

Annual Report 2009



*The Mercer's Institute  
for  
Research  
on Ageing*



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# **MIRA Personnel**

## **Steering Committee Members**

Prof. Davis Coakley (Chairman)  
Prof. J. Bernard Walsh (Director)  
Prof. Rose Anne Kenny  
Prof. Brian Lawlor  
Prof. Jim Malone  
Dr. Conal Cunningham  
Mr. Desmond Dempsey  
Dr. Miriam Casey  
Dr. Joseph Harbison  
Dr. Elaine Green  
Ms Carol Murphy (Administrator)

## **Watt's Clinical Research Fellow**

Dr. Kevin McCarroll

## **Memory Clinic Research Fellows**

Dr. Aíne Ní Mhaolain  
Dr. Damien Gallagher

## **Lecturer**

Dr. Clodagh O'Dwyer

## **Falls and Osteoporosis Unit**

Dr. Joseph Brown

## **Clinical Neuropsychologists**

Dr. Robert Coen  
Dr. Marie McCarthy

## **Research Psychologist**

Ms. Muireann Irish

## **Clinical Nurse Manager**

Ms. Irene Bruce

## **Senior Social Worker**

Mr.. Matthew Gibb

## **Biostatistician**

Dr. Cathal D. Walsh

## **IT Consultant and Technology Adviser**

Mr. Vincent Quinn

## **Falls and Osteoporosis Clinical Nurse Specialists**

Ms. Niamh Maher  
Ms. Nessa Fallon  
Ms. Georgina Steen  
Ms. Kara Fitzgerald  
Ms. Dympna Hade  
Ms. Lisa Byrne/ Ms. Michelle Burke  
Ms. Ciara Rice

## **Senior Radiographer**

Ms. Eilish McDermott  
Ms. Sophie Toth

## **Medical Physics and Bio-Engineering**

Dr. Gerard Boyle  
Mr. M. Al-Kalbani  
Mr. C. Finucane

## **Technology Research for Independent Living (TRIL)**

### **Project Team:**

Dr. Mimi Fan, Clinical Director  
Ms. Jennifer Feighan, Clinic Programme Manager  
Ms. Roisin Brophy, TRIL administrator  
Dr. Roman Romero, Medical Research Fellow  
Dr. Lisa Cogan, Medical Research Fellow  
Dr. Susan Squires – Senior Researcher  
Mr.. Tim Foran, Senior Medical Physicist  
Ms. Claire Somerville, Senior Social Scientist  
Ms. Sheila Callinan, Assistant Psychologist  
Ms. Deirdre Finnegan, Assistant Psychologist  
Ms. Maura O'Sullivan, Senior Physiotherapist  
Ms. Clodagh Cunningham, Clinical Nurse Manager II  
Ms. Roisin Brophy, TRIL administrator  
Ms. Vanessa Buckley - Research Assistant – Social Connection  
Ms. Blaithin O'Dea- Research Assistant – Social Connection  
Mr.. Ciarán Wynne - Research Assistant – Falls Prevention

## **The Irish Longitudinal Study of Ageing (TILDA)**

### **Project Team: (mainly based in TCD)**

Prof. Brendan Whelan, Research Director  
Ms. Melina Ziegel, Programme Manager  
Dr. Hilary Cronin, Research Fellow  
Dr. Amilcar Moreira, Research Fellow  
Dr. Yumiko Kamiya, Research Fellow  
Ms. Claire O'Regan, Clinical Research Nurse  
Ms. Jacinta O'Grady, Executive Officer  
Ms. Pauline Walsh, Executive Officer

### **HRB Translational Study Team:**

Prof. Michael Rowan, Dept. of Pharmacology TCD  
Dr. Orla Collins, Clinical Research Fellow  
Dr. Christian Kerskens, Research Fellow  
Ms. Sheila Dillon, Clinical Research Nurse  
Ms. Catherine Brien, Executive Officer

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

#### **Project Team:**

Dr. Conal Cunningham, Principle Investigator  
Ms. Helen Toohey, Research nurse  
Ms. Sinead McNiffe, Research Nurse

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

Dr. Kevin McCarroll  
Ms. Lisa Crosby, Clinical Nurse Specialist

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

Dr. Miriam Casey, Principle Investigator  
Dr. Guan Choon Chan, Clinical Research Fellow  
Ms. Caoimhe McDonald, Clinical Nutritionist

