD renderings of concepts, and evaluation of concepts by the project team. Once desired specs were finalised equipment trials and prototypes were organised and developed with suitable vendors and followed through to tendering and procurement.

The figure below shows the initial concept FASU designs rendered by MPBE and the final FASU bay delivered in MISA in 2016.



Concept Design of the New FASU Assessment Bay (left). New FASU bay in MISA (right).

Innovation Activity

Design and Older People

'SJH Design Week' was run by MPBE for a second year in Feb 2016 in partnership with the Quality, Safety and Improvement Directorate (QSID). Dr Chris Soraghan and Dr Gerard Boyle put out a call to all staff from SJH to submit design ideas to improve patient and staff experience at the hospital. Over 50 ideas were collated from staff all across the hospital. Of these 11 projects were shortlisted. For example, one project sought to find ways to support a patient sit up comfortably in bed without inducing pressure sores, while another considered ideas for a safer, more discrete receptacle for emptying urinary catheter bags. The projects were assigned to 44 students from the Medical Device Design M.Sc. at NCAD and from TCD Bioengineering, with 4 students assigned to each project. The students worked intensely over one week with the SJH project originators (called 'Ideators') to tackle the design challenges. The students then presented their solutions in an open forum at SJH. The objectives of Design Week are to support 'design thinking' by staff and to help individual staff members develop ideas they have to improve the hospital experience. The winning NCAD student (Nikita Parikh) from SJH Design Week 2016 continued research into the design of a Fast Ward Admission Trolley as part of her final master's thesis (June-Sept 2016), with co-supervision by Dr Chris Soraghan. The Fast

Admission trolley idea was submitted by SJH Ideator's from Edward Hallaran Bennett's Ward (headed up by Tony Galvin, Productive Ward Lead). Tony and his team continued development of the idea with the MSc student producing a physical design and a process map illustrating all the steps carried out during a patient admission. Ideas generated from two of the SJH Design Week projects have since catalysed innovation initiatives at SJH to improve patient services.

Local Asset Mapping Project

Dr Gerard Boyle and Dr Chris Soraghan continued technological support to the Local Asset Mapping Project (LAMP), including development and refinement of a web platform for LAMP. The platform was presented at the Institute for Public Health's Knowledge 4 Health Conference 2016 in the Royal Hospital Kilmainham to assess interest in a social prescribing model provided by LAMP. LAMP also exhibited at the first Health Innovation Showcase at the Science Gallery in Dublin in November 2016 coordinated by eHealth Ireland and the HSE. Dr David Robinson, Dr Gerard Boyle, Jennifer Feighan and Dr Chris Soraghan were awarded a grant of €3,500 towards the development of a Cancer Health Information System called (ProsPr – Prostate Social Prescribing Project) as part of LAMP. This was funded by the Regional Oncology Programme Office, St. James's Hospital.

Geoprocessing Support (Geographic Data Processing)

Dr Chris Soraghan and Dr Gerard Boyle continued to provide geoprocessing support to researchers from GUIDE. The work was presented at national and international conferences demonstrating correlates of HIV outcomes to geography and social deprivation, which aligns with work in the LAMP project.

Ocular Microtremor

A spin-off 'i-tremor' technology for non-invasive measurement of Ocular Microtremor (OMT) is ongoing further development by Dr. Gerard Boyle and Dr. Mindaugas Norkus with support from the Enterprise Ireland Commercialisation fund. This state of the art technology is designed to enable a quick and simple evaluation of depth of consciousness. A formal market evaluation for the device was carried out in 2016, and demonstrated an interest in the technology from the emergency ambulance sector, amongst other areas. The potential of i-tremor technology for assessment of sports concussion on the pitch-side is also being explored as part of the ongoing commercialisation effort, and was recently acknowledged in the health supplement of The Irish Times newspaper [Cullen, P. (2016, Dec. 5). It's all downhill from 38: why ageing is not just for the old. The Irish Times, Retrieved from <http://www.irishtimes.com/>].

Novel Neurocardiovascular Monitoring Device

As part of a collaborative project between DIT (Product Design and Schools of Electronic and Electrical Engineering) and Dr. C Finucane initiated in September 2016 we welcomed 2 FYP students from DIT. Both students are working on separate components (product design and electronic engineering perspectives) of a larger design project focussing on designing a novel continuous BP and HR measurement product and are co-supervised by Dr. Ciarán Finucane (MISA), Dr. Colm O Kane (DIT), Dr. Ted Burke (DIT).

The MPBE team in MISA also welcomed Laura Perez Denia to the team in November 2016 as part of her M.Sc. thesis in Bioengineering at TCD. Laura is validating a novel system for assessing neurocardiovascular instability in young and older adults that is intended to be cheaper and more convenient for wider clinical and community use than current technologies. Laura is conducting her research under the supervision of Dr. Ciarán Finucane and will be conducting clinical testing at the Falls and Syncope Unit at SJH.

App Development

The SJH Campus Guide app for patients, staff, and visitors navigating the hospital campus has been developed with an external local company in Dublin 8. Dr Chris Soraghan and Anthony Edwards (Clinical Photography) coordinated the design which caters for web-based updating of content. The App is expected to be available in the app stores in Q1 2017.

Rehabilitation Engineering

Electrolarynx design

The team continue to investigate methods of improving electrolarynx device design. Dr.Tim Foran investigated voice coil design and sound transmission with Dr. Noirin Sheahan to improve sound quality and transmission into the oral cavity. Dr Gerard Boyle continued development of a novel ultrasound based electrolarynx device to support speech production, supervising a TCD Bioengineering student Padraig Maree in a 6 month internship as part of his final year undergraduate course. Padraig designed a rig for creating a 'beat-frequency' from the interaction of two ultrasound transducers. An M.Sc. design student (Oisin Minogue) from NCAD also completed his final master's thesis on design concepts for a hands-free electrolarynx, in order to free up hands for use in socialising, sketching while talking, and other activities, supervised by Dr. Chris Soraghan.

Orientation tool for stroke patients

The team collaborated with Professor Joe Harbison and Senior OT Elaine Harrington on an orientation project for stroke patients. A engineering student from UCD Rory Mc Cullough was supervised by Dr. Ciarán Finucane and Dr. Tim Foran during a 4 week project placement to prototype a number of concepts. To date an initial system has been trialled successfully on one patient in MISA, with plans to trial on other stroke patients in the future.

3-D Printing and Modelling

Dr Mindaugas Norkus and Dr Finucane are collaborating on the design and rapid prototyping of an open source prosthetic limb. As part of this work a 3D printed prosthetic hand has been designed and manufactured as a means of assessing the feasibility of contributing to a global charitable initiative.

Research Activities

Dr. Tim Foran graduated with a Ph.D. from Trinity College (School of Medicine) during the year. His thesis was entitled 'Measurement of variability in gait with application to older adults'.

International Collaborations

Collaborative studies with our international partners from the Amsterdam Medical Centre in Holland, and the Schlegel Research Institute for Ageing in Waterloo, Canada (<http://www.the-ria.ca/>) continued this year on the theme of Neurocardiovascular Instability and the influence of cerebral hypoperfusion.

As part of our ongoing collaborative work with our European partners lead by Prof Wouter Wieling from the Amsterdam Medical Centre, a team from MISA (R Kenny), MPBE (C Finucane) and TILDA (H Nolan) have been invited to work on an expert review of the importance of continuous blood pressure measurements across the lifespan in syncope assessment.

Neurocardiovascular Instability, Falls and Syncope Research

Neurocardiovascular Instability refers to impairment of the neural regulatory centres that govern blood pressure control and can lead to low blood pressure, cerebral hypoperfusion, dizziness, faints and falls. Research work in this area focuses on understanding the mechanisms

of Neurocardiovascular Instability and its relationship to health outcomes in older adults, and explores the development and use of technology to enhance clinical and research activities in this area. This year 5 papers related to Neurocardiovascular Instability were published in international journals and 12 presentations were made at national and international conferences.

Orthostatic Hypotension, Injurious Falls and Syncope

Dr. Ciarán Finucane and Professor Rose Anne Kenny published an invited editorial commentary entitled “Falls risk, orthostatic hypotension, and optimum blood pressure management: is it all in our heads?” in the American Journal of Hypertension.

Dr. Finucane, along with colleagues from TILDA and the University of East Anglia also recently published work in the Journal of the American Geriatric Society examining the relationship between impaired orthostatic BP recovery, falls and syncope. This work was also presented to an international audience at the annual European Union Geriatric Medicine Society held in Lisbon.

Two related papers describing the reliability of continuous beat-to-beat blood pressure measurements and the accuracy of anatomical landmarks for locating the carotid sinus have also been published in Clinical Autonomic Research and Ageing and Ageing respectively.

Cerebral Perfusion in Syncope and Falls

An international collaborative study initiated by Dr Ciarán Finucane, Professor Richard Hughson and PhD candidate Laura Fitzgibbon-Collins from the Schlegel Research Institute for Ageing in Waterloo is currently assessing the role of cerebral hypoperfusion in falls risk in nursing homes residents throughout Ontario Canada. Data collection has recently been completed. First results indicating that cerebral perfusion abnormalities are common in older adults and are often unidentified by peripheral BP measurements placing individuals at risk of falls were recently presented at three international conferences (the American Society of Physiology, the Irish Gerontological Society and the British Geriatric Society in 2016). In addition, a collaborative grant application was made to Canadian Institute of Health Research to further develop this theme.

MISA Seminar Series: Arteries, Astronauts and Ageing!

As part of our ongoing international collaboration a presentation on ‘Arteries, Astronauts and Ageing’ was given at MISA by Professor Richard Hughson, the Schlegel Research Chair in Vascular Ageing and Brain Health and a member of the Schlegel-University of Waterloo Research Institute for Ageing, Ontario, Canada. The event was part of the MISA seminar series and was organised in collaboration with the MPBE team based at MISA.

The seminar was well attended and focused on Prof Hughson’s research into how the cardiovascular system changes with ageing and with space travel. It might be unexpected, but down-to-Earth problems of ageing have parallels in the physiological changes seen in astronauts on the International Space Station. A major focus of Prof. Hughson’s work is on the effect of ageing and of long term weightlessness on the ability of the cardiovascular system to regulate arterial blood pressure and brain blood flow. Studying these two populations in parallel provides unique insights into possible mechanisms that might increase the risk of fainting and falling. Professor Hughson was visiting Ireland to present work conducted in collaboration with Dr. Ciarán Finucane at the International Physiology Society Conference.



Figure: Professor Hughson presenting at the MISA seminar series.

Educational Activities

The MPBE team undertakes educational activities and student collaborations throughout the year.

In addition to the NCAD design week, the MPBE team in MIRA delivered (in Q4 2016) a teaching module on Bioinstrumentation to students as part of the MSc in Medical Device Design at NCAD on Thomas Street. This module is delivered to students with various backgrounds from fine arts to industrial design and involved a team-based project to solve a design problem taking into consideration the bioengineering principles learned.

A Novel Test for Vasovagal Syncope

Michelle Sybring presented her MSc thesis in Biomedical Engineering at both the Irish Gerontological Society and British Geriatric Society conferences in 2016. This work was performed in collaboration with the Falls and Blackout Unit at St. James's hospital and TILDA, and conducted under the supervision of Dr. Ciarán Finucane and Prof. Rose Anne Kenny. Michelle's work focused on the design, development and testing of a novel and convenient test for vasovagal syncope in older adults. The developed approach combines physiological measurements made during the active stand test, multiparameter signal processing and advanced data analytics including machine learning algorithms.

Other Activities

Fund raising

Dr. M Norkus and Dr. C Finucane raised €2.5k for Stroke and Neurology teams in 2016 by completing a Half Ironman as part of the Galway Challenge in 2016. Well done lads!

The Local Asset Mapping Project - LAMP

2016 was a busy year for LAMP as we joined the Wellcome-funded Social Prescribing Network, launched at University of Westminster in London. As part of that connection, LAMP undertook a site visit to Bromley-by-Bow in East London to examine the UK's model of connecting patients to community resources.

Locally LAMP became part of the Dublin 8 Social Prescribing Project with Fatima Groups United. The South Inner City Community Development Association (SICCCA) provided volunteers to add further detail to LAMP's directory of community activities. LAMP integrated further in the local area by becoming part of the Kilmainham Inchicore Network.

LAMP developed the web-based prescription engine further with a view to deployment at point-of-care as a clinical tool. This directory will allow health professionals to direct patients to community resources. As part of this development, we connected with various services within the hospital including GUIDE, Diabetes, Respiratory Rehab, and the Bone Health Clinic.

LAMP secured funding from the Regional Oncology Programme Office to develop ProSPR - the Prostate Social Prescribing Project. This will develop the prescription engine further in a cancer-specific way. LAMP received support from GBHI to participate in a community project examining the impact of online education on understanding of hypertension as a risk factor for dementia.

Finally, LAMP showcased progress to date at a number of internal and external fora, including hospital Grand Rounds, GP teaching, Trinity College's Science Gallery, and the Knowledge for Health Conference at the Royal Hospital Kilmainham.

TILDA: The Irish Longitudinal Study on Ageing

The role of research in responding to the challenges and opportunities of an ageing society requires a multidisciplinary and integrated approach. TILDA is a large-scale nationally representative study of more than 8,500 people aged 50 and over, and it is the most ambitious study on ageing. 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 the ageing process.

2016 was characterised by a focus on research excellence, the translation of research for policy-makers, non-governmental agencies, 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.

TILDA Research Highlights

TILDA Discovers Cardiovascular Predictor of Mortality

Research from TILDA showed, for the first time, that the speed of heart rate change in response to standing up predicts mortality in older people. When we stand up our heart rate speeds up then settles. The rate at which this happens in older people has been shown for the first time to predict mortality four years later according to the research from TILDA which was published in *Circulation Research*, a leading journal of the American Heart Association.

The team at Trinity College Dublin in collaboration with researchers from Harvard University's Center for Population and Development Studies found that the speed of heart rate recovery in the initial 20 seconds after a person stands predicts the likelihood of dying over four years in older people. The research team went a step further by dividing participants into groups based on their speed of heart rate recovery. Those in the slowest heart rate recovery group were 7 times more likely to die over the four year period compared with those in the fastest heart rate group. They remained 2.3 times more likely to die even when the researchers took account of other known risk factors for mortality and for heart rate such as age, diabetes, lung disease, socio-economic status, smoking, dietary factors, and body mass index.

The research involved 4,475 TILDA respondents aged 50 years and over who completed a detailed cardiovascular health assessment at the TILDA health centre at Trinity in 2011 and were followed up four years later. Participants in the study rested in a lying position for 10 minutes during which time their heart rate and blood pressure were monitored. Participants were then asked to rise from the lying position to a standing position. This simple manoeuvre represents a major cardiovascular challenge causing the heart to beat faster as it tries to compensate for the drop in blood pressure that occurs when a person stands up after lying down. The heart beat then returns towards its baseline or normal rate and it is the speed of this recovery to baseline that is the key factor. The faster it returns to normal, the better. Commenting on the findings, the author of the report and Senior Research Fellow with TILDA, Dr Cathal McCrory, remarked that: "Our study shows that the speed of heart rate recovery in response to standing is an important marker of health and vitality that could be assessed quite readily in a clinical setting such as a hospital. It represents a new and potentially important biomarker of cardiovascular ageing that is useful for screening purposes."

Changes in entitlement to medical cards results in changes in number of GP visits for over 50s

TILDA detailed the impact that changes to an older person's entitlement to a medical card had on their use of health services, such as GP visits, flu vaccines, medications and hospital care. The report authors found that changes in people's entitlement to medical cards were associated with changes in their use of GP services and level of medications dispensed. Using data from two waves of TILDA in 2010 and 2012 they found that in the over 50s:

Gaining a full medical or GP visit card is associated with 1.3 extra GP visits per annum. Compared to the level of GP visiting for this group in 2010, which was 3 visits, this represents an increase of approximately 43 per cent.

For those who lose a full medical or GP visit card, the number of GP visits falls by 1.2 visits per annum. This is equivalent to a fall of approximately 29 per cent from the 2010 level which was 4 annual visits.

Gaining a full medical card was associated with a significant increase in the numbers of medications taken regularly.

Getting a medical card was not, however, associated with any significant changes in the probability of a flu vaccine, the number of emergency department visits, outpatient visits or inpatient nights.

Physical Activity in Community-Dwelling Older Irish Adults

TILDA released a Topic Report and Research Brief on physical activity. Lead authors, Dr Orna Donoghue (Project Manager) and Dr Matt O'Connell (CARDI Research Fellow) showed that only three out of five Irish adults aged 50 years and over walk for the recommended target of at least 150 minutes per week. However, middle-aged and older Irish adults with high levels of physical activity report greater participation in social activities, lower depression, less anxiety, better quality of life, and less loneliness compared to those with low physical activity levels. The results provided a profile of those who are less active which can be used to ensure that the appropriate groups are targeted for intervention as part of health promotion campaigns and initiatives. These findings underscore the vital contribution that current initiatives such as the Get Ireland Active plan (launched on 14 January by the Department of Health), and future policies to promote physical activity may make in optimising health and wellbeing amongst the ageing population. This research was covered in a number of national media outlets.

How Negative Attitudes Towards Ageing Affect Health in Later Life

TILDA released a Research Brief which investigated whether long-term exposure to negative attitudes towards ageing affects long-term changes in physical health. This research, led by Dr Deirdre Robertson (former TILDA PhD student, now based at Columbia University), showed that participants with negative attitudes to ageing had slower walking speed and worse cognitive abilities two years later, compared to older adults with more positive attitudes towards ageing. This was true even after participants' medications, mood, their life circumstances and other health changes that had occurred over the same two-year period were accounted for. These results highlight that the way we think, talk and write about ageing may have direct and measurable effects on mental, physical and cognitive health. Societal attitudes towards ageing are predominantly negative, therefore, these findings have important implications for media, policymakers, practitioners and society more generally. Articles about this research were published in 48 national and international news outlets. Dr Robertson was also interviewed by the Florida Psychiatric Association and this was made available on their Podcast 'The Experts Speak'.

The Impact of Frailty on Public Health

Nurse Service Utilisation

Dr Lorna Roe of TILDA and the Centre for Health Policy and Management, Trinity College Dublin, presented findings at the annual general meeting of the Institute of Community Health Nursing. The report examines the demographic and healthcare entitlements of older frail Irish people utilising Public Health Nursing services and was commissioned by the Institute of Community Health Nursing (ICHN). Key findings from the report include:

57% of Public Health Nursing service users aged 65 years and older are frail.