#### **Secretaries**

Ms. Deirdre Cummins  
Ms. Martha Gavin  
Ms. Rachael Farley  
Ms. Heather Bailey  
Ms. Lisa Masterson

## Past Personnel

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

### Research Registrars

Dr. C. Connolly  
Dr. A. Denihan  
Dr. R. Doyle  
Dr. A. Eustace  
Dr. C. Fallon  
Dr. R. Mulcahy  
Dr. M. Kirby  
Dr. H. Lee  
Dr. A. Lynch  
Dr. C. Maguire  
Dr. M. Moran

Dr. S. Ni Bhrian  
Dr. H. O'Connell  
Dr. D. O'Mahony  
Dr. G. Swanwick  
Dr. D. Hennelly  
Dr. T. Coughlan  
Dr. S. Kennelly  
Dr. D. Robinson  
Dr. C. O'Luanaigh  
Dr. N. Collins

### Research Psychologists:

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

### Medical Social Worker

Ms. M. Headon

### PhD Student:

Ms. M. O'Reilly

## Directors Report

2009 marked the 21<sup>st</sup> Anniversary of the establishment of the Mercer's Institute for Research on Ageing (MIRA). The event was marked by the performance of Handel's Solomon in St. Patrick's Cathedral by the Guinness Choir and orchestra. The performance was preceded by a reception which was held in St. Patrick's Choir School. The guests included Lord Iveagh, Professor John Hegarty the Provost of Trinity College Dublin, the chairman of the Mercer's Hospital Foundation Mr. Graham Heather and his wife Meriel and members of the Foundation's Board. Others attending the reception were members of the St. James's Hospital Board and Professor Ian Howie and his wife Mamie. Professor Howie was chairman of the St. James's Hospital Board for over thirty years and has been a major advocate of the work of the Institute on the St. James's Hospital campus and together with the hospital executive provided the infrastructure and the accommodation for MIRA since its foundation.

Also attending the performance were many staff members of Trinity College, the HSE, current staff members of the Mercer's Institute for Research on Ageing and previous research and clinical staff, many of whom are in lead positions in Care of the Elderly posts throughout the country.

The event was a tremendous success and we are very grateful to the Guinness Choir and orchestra and to Dean Robert Mac Carthy and staff of St. Patrick's Cathedral who made the evening so enjoyable for everyone. We also wish to express our thanks to Brian Levis Headmaster of St. Patrick's Choir School.

2009 was also a very successful year for the Mercer's Institute for Research on Ageing and we saw significant developments in all of the areas within the Institute.

The Memory Clinic and Early Cognitive Assessment Studies Clinic have been very active in 2009. Patients are seen earlier in their illness and investigations allow for a more accurate assessment and treatment of the underlying causes of the cognitive deficit in each case. Patients are identified for participation in the different research projects which are being undertaken in the Institute.

Ongoing studies in the Memory Clinic include the ECAD study (Enhancing Care in Alzheimer's Disease), the Contact Study (use of a novel drug Dimebon in Alzheimer's Disease), the Dublin Healthy Ageing Study and a study on Vitamin B12 and cognition.

The Bone Protection and Osteoporosis Unit continues its high level of activity with 2180 people attending for DXA scans, 870 patients attending the Pre-assessment and Clinical Nurse Specialist led clinics which include all Colles, hip fractures and initial referrals from consultants within St. James's Hospital. In addition we had 1028 patients attending our specialised bone health clinics.

In 2009 we also had a new mass spectrometer installed in the Department of Clinical Biochemistry and this has provided us with a more rapid method of Vitamin D measurement including the ability to study Vitamin D metabolites.

Up to then the measurement of Vitamin D was very time consuming and complex and this new technology opens up new avenues of study on Vitamin D deficiency in the Irish population.

Dr. Joe Browne (our Bone Research Fellow) was awarded the Presidential Medal for his work on investigating bone quality and osteoporosis in hip fracture patients at the Annual Irish Gerontological Society Meeting which took place in Belfast.

The TUDA study also got underway in 2009. This is a collaborative study between Trinity College, University of Ulster, St. James's Hospital and the Department of Agriculture and is looking particularly at memory and bone health. The study will recruit over 6000 patients in Northern Ireland and the Republic. This study will have an increasing role in the work of the Mercer's Institute over the next few years.