Less than one third of frail older people access the Public Health Nursing service.

Frail older people's healthcare entitlement, living arrangements, disability and severity of frailty are all important determinants for accessing the Public Health Nursing service.

TILDA Researcher Receives Research Award for Topic Report

Dr Catriona Murphy (former TILDA Health Research Fellow and currently at Dublin City University) received a research award from the Institute of Community Health Nursing for a Topic Report that she released earlier in 2016. This topic report was called "Demographic and health profile of older adults utilizing public health nursing services in Ireland: Findings from The Irish Longitudinal Study on Ageing (TILDA)". Dr Murphy received the award at the Institute of Community Health Nursing annual general meeting on 26 September.

Road Safety Authority – TILDA Collaboration

Dr Orna Donoghue presented findings from TILDA which showed that 31% of adults aged 65-74 years and 61% of adults aged 75 and over do not have enough time to cross the road during the amber light phase based on their usual walking speeds. The RSA also identified other specific behaviours as being problematic and linked to road accidents in older adults. Subsequently, the RSA identified older adults as 'vulnerable road users' and an appropriate group to target in future education and safety campaigns. TILDA submitted a proposal to the RSA in January 2016 and this was subsequently approved for funding. The focus of the collaboration is to specifically target an improvement in safety for older road users, by generating a profile of middle-aged and older adults in Ireland, obtaining information about older road users' awareness and perceptions of safe behaviours and assisting in developing an education and awareness campaign to promote desirable behaviours. This grant will run from April to November 2016.

Hypertension Seminars Delivered to Health Professionals

Dr Catriona Murphy, TILDA Research Fellow, delivered a number of hypertension seminars for health professionals in primary and community care practice across the country. The purpose was to provide guidance to those in clinical practice regarding routines to improve the prevention, early detection and management of patients with high blood pressure. This work was funded by the Health Research Board (HRB) Knowledge and Exchange Dissemination Scheme (KEDS).

TILDA Welcomes the Principal Investigator of the China Health and Retirement Study (CHARLS)

TILDA was visited by Professor Yaohui Zhao, the Principal Investigator of the China Health and Retirement Study (CHARLS). She met with TILDA researchers and gave a seminar “Health, Elder Care and Retirement in China” to the TILDA team. Her visit produced many interesting interactions and discussion around potential future collaborations.

Lecture on Irish Immigrants Marks 10 Years of TILDA

Professor James P. Smith delivered a lecture entitled “Irish immigrants and their progeny around the world” in Trinity College Dublin. Professor Smith, Distinguished Chair in Labor Markets and Demographic Studies at US-based policy-research institute RAND, visited Trinity to help celebrate the 10th anniversary of TILDA. He has served as chair of the TILDA International Scientific Advisory Board since the study began, and has played a pivotal role in helping TILDA to be a success. In his research, Professor Smith found that on average, Irish migrants to the US were as well educated as other European immigrants to the US during the first half of the 20th century. Professor Smith also found that children and grandchildren of Irish migrants to the US did not receive more education in the US than they would have received if the original migrants had stayed at home in Ireland.

TILDA's Scientific Advisory Board Meets

The TILDA research team and affiliated researchers presented to members of the TILDA Scientific Advisory Board and other guests during this one-day event held at Trinity College Dublin. Scientific Advisory Board attendees included Professor Jim Smith (chair), Professor James Nazroo, Professor Lisa Berkman, Professor Aartjan Beekman, Professor Robert Wright, Professor John Henretta, Professor David Weir, Professor Robert Clarke, Professor Stacy Tessler Lindau, Professor Finbarr Martin, Professor Carol Brayne, and Professor Ian Young. Presentations included topics such as the Global Brain Health Institute; Technological Assessments in Longitudinal Studies; Chrono-Biological Markers of Ageing; Knowledge Exchange Seminars on Hypertension; The Relationship Between Kidney Disease and Ageing; Sexual Activity and Relationship Quality in Older Age; and Housing and Older Adults in Ireland.

Professor Rose Anne Kenny Presents at the Biomedical and Life Sciences Innovation Showcase

Professor Rose Anne Kenny presented a talk entitled “How a longitudinal study can change the research landscape” at the Biomedical and Life Sciences Innovation Showcase. The showcase was co-hosted by Trinity College Dublin and the Royal College of Surgeons in Ireland to promote the next wave of Biomedical and Life Sciences research being undertaken within both institutions and profiled examples of and opportunities for Knowledge Transfer and Industry collaboration.

TILDA visited by Principal Investigators from the Dunedin Study, New Zealand

Professor Terrie Moffitt and Professor Avshalom Caspi, co-Principal Investigators of the Dunedin Study, New Zealand visited TILDA. They toured the Health Assessment Centre and underwent a

TILDA health assessment, met with researchers and delivered a seminar to the TILDA team. TILDA advised them on possible health assessment measures that they might include in forthcoming waves of the Dunedin Study.

TILDA Engages the Active Ageing Partnership and Age Friendly City and County NGO Forum

Dr Christine McGarrigle (Research Director) met with the Active Ageing Partnership, and the Age Friendly City and County NGO Forum, to present recent TILDA findings around older adults' obesity, exercise and health outcomes including diabetes and heart disease. The purpose of these meetings was to present findings that can be translated into awareness campaigns. Both groups were very interested in TILDA findings and are keen to collaborate going forward, for example, to incorporate TILDA data into education campaigns and programs including the Ageing with Confidence Education scheme run by Age and Opportunity.

TILDA Celebrates its 10th Anniversary with 600 Participants

From heart conditions to caring for grandchildren and from undiagnosed diabetes to the power of positive thought, TILDA has spent a decade understanding Ireland's older generation. Trinity College Dublin celebrated that milestone with 600 of the 8,500 participants at a special event on 8 September, at which researchers and participants considered the critical impact that this research continues to have on the lives of older people. To date, policy makers, NGOs and others have used TILDA findings as the evidence base for 57 policy and strategy documents covering transport, health, jobs, pensions, carers, residential and home care, road safety, capacity planning for services, medical care and practice, IT, health insurance, dementia prevention, volunteering, taxation and the economy.

On the day, Professor Rose Anne Kenny (Principal investigator of TILDA and Professor of Medical Gerontology at Trinity College) gave examples of how this research is changing policy and practice for older adults:

- When TILDA revealed two thirds of older people have high blood pressure – often unknown to the individual despite the risk it poses to their heart and brain health – TILDA, with funding from the HRB, rolled out a nationwide programme to community health nurses to encourage more frequent blood pressure monitoring.
- TILDA measurements on walking speeds revealed that one in three older adults cannot cross the road in the time allotted at signalised crossings. TILDA researchers are now working with local authorities to assess signal timing settings and are providing evidence for public safety campaigns with the Road Safety Authority.
- Atrial fibrillation is a common cause of stroke, heart failure and dementia. TILDA found that the prevalence of atrial fibrillation was 2.3% in the population, rising to 20% in men aged over 80 years. Of those with an arrhythmia, one third were unaware of the arrhythmia and one third were incorrectly treated. The Irish Heart Foundation translated these findings into a national awareness campaign and now, the National Screening Programme Guidelines use this TILDA data.

On behalf of the TILDA team, Professor Kenny paid tribute to the TILDA participants saying that they “have helped us to unmask the important and often silent contribution that older adults make to Irish society. The participants have contributed to a rich legacy which will ensure a better quality of life for future generations by helping us to understand the process of ageing. This understanding is coupled with important information to help governments to make efficient policy decisions to optimise health and economic success as populations age.” Other speakers on the day included Dr Patrick Prendergast (Provost, Trinity College Dublin), Ms. Helen McEntee

(TD, Minister of State for Mental Health and Older People), Dr Colm O'Reardon (Deputy Secretary for Strategy and Research, Department of Health), Dr Graham Love (Chief Executive, Health Research Board) and Micheál Ó Muircheartaigh (RTE Commentator). The event was kindly supported by the Trinity Foundation and was extremely successful with participants providing very positive feedback about their engagement in the study and their interest in hearing about the impact of the research findings. The event was widely featured in print media and radio.

TILDA Hosts One-Day Workshop on Publicly Archived Datasets

TILDA delivered a free one-day data workshop at Trinity College Dublin to almost 70 participants, all of whom were interested in accessing TILDA data for research purposes. The morning session included an overview of TILDA and the data available through the public data archives. There were also a number of invited speakers, including Jenny O'Neill, Data Manager at the Irish Social Science Data Archive (ISSDA) and Drystan Phillips, Senior Programmer on the Gateway to Global Aging project, based at the University of Southern California. The Gateway to Global Aging is a platform for population survey data on aging around the world, including TILDA. The site offers a digital library of survey questions, a search facility to find comparable questions across surveys and code to generate identically defined variables for cross-country analysis. The afternoon session was a hands-on workshop for 26 participants using the harmonised TILDA dataset to do cross-country comparisons. Feedback from the workshop was extremely positive.

TILDA Postdoctoral Fellow on Placement at University of Maryland

TILDA Research Fellow Dr Patrick Moore visited the Department of Pharmaceutical Health Services Research at the University of Maryland, Baltimore, from May to September 2016. The visit was part of Dr Moore's Interdisciplinary Capacity Enhancement (ICE) fellowship sponsored by the Irish Health Research Board. The department seeks to improve health among diverse populations through health services and other medication related research, education, service and community outreach. The placement provided exposure to a range of researchers working on a variety of American prescribing datasets and outreach projects. A collaborative project was undertaken using TILDA data and data from the Medicare Current Beneficiaries Survey (MCBS) examining the effect cholesterol lowering medication has on an individual's health behaviour (smoking, diet, exercise). The placement also provided networking opportunities with other American faculty researchers as well as a chance to present some of TILDA's research.

TILDA Hosts Access Earth International Meeting: Advancing Universal Design

Access Earth is a community working to make travel easy and equal. Their mission is to empower people to embark on new adventures by providing specific information on accessibility. In 2016, Access Earth received seed funding from Enterprise Ireland and the project was highlighted in The Huffington Post: http://www.huffingtonpost.com/entry/access-earth-app-disabled-rate-businesses-places-accessibility_us_572a46d1e4b096e9f0901521.

Trinity EngAGE Massive Open Online Course (MOOC) Runs for the Second Time

The Trinity EngAGE MOOC on Strategies for Successful Ageing was a free five-week course which originally launched on the 8 February 2016. Due to its success, the course was launched for a second time on 26 September. It presented world-leading research in ageing and offered strategies to support health and well-being. The lead educator was Professor Rose Anne Kenny and TILDA research was also highlighted throughout the course. 14,000 learners participated in the course, resulting in 130,000 comments and 173,000 likes. The project team met with representatives from five of Age Friendly Ireland's Older Person Councils to outline core topics of interest which researchers then responded to, resulting in a model of community based teaching and learning. The Project Team included The Irish Longitudinal Study on Ageing (TILDA),

Mercer's Institute for Successful Ageing (MISA), Trinity Online Services, Age Friendly Ireland, the Irish Museum of Modern Art, the Irish College of General Practitioners Retired GPs and Age & Opportunity. The course facilitated strong engagement between learners in the form of comments, resulting in the development of a global community of learners. Details are available here: <https://www.futurelearn.com/courses/successful-ageing/1>.

TILDA Facilitates the Age Friendly Ireland National Convening Of Older Peoples' Councils

Sarah Bowman, Director of Public Engagement, facilitated a session with 140 participants from 31 Counties at the National Convening Of Older Peoples' Councils which was hosted by the Dún Laoghaire Rathdown Network for Older People, in association with Dún Laoghaire Rathdown County Council and Age Friendly Ireland. The programme focused on celebrating successes and identifying barriers to an Age Friendly Ireland.

Science Foundation Ireland: EngAGE with Science Project Toolkit Launched

AMBER, the Science Foundation Ireland funded materials science centre based at Trinity College Dublin and TILDA's Director of Public Engagement, working in collaboration with St Andrew's Resource Centre, Dublin, concluded their 8-week "EngAGE with Science" intergenerational community learning programme. "EngAGE with Science" brought primary school students, teachers, researchers and older people together to consider and debate developments in science. This novel project utilised AMBER's successful NanoWow curriculum as a model to demonstrate how any research institute can translate their unique research in order to build strategic partnerships, strengthen local communities, inspire students of all ages, and ensure that Ireland has the most scientifically informed public. "EngAGE with Science" was funded through the Science Foundation Ireland Discover programme and was highlighted as an exemplar project in 2015. In June 2016, the programme toolkit was launched so that other educational centres can replicate the programme. Learn more about the project here: https://www.tcd.ie/news_events/articles/amber-s-engage-with-science-project-inspires-students-of-all-ages-to-connect-with-science/6313#.VqljjJqLRQI

TILDA Facilitates the Opening and Closing of E-Gress at the Irish Museum of Modern Art

E-gress is a soulful and stirring filmic artwork that maps a twilight world of loss and change exploring how individuals diagnosed with dementia find new ways to adjust to a changing world. E.gress was produced by artist Marie Brett and musician Kevin O'Shanahan following an intensive collaboration with the Alzheimer Society of Ireland, informed by the concept of absence and presence and how ambiguous loss theory relates to an experience of dementia. This multi-layered film, a portrait of living moments on life's edge, invites us to contemplate loss, love and life itself. Professor Rose Anne Kenny chaired the opening event and Sarah Bowman, Director of Public Engagement, chaired the closing event at the Irish Museum of Modern Art.

TILDA 2016 Newsletter

The 2016 TILDA newsletter was distributed to participants and included key research findings, notable achievements and events. See: <https://tilda.tcd.ie/assets/pdf/TILDA%20Newsletter%202016.pdf>.

TUDA Study

Principal Investigators: Dr Conal Cunningham, Dr Miriam Casey, Dr Kevin McCarroll, Prof Anne Molloy.

The TUDA (Trinity, Ulster, Dept of Agriculture) study is the largest cross sectional study of its type in all-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 comprises 5186 non-institutionalised adults aged over 60 recruited into three disease defined cohorts exhibiting early phenotypic evidence of disease. 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.

TUDA provides a rich source of detailed 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. TUDA is one of the largest and most comprehensively characterised cohorts of its kind in the area of ageing research. As the cohorts are disease defined, it provides a unique insight into the potential role and interaction of several pathogenetic factors in older adults including nutritional, genetic and health and lifestyle factors in the development of common diseases of ageing.

Plans are now underway to conduct a follow up study in a subgroup of TUDA participants at St James's Hospital, Dublin. 'TUDA 5+' will recruit subjects 5 years after their initial assessment to repeat all of the original study investigations and tests. In addition, further and more detailed information will be obtained on dietary intake. It is envisaged that this follow up study which is also being replicated in the hypertensive cohort by our colleagues at the University of Ulster, will lead to the recruitment of approximately 1000 subjects. TUDA 5+ will become one of the largest longitudinal studies of its kind of older adults and will provide a rich dataset for further research on biomarkers of health in ageing. It will also hugely compliment the TILDA longitudinal study of ageing.

A novel study exploring the potential affect of food polyphenols on cognition using future data from TUDA 5+ has been funded via grant support from Science Foundation Ireland. Procanidins abundant in foods such as tea, cocoa, grapes, nuts and berries are of specific interest among polyphenols and are almost exclusively metabolised to phenolic acids and valerolactones. Our study aims to validate gamma-valerolactones as stable biomarkers of procanidin rich foods and determine any potential association with markers of inflammation, metabolic health and cognition.

Normative data for the Frontal Assessment Battery (FAB) has been established in a sub-sample of 2508 participants in TUDA and is now published. The study is the largest to date to create FAB norms, which are stratified by age and education in adults ranging from sixty to over ninety years of age. Results show that FAB scores between 10 -15 out of total score of 18 may be considered normal after allowing for above factors.

A study exploring the observed effects of Riboflavin and Folic Acid on blood pressure control in the TUDA population is currently under peer review. Previous evidence from genome wide studies has identified associations between blood pressure and the gene encoding the folate metabolising enzyme methylenetetrahydrofolate reductase (MTHFR). Specific MTHFR genotypes in conjunction with lower riboflavin levels were associated with the earlier development of hypertension in TUDA study participants.

Dr Ontefetse Ntshohlang has evaluated the relationship between adiposity and cognitive function in the TUDA population. His study found that greater waist/hip ratio measurements were consistently associated with poorer performance in cognitive function across all three TUDA cohorts and in several domains including on testing with the FAB, RBANS and MMSE. Findings were independent of multiple factors including age, education and body mass index and have been submitted for journal review.

Dr Eamon Laird using data from 4137 participants in TUDA identified that 96% of older adults sampled did not meet current dairy intake recommendations. This study is the largest to date examining dairy intakes in older Irish adults and also found that it significantly contributed to vitamin D and B vitamin biomarker status. Findings were published in the Journal of Nutrition Health & Ageing

In a further TUDA study, lower B6 and riboflavin status were both associated with an accelerated rate of cognitive decline over a 5 year period in a subset of 587 participants, findings that were presented at the Winter meeting of the Nutrition Society. Another TUDA study examining factors affecting cognition identified lower socioeconomic status (geomapped individually for each participant) to be a predictor of poorer cognitive performance. Findings have been submitted to Age Ageing for review.

Data from the entire TUDA dataset has also been used to explore the relationship between sun exposure and vitamin D levels in older Irish adults. The study identified ambient UVB dose and sun enjoyment as positive predictors of vitamin D highlighting its beneficial role, even in the 'older' old and is in the final stages of peer review in the Journal of Nutrition.

Publications 2016

Bhangu, J, Mc Mahon J, Hall G, Rice CP, Kenny, RA. et al (2016).

[Long-term cardiac monitoring in older adults with unexplained falls and syncope.](#)

Heart 102(9):681-6

Briggs R, Kenny RA, Kennelly SP.

[Systematic Review: The Association between Late Life Depression and Hypotension.](#)

J Am Med Dir Assoc. 2016;17(12):1076-1088

Briggs R, Coary R, Collins RA, Coughlan T, O'Neill D, Kennelly SP. [Acute hospital care: how much activity is attributable to caring for patients with dementia?](#)

QJM. 2016 Jan;109(1):41

Burke EA, Walsh JB, McCallion P, McCarron M, Carroll R.

[An exploration of the bone health of older adults with an intellectual disability in Ireland](#)

[Journal of Intellectual Disability Research.](#) April 2016 doi: 10.1111/jir.12273

Canney, M, O'Connell, MD, Murphy, CM, O'Leary, N, Little, MA, O'Seaghdha, CM, Kenny, RA.