The Falls & Blackout Unit continues to expand its service and last year we had 3118 patients attendances at the units clinics. We have seen more than a doubling of its activity over the past three years. All patients who attend St. James's Hospital with unexplained falls and blackouts are seen as a priority in the Falls & Blackout Unit. In addition to the areas of research into neuro-cardiovascular instability, syncope and blackouts we have seen significant developments in nurse led clinics where nurses are in direct phone contact with patients who ring in by day and also provide portable monitors to patients to measure 24 hour blood pressure and ECG's and make available and fit 7 day event monitors.

The Stroke service has seen major developments in 2009 with the opening of a new six bedded dedicated acute stroke unit in the Acute Medical and Assessment Unit in May 2009. One of our hospital CT scanners has been upgraded with the introduction of a new CT perfusion capability thus facilitating a more comprehensive and immediate assessment of patients who are admitted with a new onset of a stroke. A national stroke nursing conference took place in October organised by MedEL and MIRA staff and the HRB has awarded a research grant to Dr. Daniel Ryan who will commence his stroke research work in the Mercer's Institute from June 2010

Dr. Mohammad Alkabini who worked as a research electronics engineer in the MIRA Bio-engineering Unit with Professor Coakley and with Dr. Gerard Boyle was awarded a PhD for his work on ocular microtremor by TCD in 2009.

Professor Rose Anne Kenny who is the driving force behind the Irish Longitudinal Study on Ageing (TILDA) saw significant developments in 2009 with the opening of the new TILDA centre in TCD in May by Professor Mary Mc Aleese and the opening of a satellite centre in Cork. TILDA is now recruiting older people from throughout Ireland in its Longitudinal Study on Ageing.

The IDA and Intel Technology Research for Independent Living (TRIL) Project has its main clinical centre based in the Mercer's Institute for Research on Ageing in St. James's Hospital. This year completed one of the main phases of its operation with the completion of the TRIL 600 Study.



2009 also saw the recruitment of Sharron Kelliher who will take a lead role in developing communication for Mercer's Institute and in organising and coordinating the education outreach programmes for MIRA and the Centre for Successful Ageing. Her input will further highlight the work of the Mercer's Institute and the value of positive ageing in the wider community. She already has made a major impact in many of these areas since her appointment as can be seen in the Communications Section of this year's report.

## **Acknowledgements**

I would like to again thank all who helped organise the 21<sup>st</sup> Anniversary celebrations of the Mercer's Institute that I have described above. In particular I wish to thank Judy Oxley and Carol Murphy for their organisational skills and for their continued commitment to the work of MIRA. In addition, Judy Oxley has again this year arranged the layout, the setting and printing of the annual report. I'd also like to thank Jacqueline Buckley and Doris O'Byrne who co-ordinated the submissions from the different units within MIRA.

The 21<sup>st</sup> celebrations allowed us to bring together past and present staff of MIRA and it continues to be a highly rewarding experience to see so many people who have gone through MIRA over the past 21 years working in health care throughout Ireland and throughout the world as senior medical, nursing and therapy staff – all committed to improving the health care of our older population and enabling so many of our senior citizens to continue to live active and productive lives as full members of the community.

Tom Mitchell, the Chairman of St. James's Board, and the CEO of the Hospital Mr. Ian Carter have been major supporters of the work of the Mercer's Institute and I wish to thank them for facilitating the development of all the services and research activities within MIRA and St. James's Hospital.

I'd like to thank the Health Research Board, Science Foundation Ireland, the HSE and the Department of Health, the IDA, Department of Agriculture and INTEL as well as many of the pharmaceutical companies for the grant funding and support that they continue to give towards the research and work of the Institute. The support we have received over the last five years from Atlantic Philanthropies have greatly enabled the work of Professor Rose Anne Kenny and Dr. Joe Harbison who are international leaders in their fields and both have made major contributions to care of the elderly in Ireland and to the work of MIRA since their arrival. Atlantic Philanthropies are also steadfast in their support of our new planned Centre of Excellence for Successful Ageing which continues to make steady progress.

Finally on behalf of the Steering Committee and staff of the MIRA I'd like to sincerely thank the Board of the Mercer's Hospital Foundation. Their support has been the backbone of the Mercer's Institute for 21 years and they continue to be our major source of sustained funding which has enabled us to embark on continuing new avenues of research and health care delivery in a very disadvantaged area of inner city Dublin.

Consistent with their name they truly have been a foundation on which the different units of the Mercer's Institute for Research on Ageing have continued to blossom and develop.



*Prof. J. Hegarty Provost TCD, Lord Iveagh & Prof. D. Coakley*



*Prof. JB Walsh, Prof & Mrs. I Howie  
Mr. G. Heather and Mr. R. Ensor*

J. Bernard Walsh,

A handwritten signature in black ink that reads "J Bernard Walsh". The signature is written in a cursive style.

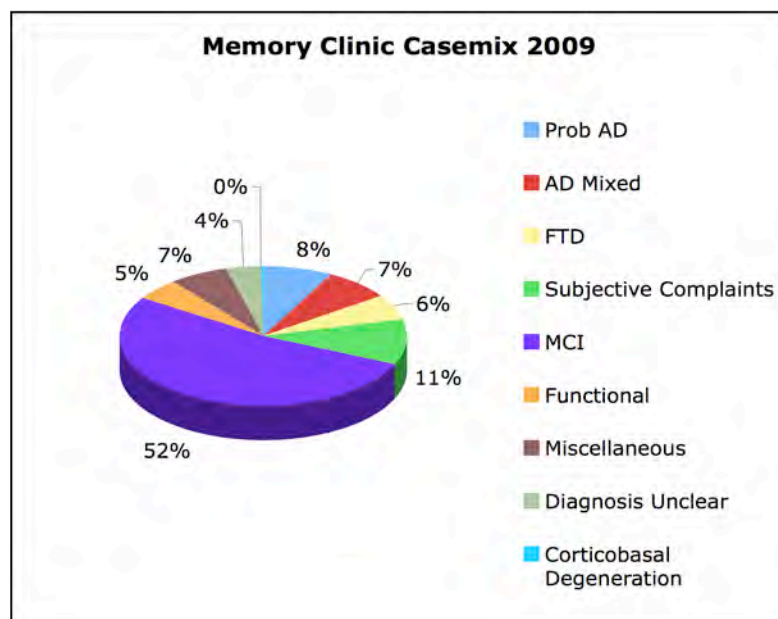
Director.

## Memory Clinic

379 patients were seen in the Memory Clinic in 2009 - 245 (65%) of these were new referrals for full assessment. The following pie chart represents a breakdown of the all of the assessments seen in the clinic both new and return patients and the working diagnosis assigned to each. Those patients with unclear diagnosis have all been referred to St James's Hospital Neurology services for a second opinion and are then discussed at joint neurology/memory clinic consensus meetings. They continue to be followed up by the memory clinic also. These figures highlight that the majority of patients present at a stage of mild cognitive impairment which facilitates early diagnosis. These patients receive continued follow-up within the memory clinic service.

## Cognitive Studies Clinic

The Cognitive Studies Clinic (CSC) is a 'rapid access' clinical memory service aiming to assess patients with undiagnosed memory difficulties within 8 weeks from time of referral. Referrals are received from General Practitioners and consultants in the Dublin Ageing Research Network. This clinic is operated by clinical research fellows and nurses involved in the MIRA brain ageing research programme under the supervision of Professors Brian Lawlor and Rose Anne Kenny. Patients referred to this clinic have a comprehensive clinical assessment, neuropsychological testing, and neuro-imaging as appropriate. There are 2 clinical sessions per week on Thursday and Friday mornings. There is close liaison with the MIRA memory clinic and all patients seen in both clinics are discussed at a joint consensus meeting. Approximately 250 new patients were seen in 2009. These patients were asked to participate in research projects and will be followed up the MIRA memory clinic as appropriate.



Legend: AD =Alzheimer's Dementia, FTD = Frontotemporal Dementia, MCI= Mild cognitive Impairment.

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

### Overview

This is a study of the economic, psychosocial and physical impact of Alzheimer's Disease (AD) upon patients and caregivers. The changing demographics of Irish society mean that the prevalence of AD is increasing with ever-greater numbers of patients in the moderate to severe stages of disease. The majority of this burden of caregiving is currently borne by informal caregivers working in the home with little professional input or support from formal services. A small change in the distribution of this burden of care could have significant implications for the demands placed on already oversubscribed health carer sources such as residential care. This study will explore the economic, psychosocial and physical costs associated with AD with particular focus upon the frequently neglected informal caregiving support structures which are so essential to the care of patients.