[Single Agent Antihypertensive Therapy and Orthostatic Blood Pressure Behaviour in Older Adults Using Beat-to-Beat Measurements: The Irish Longitudinal Study on Ageing.](#)

PLoS One. 11(1).

Cassarino M, Kenny RA, O'Sullivan V, Setti A.

[Environment and Cognitive Aging: A Cross-Sectional Study of Place of Residence and Cognitive Performance in the Irish Longitudinal Study on Ageing.](#)

[Neuropsychology.](#) 30(5):543-57.

Coen RF, Robertson DA, Kenny RA, King-Kallimanis BL.

[Strengths and Limitations of the MoCA for Assessing Cognitive Functioning Findings From a Large Representative Sample of Irish Older Adults.](#)

Journal of Geriatric Psychiatry and Neurology. 29(1):18-24.

Coen RF, McCarroll K, Casey M, McNulty H, Laird E, Molloy AM, Ward M, Strain S, Hoey L, Hughes C, Cunningham CJ. (2016)

[The Frontal Assessment Battery: Normative Performance in a Large Sample of Older Community-Dwelling Hospital Outpatient or General Practitioner Attenders.](#)

Journal of Geriatric Psychiatry and Neurology. DOI: 10.1177/0891988716666381

[Epub ahead of print]

Coen RF, Robertson DA, Kenny RA, King-Kallimanis BL. (2016)

[Strengths and limitations of the MoCA for assessing cognitive functioning: findings from a large representative sample of Irish older adults.](#)

Journal of Geriatric Psychiatry and Neurology, 29(1), 18-24 DOI: 10.1177/0891988715598236

Devenney K, Sanders M, Aaronson J, Abeln V, Coen RF, Guinan E, Kessels R, Montag C, Polidori MC, Reuter M, Stuckenschneider T, Vogt T, Walsh C, Weber B, Lawlor BA, Rikkert MO, Schneider SR.

[The Effects of an Extensive Exercise Program on the Progression of Mild Cognitive Impairment \(MCI\): Study Protocol for a Randomised Controlled Trial.](#)

BMC Geriatrics

Donoghue O, Dooley C, Kenny RA.

[Usual and dual task walking speed: implications for pedestrians crossing the road.](#)

[Journal of Aging and Health.](#) 28(5): 850–862.

Feeney J, O'Leary N, Kenny RA.

[Impaired orthostatic blood pressure recovery and cognitive performance at two-year follow up in older adults: The Irish Longitudinal Study on Ageing.](#)

[Clinical Autonomic Research.](#) 1;26(2):127–33.

Feeney J, Savva GM, Regan CO, King-Kallimanis B, Cronin H, Kenny RA.

[Measurement Error Reliability and Minimum Detectable Change in the Mini-Mental State Examination Montreal Cognitive Assessment and Color Trails Test among Community Living Middle-Aged and Older Adults.](#)

[Journal of Alzheimer's Disease.](#) 53(3):1107–14.

Feeney J, O'Leary N, Kenny RA.

[Erratum to: Impaired orthostatic blood pressure recovery and cognitive performance at two-year follow up in older adults: The Irish Longitudinal Study on Ageing.](#)

[Clinical Autonomic Research,](#) 26(3): 243

Finucane C, Colgan MP, O'Dwyer C, Fahy C, Collins O, Boyle G, Kenny RA.

[The accuracy of anatomical landmarks for locating the carotid sinus](#)

[Age Ageing.](#) July 4 [Epub ahead of print]

French HP, Galvin R, Horgan NF, Kenny RA.

[Prevalence and burden of osteoarthritis amongst older people in Ireland: findings from The Irish Longitudinal Study on Ageing \(TILDA\).](#)

[European Journal of Public Health.](#) 26(1):192–8.

Gallagher DJ, Coen RF, Lawlor BA. (2016)

[Alzheimer's Disease. In Neurodegenerative Disorders: A Clinical Guide,](#)

2nd Ed, O. Hardiman & C.P. Doherty eds, Springer International Publishing, Switzerland.

57-74. DOI 10.1007/978-3-319-23309-3

Glynn RW, Dolan C, Shelley E, Lawlor B.

[Evidence-based prevention and treatment of dementia.](#)

[Lancet Neurol.](#) 2016 Sep;15(10):1006–7. doi:10.1016/S1474-4422(16)30122-3.

[PubMed PMID:](#) 27450470.

Henretta JC, McCrory C.

[Childhood Circumstances and Mid-Life Functional Mobility.](#)

[J Aging Health.](#) 28(3):440–59.

Jansen S, Bhangu J, de Rooij S, Daams J, Kenny RA, van der Velde N.
[The association of cardiovascular disorders and falls: a systematic review.](#)
Journal of the American Medical Directors Association. s17(3):193-9.

Kenny RA, McNicholas T.
The management of vasovagal syncope.
QJM: monthly journal of the Association of Physicians. 2016;109(12):767-73.

Lawlor B, Kennelly S, O'Dwyer S.
[Correction. NILVAD protocol: a European multicenter double-blind placebo-controlled trial of nilvadipine in mild-to-moderate Alzheimer's disease.](#)
BMJ Open. 2015 Sep 28;5(9):e006364. doi: 10.1136/bmjopen-2014-006364corr1. PubMed PMID: 26416510; PubMed Central PMCID: PMC4593160.

Meulenbroek O, O'Dwyer S, de Jong D, van Spijker G, Kennelly S, Cregg F, Olde Rikkert M, Abdullah L, Wallin A, Walsh C, Coen R, Kenny RA, Daly L, Segurado R, Borjesson-Hanson A, Crawford F, Mullan M, Lucca U, Banzi R, Pasquier F, Breuilh L, Riepe M, Kalman J, Molloy W, Tsolaki M, Howard R, Adams J, Gaynor S, Lawlor B.
[European multicentre double-blind placebo-controlled trial of Nilvadipine in mild-to-moderate Alzheimer's disease-the substudy protocols: NILVAD frailty; NILVAD blood and genetic biomarkers; NILVAD cerebrospinal fluid biomarkers; NILVAD cerebral blood flow.](#) BMJ Open. 2016 Jul 19;6(7):e011584. doi:10.1136/bmjopen-2016-011584. PubMed PMID: 27436668; PubMed Central PMCID: PMC4964180.

Miller AM, Rutkowska A, Bahl JM, Herukka SK, Koel-Simmelink MJ, Kruse N, Mollenhauer B, Siloaho M, Skinningsrud A, Zetterberg H, Teunissen CE, Lawlor BA.
[Multicenter immunoassay validation of cerebrospinal fluid neurofilament light: a biomarker for neurodegeneration.](#)
Bioanalysis. 2016 Nov;8(21):2243-2254. PubMed PMID: 27684648.

Miller, A.M., Begley, E., Coen, R.F., Doyle, M., Dunne, J., Hutchinson, S., Kennelly, S.P., Kenny, R.A., Killeen, R.P., O'Dwyer, S., O'Neill, C., O'Sullivan, S.S., Rowan, M.J., Sheehy, N., McGuigan, C., Lawlor, B.A. (2016)
[Clinical consensus guidelines on the application of cerebrospinal fluid biomarkers for Alzheimer's disease diagnosis: recommendations of the Irish Network for Biomarkers in Neurodegeneration.](#)
Irish Medical Journal, 109(10), 483 <http://imj.ie/clinical-consensus-guidelines-on-the-application-of-cerebrospinal-fluid-biomarkers-for-alzheimers-disease-diagnosis-recommendations-of-the-irish-network-for-biomarkers-in-neurodegeneration/>

Moriarty F, Bennett K, Cahir C, Kenny RA, Fahey T. [Potentially inappropriate prescribing according to STOPP and START and adverse outcomes in community-dwelling older people: a prospective cohort study.](#)
British Journal of Clinical Pharmacology. May [Epub ahead of print]

Mosca, I, Barrett, A.

[The Impact of Voluntary and Involuntary Retirement on Mental Health: Evidence from Older Irish Adults.](#)
The Journal of Mental Health Policy and Economics. 19(1): 33-44.

Mosca, I, McCrory, C.

[Personality and wealth accumulation among older couples: Do dispositional characteristics pay dividends?](#)

Journal of Economic Psychology. 56:1-19.

Moriarty F, Bennett K, Cahir C, Kenny RA, Fahey T. [Potentially inappropriate prescribing according to STOPP and START and adverse outcomes in community-dwelling older people: a prospective cohort study.](#)

Br J Clin Pharmacol. 82(3):849-57.

McCrory C, Berkman L, Nolan H, O'Leary N, Foley M, Kenny RA.

[Speed of Heart Rate Recovery in Response to Orthostatic Challenge: A Strong Risk Marker of Mortality.](#)
Circulation Research. 119(5):666-75.

McCrory C, Finucane C, O'Hare C, Frewen J, Nolan H, Layte R, Kearney PM, Kenny RA. .

[Social Disadvantage and Social Isolation Are Associated with a Higher Resting Heart Rate: Evidence from the Irish Longitudinal Study on Ageing.](#)

The Journals of Gerontology: Series B: Psychological Sciences and Social Sciences. 71(3):463-73

McHugh JE, Kenny RA, Lawlor BA, Steptoe A, Kee F.