This study will collect data from 130 patient/carer dyads recruited from the Medicine for the Elderly and Psychiatry of Old Age services in St. James's Hospital who will be stratified according to severity of AD. It will measure patient and caregiver variables associated with increasing costs and with adverse biopsychosocial outcomes such as poor physical health, depression, caregiver burden and other predictors of early withdrawal from the caregiving role and patient institutionalisation. There is currently little information of this nature in the Irish context. It is hoped that an increased understanding of the financial, social, physical and psychological challenges faced by caregivers will facilitate more effective planning of interventional strategies to achieve improved outcomes for patients and caregivers alike. It should equally inform decision-making regarding the most effective deployment of existing healthcare resources in the Irish context.

### Progress so far

This study represents a collaboration between the Mercer's Institute for Research on Ageing, Elan pharmaceuticals and the Irish Centre for Social Gerontology at the National University of Ireland, Galway. The Principal Study Investigator is Professor Brian Lawlor and additional investigators on this project are; Dr Damien Gallagher, Dr Aine Ni Mhaolain, Ms Lisa Crosby SRN and Ms Deirdre Ryan. Ethics approval for this study was obtained in December 2008 and recruitment commenced in January 2009. 120 patient/caregiver dyads have taken part in the study to date and recruitment is still ongoing. Dr Damien Gallagher has had an MD proposal based on the above study accepted by Trinity College and Dr Aine Ni Mhaolain has recently had an MSc proposal accepted with a view to transferring to a PhD programme in 2010.

### Disclosure of Diagnosis Study

Dr Damien Gallagher is collaborating with Dr Aine NiMhaolain, Dr Kevin McCarroll and Dr David Robinson on a study regarding the attitudes and preferences of patients and caregivers to the disclosure of a diagnosis of Alzheimer's disease. This study follows on from research previously completed in the Memory clinic (Maguire et al. BMJ 1996) which highlighted the frequent dissonance between patients' and caregivers' desire for information in this context. We anticipate that findings from

this study will inform standards of clinical care in the Memory clinic. Dr Damien Gallagher is also drafting a review article regarding falls in Alzheimer's disease with particular focus upon risk factors and economic consequences.

### CONTACT STUDY: Dimebon in Alzheimer's Disease

This is a Phase 3 Multicenter, randomised, double-blind, placebo controlled six month safety and efficacy study of Dimebon in patients with moderate to severe Alzheimer's Disease and neuropsychiatric symptoms. Ethical approval has been received and recruitment for this study is due to commence in January 2010. The primary objectives of this study are to evaluate the efficacy of Dimebon as compared to placebo on measures of behaviour using the Neuropsychiatric Inventory (NPI), as well as measures of self-care and daily function using the Alzheimer's Disease Cooperative Study-Activities of daily living severe (ADCS-ADLsev). Other key secondary objectives include evaluation of the efficacy of Dimebon as compared to placebo on a measure of psychosis of AD as well as various measures of cognition, global function, resource utilization and quality of life. Dimebon Dihydrochloride is an orally available investigational product with a novel mechanism of action that may have clinically important therapeutic potential in neurodegenerative diseases such as AD. It is hypothesised that the ability of Dimebon to block abnormal mitochondrial membrane depolarization may improve cellular function and resilience in the setting of the cellular stresses that appear to play a role in neurodegenerative disease. Approximately 70 centres worldwide are participating in this study and we hope to recruit a minimum of 10 patients with moderate to severe AD and neuropsychiatric symptoms from the Memory Clinic and Medicine for the Elderly and Psychiatry of Old Age services in St James's Hospital.

### Neuroenhancement in Elder Lives (NIEL)

This is a new programme that aims to help prevent dementia and cognitive impairment among older people by enhancing cognitive function through new combinations of brain stimulation, mental training and pharmaceuticals. This programme, called NIEL, is a collaborative effort between MIRA and Trinity College Dublin's Institute of Neuroscience to develop new models of intervention in this area for the early detection and prevention of dementia which can be replicated internationally. The initiative, funded by Atlantic Philanthropies, will be led by TCD's Professor of Psychology, Ian Robertson, in conjunction with Professor Brian Lawlor, Professor of Old Age Psychiatry and Consultant Psychiatrist at MIRA and St. James's Hospital who will be its clinical director. This project has been funded to the value of €2.5 million.