[The discrepancy between social isolation and loneliness as a clinically meaningful metric: findings from the Irish and English longitudinal studies of ageing \(TILDA and ELSA\).](#)

Int J Geriatr Psychiatry. 2016 Jun 1. doi: 10.1002/gps.4509. [Epub ahead of print] PubMed PMID: 27246181.

McHugh JE, Lee O, Aspell N, Connolly L, Lawlor BA, Brennan S.

[Peer volunteer perspectives following a complex social cognitive intervention: a qualitative investigation.](#)

Int Psychogeriatr. 2016 Sep;28(9):1545-54. doi:10.1017/S1041610216000144. PubMed PMID: 26888653.

McHugh Power J, Carney S, Hannigan C, Brennan S, Wolfe H, Lynch M, Kee F, Lawlor B. [Systemic inflammatory markers and sources of social support among older adults in the Memory Research Unit cohort.](#)

J Health Psychol. 2016 Nov 3. pii:1359105316676331. [Epub ahead of print] PubMed PMID: 27815328.

McHugh Power J, Tang J, Lawlor B, Kenny RA, Kee F.

[Mediators of the relationship between social activities and cognitive function among older Irish adults: results from the Irish longitudinal study on ageing.](#)

Aging Ment Health. 2016 Sep 27:1-6. [Epub ahead of print] PubMed PMID: 27676290.

McHugh Power JE, Lee O, Aspell N, McCormack E, Loftus M, Connolly L, Lawlor B, Brennan S.
[RelAte: pilot study of the effects of a mealtime intervention on social cognitive factors and energy intake among older adults living alone.](#)

Br J Nutr. 2016 Nov;116(9):1573-1581. PubMed PMID: 27788696.

McMahon CG, Power Foley M, Robinson D, O'Donnell K, Poulton M, Kenny RA, Bennett K.
[High prevalence of frequent attendance in the over 65s.](#)

European Journal of Emergency Medicine. May [Epub ahead of print]

McNamara, P., Zaporozhan, L., Doherty, C.P. Coen, R.F., Bergin, C. (2016) HIV and Other Infectious Causes of Dementia.

[In Neurodegenerative Disorders: A Clinical Guide, 2nd Ed, O. Hardiman & C.P. Doherty eds, Springer International Publishing, Switzerland.](#) 255-268. DOI 10.1007/978-3-319-23309-3

O'Brien H, Mohan H, Hare CO, Reynolds JV, Kenny RA.

[Mind Over Matter? The Hidden Epidemic of Cognitive Dysfunction in the Older Surgical Patient.](#)

Ann Surg. 2016 – Aug 17 [Epub ahead of print]

O'Callaghan S, Kenny RA.

[Neurocardiovascular Instability and Cognition.](#)

Yale J Biol Med. 2016;89(1):59-71.

O'Hare C, McCrory C, O'Connell MDL, Kenny RA.

[Sub-clinical Orthostatic Hypotension is Associated with Greater Subjective Memory Impairment in Older Adults.](#)

International Journal of Geriatric Psychiatry. 1 June [Epub ahead of print]

O'Hare C, O' Sullivan V, Flood S, Kenny RA.

[Seasonal and Meteorological Associations with Depressive Symptoms in Older Adults: A Geo-Epidemiological Study.](#)

JAD. 191 (2016) 172-179.

Ometto F, Stubbs B, Annweiler C, Duval C, Wang J, McCarroll K, Cunningham C, Soysal P, Isik AT, Luchini C, Solmi M, Sergi, Veronese N.

[Hypovitaminosis D and orthostatic hypotension: A systematic review and meta-analysis.](#)

J Hypertension 2016;34(6):1036-43

Porter K, Hughes CF, Hoey L, Ward M, Moore K, Strain JJ, Molloy AM, Cunningham C, Casey MC, Laird E, McCarroll K, Pentieva K, McNulty H. [Biomarkers of folate and related B-vitamins as predictors of cognitive decline in older Irish adults over a 5 year follow up period](#)

Journal of Nutrition - Volume 76 Issue OCE1

Power C, Greene E, Lawlor BA, "Depression in Late Life: Aetiology, Presentation and Management", [Chapter in: Mental Health and Illness of the Elderly](#) Edited by: Helen Chiu and Kenneth Shulman, Published by Springer, (In press)

Rice CP, Kenny, RA. (2016).

[The way to a man's heart is through his stomach – a case of swallow syncope.](#)

European Journal of Cardiovascular Nursing 15:S15-S16 April 2016.

Robertson DA, Kenny RA.

[Negative perceptions of aging modify the association between frailty and cognitive function in older adults.](#)

Personality and Individual Differences. 31(1):71-81.

Robertson DA, King-Kallimanis BL, Kenny RA.

[Negative Perceptions of Aging Predict Longitudinal Decline in Cognitive Function.](#)

Psychol Aging. 31(7):71-81.

Ryan DJ, Kenny RA, Finucane C, Meaney JF, Collins DR, S Walsh,

[Abnormal orthostatic blood pressure control among subjects with lacunar infarction](#)

European Stroke Journal, 2396987316663287 2016.

Santini ZI, Fiori KL, Feeney J, Tyrovolas S, Haro JM, Koyanagi A.

[Social relationships, loneliness, and mental health among older men and women in Ireland: A prospective community-based study.](#)

Journal of Affective Disorders. 204:59-69

Schepens ME, Lutomski JE, Bruce I, Olde Rikkert MG, Lawlor BA. [Reliability and Validity of the International Dementia Alliance Schedule for the Assessment and Staging of Care in Ireland.](#) Am J Geriatr Psychiatry. 2016 Apr;24(4):297-300. doi: 10.1016/j.jagp.2015.10.002. PubMed PMID: 26796923.

Skrobot. O.A, O'Brien, J. et al. & VICCCS group incl R.F. Coen. [The Vascular Impairment of Cognition Classification Consensus](#) Study. (Alzheimer's & Dementia, in press) DOI: <http://dx.doi.org/10.1016/j.jalz.2016.10.007>

Vaughan RM, Coen RF, Kenny R, Lawlor BA. Preservation of the Semantic Verbal Fluency Advantage in a Large Population-Based Sample: Normative Data from the TILDA Study. J Int Neuropsychol Soc. 2016 May;22(5):570-6. doi: 10.1017/S1355617716000291. PubMed PMID: 27055803.

Ungar A, Rivasi G, Rafanelli M, Toffanello G, Mussi C, Ceccofiglio A, McDonagh R, Drumm B, Marchionni N, Alboni P, Kenny RA.

[Safety and tolerability of Tilt Testing and Carotid Sinus Massage in the octogenarians.](#)

Age Ageing, 45(2):242-8. [Epub 31 Jan]

Vaughan RM, Coen RF, Kenny R, Lawlor BA.

[Preservation of the Semantic Verbal Fluency Advantage in a Large Population-Based Sample: Normative Data from the TILDA Study.](#)

Journal of the International Neuropsychological Society: JINS. 22(5):570.

Conference Papers, Published Abstracts and Presentations

Boyle G, Finucane C, Foran T, Norkus M, Soraghan C.

MISA Biomedical Engineering Lab. A Hospital based technology research and innovation unit.

Faculty of Health Sciences Research Day TCD, Dublin, 15th September 2016.

Boyle G, Soraghan C, Feighan J, Robinson D. Social Prescribing at St. James's Hospital to Promote Community Health and Wellbeing. Faculty of Health Sciences Research Day TCD, Dublin, 15th September 2016.

Burke E, Carroll R, McCallion P, Walsh JB, McCarron M.

An investigation into the contributing factors that increase the risk of osteoporosis and osteopaenia in young adults with intellectual disability

Age Ageing (2016) 45 (suppl 2): ii1-ii12 doi:10.1093/ageing/afw159.23

Canney M, O'Connell MD, Sexton DJ, Kenny RA, Little MA, O'Seaghda CM.

Cystatin C versus creatinine as a predictor of objective tests of physical performance in older adults

Irish Nephrology Society Annual Scientific Meeting, RCPI, Dublin. March 11th 2016

Casey M, Healy M, McCarroll K, Siddique N, Mahon J, Fallon N, Walsh JB, Lannon R.

The essential role of bone biochemistry in the treatment of osteoporosis with rPTH therapy: a large study of over 450 patients

Bone Abstracts (2016) Vol 5, DOI: 10.1530/boneabs.5.P322

Donoghue O.

Publicly archived TILDA data: CAPI and SCQ
TILDA Data Workshop, Trinity College Dublin. September 9th 2016

Dupan S, O'Connell M, Kenny RA, Finucane C. Baroreflex Sensitivity And Arterial Stiffness Influence Orthostatic Blood Pressure Responses In Older Adults: Insights From The Irish Longitudinal Study On Ageing. Age and Ageing 45 (suppl 1), i11-i11.

Fawsitt C, Nolan A, Kenny RA. Health care financing and undiagnosed and uncontrolled illness among older adults in Ireland

Fawsitt C, Nolan A, Kenny RA Healthcare Financing and Undiagnosed and Uncontrolled Illness Among Older Adults in Ireland

TILDA Research Seminar Series, Dublin. February 2nd 2016

European Health Economics Association Conference, Hamburg. July 13-15th 2016

Finucane C, C Soraghan, C Byrne, F Mc Carthy, C Aspell, R Kenny.

Translating Epidemiological Research Into Clinical Practice: Evaluation Of New Tools For Autonomic Assessment In A Clinical Environment Age And Ageing 45, 38-38.

Presented at Irish Gerontological Society Annual Scientific Meeting, 30th Sept – 1st Oct 2016, Killarney, Ireland.

Finucane C, Savva GM, Kenny RA. Reliability Of Autonomic Function Tests In Older Adults: Implications For Clinical Practice And Research.

Age and Ageing 45 (suppl 1), i18-i18.

Finucane C, O'Connell M, Richardson K, Donoghue O, Savva G, Kenny RA.

Impaired orthostatic blood pressure stabilization is a risk factor for unexplained and injurious falls in older adults.

European Union Geriatric Medicine Society (EUGMS), 5-7th October 2016, Lisbon, Portugal.

Faculty of Health Sciences Research Day TCD, Dublin, 15th September 2016.

Finucane C, Kenny R.

Falls Risk, Orthostatic Hypotension, and Optimum Blood Pressure Management: Is It All in Our Heads?

Journal of American Hypertension, September, 2016.

Finucane C, Colgan MP, Collins O, O'Dwyer C, Boyle G, Kenny R.(2016).

[Should Carotid Sinus Massage be Guided by Ultrasound.](#)

Age and Ageing, 2016.

Fitzgibbon L, Finucane C, Brar I, Heckman G, Hughson R.

[Orthostatic hypotension, but not orthostatic symptoms, is a marker of cerebral hypoperfusion in older adults.](#)

Joint Meeting of the American Physiological Society and The Physiological Society, Dublin Convention Centre, Dublin, Ireland.

Fitzgibbon L, Finucane C, Brar I, Heckman G, Hughson R.

[Translating New Technology Into Clinical Practice: Should A Direct Measure Of Cerebral Perfusion Be Used In Syncope And Falls Assessment?](#)

Age And Ageing 45, 37-37.

Presented at Irish Gerontological Society Annual Scientific Meeting, 30th Sept – 1st Oct 2016, Killarney, Ireland.

Fitzgibbon L, Finucane C, Brar I, Heckman G, Hughson R.

[Asymptomatic Orthostatic Cerebral Hypoperfusion Is Common In Older Adults.](#)

British Geriatric Society Annual Scientific Meeting, 23RD-25TH November, Glasgow, 2016.

Foley M.

[TILDA Data Structure](#)

TILDA Data Workshop, Trinity College Dublin. September 9th 2016

Hannigan O, Garry N, Smyth M, Dillon A, McCarthy B, Casey M, McCarroll K, Mahon J, Browne J, Walsh JB, Lannon R.

[Hidden in plain sight: DXA vs plain film X-ray in diagnosis of osteopaenia](#)

J Bone Miner Res 31 (Suppl 1)2016, MO 0209

Hannigan O, Claffey P, Fallon N, Laird E, Mahon J, McCarthy B, Walsh JB, McCarroll K, Casey M, Lannon R.

[Underreporting of Vertebral Fractures in an Older Irish Population](#)

Osteoporosis International (2016) 27 (Suppl 1) S79-S548

Kenny RA

[Initial Evaluation of Syncope](#)

RCPI Syncope Diploma

Dublin. January 12th 2016

Kenny RA

Plenary Address

[Primary Care Partnership,](#)

Maynooth, Ireland. January 29th 2016

Kenny RA

[Neurocardiovascular Function in Ageing](#)

University of Newcastle: Campus for Ageing and Vitality

Newcastle, UK. February 11th 2016

Kenny RA

[Towards a worldwide consensus on Syncope Units](#)

GIMSI DoloMeeting - Arrhythmias, Bolzano, Italy. February 19th 2016

Kenny RA

[How a longitudinal study can change the research landscape](#)

[TCD Biomedical & Life Sciences showcase: Next Wave Technologies in Biomedical / Life Sciences Research.](#) Trinity College Dublin May 17th 2016

Kenny RA
[Avoiding the silver tsunami: Strategies to optimize brain aging](#)
 International Neuropsychological Society 2016, Mid-Year Meeting, London. July 7TH 2016

Kenny RA
[Cardiovascular Ageing and the Brain - Clinical Problems of Cardiovascular Ageing](#)
 European Congress of Internal Medicine – Amsterdam. September 2nd 2016

Kenny RA.
 Syncope & Falls - New Horizon
[Syncope Cardiac Network London. September 9th 2016](#)
 Laird E, Casey MC, Ward M, Hoey L, Hughes C, McCarroll K, Cunningham C, Strain JJ, McNulty

H, Molloy AM.
[Dairy intakes in older Irish adults and effects on vitamin micronutrient status: Data from the TUDA study](#)
 Journal of Nutrition, Health and Ageing Nov 2016

Leahy S, O'Leary N, Kenny RA.
[Diabetes and Depressive Symptoms in Older Age. Cross-sectional Evidence from the Irish Longitudinal Study on Ageing](#)
 TILDA Research Seminar Series, Dublin February 16th 2016
 SPHeRE Network 2nd Annual Conference, RCSI Dublin. February 29th 2016

Leahy S
[TILDA Health Assessment Overview](#)
 TILDA Data Workshop, Trinity College Dublin. September 9th 2016
 Lannon R, Farrelly A, Mahon J, Steen G, McCarroll K, Walsh JB.
[Response to Denosumab in Patients Attending a Specialist Bone Health Clinic](#)
 Osteoporosis International (2016) 27 (Suppl 1) S79-S548

Maher N, Steen G, Fallon N, Browne J, Walsh JB, Casey M.
[Gender differences in presentation and outcome in older hip fracture patients](#)
 Bone Abstracts (2016) Vol 5, DOI: 10.1530/boneabs.5.P351

Maher N, Fallon N, Steen G, Mahon J, Walsh JB, Casey M.
[Five year mortality rate and associated factors post hip fracture in older adults](#)
 Age Ageing (2016) 45 (suppl 2): ii1-ii12 doi:10.1093/ageing/afw159.46

Mahon J, Moloney D, Farrelly A, Smith D, Mulkerrins L, Rafferty M, McManus C, Hannigan O, Fallon N, Steen G, Maher N, Lannon R, Casey M, Walsh JB, McCarroll K.

[In the heel of the hunt: Quantitative ultrasound for osteoporosis in an elderly Irish population](#)
 Age Ageing (2016) 45 (suppl 2): ii1-ii12 doi:10.1093/ageing/afw159.20

Mahon J, Duffy R, Power C, Fallon N, Steen G, Browne J, Casey M, Walsh JB, McCarroll K.

[Sad Bones: Serotonin reuptake inhibitors and bone health in an elderly Irish population](#)
 Age Ageing (2016) 45 (suppl 2): ii1-ii12 doi:10.1093/ageing/afw159.18

Mahon J, Moloney D, Farrelly A, Smith D, Mulkerrins L, Rafferty M, McManus C, Hannigan O, Fallon N, Steen G, Lannon R, Casey M, Walsh JB, McCarroll K.

[How good is quantitative ultrasound in diagnosing osteoporosis?](#)
 J Bone Miner Res 31 (Suppl 1) 2016, MO 0210

Mahon J, Duffy RM, Power C, Fallon N, Steen G, Browne J, Casey M, Walsh JB, McCarroll K.

[Serotonin reuptake inhibitors and bone health in an Irish population](#)
 J Bone Miner Res 31 (Suppl 1) 2016, SU 0270

McCarroll K, Moloney D, Farrelly A, Smith D, Mulkerrins L, Rafferty M, McManus C, Casey M, Lannon R, Mahon J.

[Higher serum urate levels are associated with greater bone mineral density](#)

Age Ageing (2016) 45 (suppl 2): ii13-ii56
doi:10.1093/ageing/afw159.236

McGarrigle CA, Kenny RA.

[TILDA: Informing policy and clinical practice Department of Health Seminar. January 14th 2016](#)

Irish College of General Practice. March 10th 2016

McGarrigle CA.

[Physical Activity and Chronic Disease](#)

Active Ageing Partnership. May 18th 2016

McGarrigle C

[An Introduction to TILDA](#)

TILDA Data Workshop, Trinity College Dublin. September 9th 2016

Moore PV, Ma Y, Nolan A.

[The impact on medication use of a change in health insurance status](#)

SPHeRE Network 2nd Annual Conference, RCSI Dublin. February 29th 2016

Moore PV, Murphy C, Shelley E, Kenny RA.

[Are Statins a complement or a substitute for healthy behaviours?](#)

SPHeRE Network 2nd Annual Conference, RCSI Dublin, February 29th 2016

Mosca I, Barrett A.

[The Impact of Adult Child Emigration on the Mental Health of Older Parents](#)

Department of Economics, University of Strathclyde, Glasgow, UK. January 12th 2016

Mosca I, Wright RE.

[Use it or Lose it: Irish Evidence](#)

Seminar at Munich Institute for the Economics of Ageing, Munich [invited speaker] September 7th 2016

Mosca I

[The Irish Longitudinal Study on Ageing \(TILDA\) Seminar at the Norwegian Institute of Public Health, Oslo \(invited speaker\). September 28th 2016](#)

Murphy C, O'Leary N, Shelley E, Fahey T, Kenny RA.

[Cross sectional and longitudinal trend in serum total cholesterol in older adults: results from the Irish Longitudinal Study on Ageing \(TILDA\) SPHeRE Network 2nd Annual Conference, RCSI Dublin. February 29th 2016](#)

Murphy C.