### The Dublin Healthy Ageing Study

The Dublin Healthy Ageing Study project is a large longitudinal population based study which investigated the physical, psychological, social as well as cognitive correlates of health in older Irish people living in the community using a comprehensive battery of physical, social, psychological, biological and cognitive measures. The second phase of the study saw the introduction of additional measures regarding: Genetic influences on cognitive ageing and cognitive decline in older people

A more comprehensive focus on the impact of social factors on the cognitive and physical health and quality of life of the elderly, with the introduction of several new social measures, which include social network, social resources, social engagement, social intimacy, and loneliness.

Data obtained in the course of this study is undergoing analysis. Research questions which we hope to address include:

### Alcohol and Cognition.

Dr. Robert Coen, in conjunction with Dr. Henry O'Connell and Dr. Cathal Walsh (Statistician, TCD & MIRA), is currently completing an analysis of the data pertaining to the impact of alcohol intake on cognition, particularly addressing the question as to whether or not regular intake of low levels of alcohol is associated with health benefits (i.e. any evidence of better cognition compared to teetotalers and moderate/heavy drinkers).

### Social factors and markers of cognitive and physical wellbeing.

Dr Conor O'Luanaigh in association with Professor Lawlor is examining the impact of social engagement and loneliness on markers of physical and psychological health. Dr O'Luanaigh and Professor Lawlor have published a review on this topic in the International Journal of Geriatric Psychiatry while additional papers regarding loneliness and markers of physical and psychosocial health are in preparation. Our awareness of the potential toxic effects of chronic stress upon cognitive functions is increasing and has been found to be an independent marker of cognitive decline in a small number of longitudinal studies. Dr Damien Gallagher is examining the significance of psychological distress as a predictor of cognitive decline in the Dublin Healthy Ageing cohort.

### B12 and Cognition

Dr David Robinson was appointed as the first Watts Clinical Research Fellow to assist in completion of the DHAS. He is examining cross-sectional and longitudinal correlations between vitamin B12 and cognition and other factors in the DHAS cohort. He has co-authored a paper with Ai-Vrin Chin examining vascular biomarkers and cognition in the DHAS wave 1 data. This paper has been published in the journal Age and Ageing.

### Genetics Resource in Late Onset Alzheimer's Disease

Over the last year there have been some interesting findings from the MIRA sample regarding susceptibility genes for Alzheimer's Disease. Professor Lawlor has collaborated on the most powerful Genome wide association study in Alzheimer's disease to date which examined genetic markers from over 16,000 individuals. The study identified two new susceptibility genes (CLU and PICALM) for Alzheimer's disease and findings were published in the prestigious Nature Genetics journal. This has been cited as one of the most important papers of 2009.



## Loneliness in Older People.

A new interventional study to decrease loneliness in older people has been funded in 2009 by Atlantic Philanthropies. This is a collaborative effort between Professor Lawlor at MIRA and the Ageing Well Network. This work which will involve training volunteers to deliver a social connection facilitation programme to older people at risk.

## Population study of Mental Disorders/AGECAT

This population study of healthy community dwelling older adults was conducted between 1993 and 1999 and contained both cross sectional and longitudinal components. Over 3000 visits and detailed assessments of general medical status together with structured diagnostic interviews of comorbid mental disorders using the Automated Geriatric Examination for Computer Assisted Taxonomy (AGECAT) package were conducted by study end. Data from this study continues to yield valuable findings regarding the clinical presentation and aetiological basis of depression in later life. Dr Jeannette Golden was able to delineate the considerable and independent contributions of both loneliness and restricted social network to depression in later life. Dr Damien Gallagher examined the aetiological and symptomatic distinctions between patients with first onset of depression in later life (>60) versus earlier onset. This study reported decreased familial risk in patients with late onset depression but increased cognitive impairment. Symptom profiles were found to be largely similar between the groups and indicated a stereotyped expression of depressive symptomatology despite variability in aetiological risk factors. Both investigators have published their findings in the International Journal of Geriatric Psychiatry. An additional study regarding the significance of sleep disturbance is in preparation from this dataset.