[Received from the Institute of Community Health Nursing for Topic Report entitled "Demographic and health profile of older adults utilizing public health nursing services in Ireland: Findings from The Irish Longitudinal Study on Ageing \(TILDA\)](#)

Institute of Community Health Nursing, Milltown, Dublin. September 28th 2016

Murphy C, Kearney PM, Shelley E, Fahey T, Dooley C, Kenny RA.

[Hypertension prevalence, awareness, treatment and control in the over 50s in Ireland: evidence from The Irish Longitudinal Study on Ageing](#)

Knowledge Exchange and Dissemination Seminar for Diploma in PHN Students, University College Dublin. September 5th 2016

Naseer A, McLoughlin J, Foley M, Donoghue O, Kenny RA, O'Connell B.

[TILDA Oral Health Assessment Uptake and Reasons for Participant Refusal.](#)

International Association for Dental Research, Pan European Region Congress, Jerusalem. September 20-22 2016

Ni Cheallaigh C, O'Rourke A, Soraghan C, Boyle G, Robinson D, Bergin C.

[Geomapping HIV Outcomes.](#)

26th ECCMID, 9th-12th April 2016, Amsterdam, Netherlands.

O'Broin C, Townsend L, Kelly N, Mahon J, Walsh JB, McCarroll K, Bergin C.

[HIV and bone disease: An audit of compliance with European AIDS Clinical Society bone disease guidelines](#)

Age Ageing (2016) 45 (suppl 2): ii13-ii56
doi:10.1093/ageing/afw159.246

O'Connor DM, Leahy S, McGarrigle CA, Kenny RA
[A comparison of the prevalence of IDF- and ATPIII- defined metabolic syndrome in adults aged 50 and over in Ireland: findings from TILDA.](#)

The Nutrition Society Summer Conference:
New technology in nutrition research and practice. July 13th 2016

O'Halloran A
[Received from Irish Gerontological Society for poster entitled "Circulating Blood Biomarkers in Older Adults with Frailty](#)

Irish Gerontological Society Meeting, Killarney.
September 30th – October 1st 2016

O'Rourke A, Soraghan C, Boyle G, Robinson D, Bergin C, Ni Cheallaigh C.
Geomapping HIV Outcomes .
9th Annual Scientific Meeting, Infectious Diseases Society of Ireland, 12th – 14th May 2016, Dublin, Ireland.

Porter K, Hughes CF, Hoey L, Ward M, Moore K, Strain JJ, Molloy AM, Cunningham C, Casey MC, Laird E, McCarroll K, Pentieva K, McNulty H
[The Role of Ambient UVB Dose and Sun Enjoyment as Predictors of Vitamin D Status in an Older Population -](#)
Journal of Nutrition - Volume 76 Issue OCE1 -
Accepted with amendments

Power C., Bates H., Healy M., Gleeson P., Greene E. (2016) [Cognitive screening in the acute hospital: Preliminary findings from a cognitive screening program in a university-affiliated, tertiary-referral hospital with 6-month interval outcomes.](#) European Psychiatry 2016 33 SUPPL. (S190-)

Robinson D, Boyle G, Soraghan C, Feighan J.
[The Local Asset Mapping Project.](#)

Knowledge 4 Health Conference 2016, 25th May 2016, Dublin, Ireland.

Roe L, O'Halloran A, Normand C, Murphy C
[The impact of frailty on public health nurse service utilization in Ireland: Findings from The Irish Longitudinal Study on Ageing \(TILDA\)](#)

Institute of Community Health Nursing,
Milltown, Dublin. September 28th 2016

Ryan A, Murphy C, Galvin R, Smith SM.
[What is the impact of levels of activity and function on the development multimorbidity over time?](#)

Society for Academic Primary Care 45th
Annual Scientific meeting, Dublin. July 6-8TH 2016

Smith D, Mahon J, McCarroll K, Walsh JB, Casey M, Stassen P, Coughlan F, McNulty MK, Steen G, Fallon N.

[Hip fracture care for elderly patients in Ireland: An audit of acute care in a university teaching hospital](#)

Age Ageing (2016) 45 (suppl 2): ii13-ii56
doi:10.1093/ageing/afw159.216

Steen G, Maher N, Fallon N, Dillon A, Mahon J, Lannon J, McCarroll K, Walsh JB, Casey M.

[Adherence and persistence to teriparatide treatment in patients attending a specialist bone health clinic](#)

Bone Abstracts (2016) Vol 5, DOI: 10.1530/boneabs.5.P406

Soraghan C, Foran T, Slattery S, Molumby C, Donnelly S, Healy U.

[Bed and Chair Occupancy Alarms in the Hospital Setting,](#)

HSCP Research Conference 2016, 16th Nov, Dublin, Ireland.

Sybring M, Nolan H, Fan CW, O'Dwyer C, Kenny RA, Finucane C.

Innovating A Novel Test For Vasovagal Syncope In Older Adults Using The Active Stand.

Age And Ageing 45, 37-37.

Presented at Irish Gerontological Society Annual Scientific Meeting, 30th Sept – 1st Oct 2016, Killarney, Ireland.

British Geriatric Society Annual Scientific Meeting, 23RD-25TH November, Glasgow, 2016

Turner C, Boyle G, Robinson D, Soraghan C, O'Donovan A.

[ONCOLAMP: A Study of the Accessibility of Community Based Services Relevant To Patients with Cancer and their Relationship to Social Deprivation and Cancer Incidence.](#)

Annual Scientific Meeting, Faculty of Radiology, Royal College of Surgeons, Dublin, September 23rd/24th, 2016.

Y Ma, A Nolan, N O'Leary

[Financial Incentives and Healthcare Utilisation in an Ageing Society](#)

TILDA Socioeconomic Working Group. February 22nd 2016

Awards & Grants

Dr David Robinson, Dr Gerard Boyle, Jennifer Feighan and Dr Chris Soraghan were awarded a grant of €3,500 towards the development of a Cancer Health Information System called (ProsPr – Prostate Social Prescribing Project) as part of LAMP. Funded by Regional Oncology Programme Office, St. James's Hospital.

Dr. Chris Soraghan and Dr Tim Foran were awarded a grant of €2,500 by the SJH Foundation to purchase sensors to potentially reduce falls risk in the hospital.

MIRA Personnel

Trustees

Prof Davis Coakley
Prof J Bernard Walsh
Prof James Malone
Ms Miriam Keegan
Dr Brendan McCarthy

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
Dr Kevin McCarroll
Mr Paul Gallagher
Ms Carol Murphy (Administrator)

Watt's Clinical Research Fellow

Dr Oisin Hannigan

Memory Clinic Research Fellow

Dr Clodagh Power

Lecturer

Dr Susan O'Callaghan

Falls and Osteoporosis Unit Clinical Research Fellows

Dr James Mahon

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

Bone Health Clinical Nurse Specialists

Ms Niamh Maher
Ms Nessa Fallon
Ms Georgina Steen
Ms Aoife Dillon

Bone Health Radiographers

Ms Laura Clowey
Ms Irina Tomita
Ms Maurisha Moffat

Falls & Syncope Unit Clinical Nurse Specialists

Ms Ciara Rice
Ms Lisa Byrne
Ms Dympna Hade
Ms Lyn Dato

Medical Physics and Bio-Engineering

Dr Gerard Boyle
Dr Christopher Soraghan
Dr Ciaran Finucan

The Irish Longitudinal Study of Ageing (TILDA) Project Team:

Prof Rose Anne Kenny, Lead Principal Investigator
Dr Christine McGarrigle, Research Director
Dr Hilary Cronin, Medical Director
Dr Orna Donoghue, Project Manager
Ms Lucy Doogan, Finance & HR Manager
Dr Ann Hever, Research & Development Manager
Dr Hugh Nolan, Biomedical Engineer
Dr Belinda King-Kallimanis, Epidemiologist
Dr Cathal McCrory, Social Epidemiologist
Dr Siobhan Leahy, Health Researcher
Ms Margaret Foley, Senior Data Manager
Dr Louise Newman, Biomedical Engineer
Dr Hugh Nolan, Biomedical engineer

Research Fellows:

Dr Aisling O'Halloran
 Dr Joanne Feeney
 Dr Matthew O'Connell
 Dr Patrick Moore
 Dr Irene Mosca
 Dr Lorna Roe
 Dr Mark Ward
 Dr Helen O'Brien
 Dr Eamon Laird
 Dr Frank Moriarty
 Dr Catriona Murphy

Executive Officers:

Ms Deirdre O'Connor, Academic PA to
 Professor RA Kenny
 Mr Aidan Lalor

Research Assistants/Research Nurses:

Ms Sinead McLoughlin
 Ms Aideen Sheehan
 Ms Mary O'Shea

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

Secretaries

Ms Deirdre Cummins
 Ms Rachael Farley
 Ms Lisa Masterson
 Ms Martha Gavin
 Ms Claire Dooley

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
 Global Brain Health Institute (GBHI)

Tallaght Hospital – Adelaide & Meath Hospital
 incorporating The National Children's Hospital
 (AMiNCH)
 Age Related Health Care
 Department of Psychiatry of Later Life

Royal College of Surgeons in Ireland (RCSI)
 Department of Anatomy

St. Patrick's Hospital

University College Dublin
 Conway Institute
 Department of Veterinary Medicine