## Translational Research in Alzheimer's Disease – GSK Project

### Differential Effects of Donepezil and Placebo on EEG/ERP Measures and Olfactory Discrimination in Mild Cognitive Impairment and Older Controls.

The objective of the study is to define the short-term effects of the existing Alzheimer's Disease (AD) symptomatic treatment compound donepezil on cognitive EEG/ERP endpoints and olfactory discrimination in normal elderly and amnesic mild cognitive impairment (aMCI) cohorts. To date, the potential success of novel therapeutic agents for the symptomatic relief of AD has been largely unknown until the drugs enter relatively large-scale patient studies, assessing clinical outcome such as cognitive improvement over a certain time period. There is a need to enhance our ability to identify pharmacodynamic markers of drug activity to confirm central pharmacology and detect early signals of efficacy on cognitive processes and/or Alzheimer Disease associated symptoms. To provide an objective and perhaps faster measure for treatment efficacy, these pharmacodynamic markers also need to be more sensitive to drug effects than conventional clinical endpoints of cognition, such that they may be applied in early phase 2 studies with as few AD or MCI patients as possible. It is also necessary to identify characteristics of the subjects which are associated with pharmacodynamic effects. Such characteristics may then be applied

to select subjects with cognitive impairment who may benefit from drug treatment in a clinical trial.

### Progress to date.

The normal control part of the differential effects of Donepezil v Placebo on ERP and Smell measures has been completed. The recruitment of amnesic MCI patients has proven difficult and this arm of the study has been terminated. We have initiated a second study of the effects of donepezil vs placebo on combined fMRI/ERP measures. The normal control part of this study is nearing completion.

### Cognitive rehabilitation in Mild Cognitive Impairment (MCI)

Maria O'Sullivan, Trainee Clinical Psychologist, NUIG, completed a Specialist placement with Dr. Robert Coen from May to September 2009. In addition to the Clinical training component of this placement Maria has been undertaking research which is ongoing in fulfillment of her Research Thesis which forms part of the D Clin Psych programme. Title: Cognitive rehabilitation for people with mild cognitive impairment: Development and piloting of an individualized intervention. The focus is on memory enhancement strategies.

### Autobiographical Memory

Based on Muireann Irish's work (see previous MIRA reports) through which we developed a novel measure of Autobiographical Memory for which she was awarded a Ph.D from TCD 2008 we continue to write and submit papers for publication and to present findings at Scientific meetings.

### Prospective memory

Based on the research that Alberto Blanco-Campal did while on Specialist placement, as his research Thesis in part fulfillment for a Doctorate in Clinical Psychology, University College Dublin a paper was published in 2009.

### Efficacy of a Cognitive Stimulation Programme for people with dementia.

This is a research study devised by and jointly supervised by Dr. Robert Coen and Dr. Jennifer Edgeworth (Senior Neuropsychologist, Beaumont Hospital) in collaboration with the Occupational Therapy Dept, St. James's Hospital (SJH) and Residential Care staff in Beaumont Hospital. The findings have been presented at scientific meetings and a paper has been submitted for publication.



## **Translational Research in Neurocardiovascular Influences on Cognitive Functioning: Basic & Clinical Mechanisms**

### **Summary:**

This is a 5 year longitudinal study of older persons with Mild Cognitive Impairment (MCI) examining the influences of Neurocardiovascular instability(NCVI) on cognition at baseline and on progression/transition to dementia over 3 years follow up. The relationship between NVCI and deep white matter hyperintensities on MRI is also being examined. We are also determining whether peripheral biomarkers predict conversion/decline.

Participants are enrolled through the Cognitive Studies and Memory Clinics at St James's hospital. The Cognitive Studies Clinic takes place twice weekly in St James's Hospital. We have set up a satellite clinic in Dundalk which will take place once monthly and will commence on June 29<sup>th</sup>. We have screened over 500 patients with memory difficulties since the clinic commenced in November 2006

Following enrolment all participants have annual cognitive and neurocardiovascular assessments. Neuroimaging is performed following enrolment and at 3 years follow up. Clinical assessments take place in St James's hospital and neuroimaging takes place in the Trinity College Institute of Neurosciences (TCIN). In parallel, animal responses to cardiovascular and heart rate challenges are been examined in TCIN.

We have enrolled 113 patients with MCI and 41 control patients. We will continue to recruit patients until November 2009. We have presented cross sectional results at the Irish Gerontological and the British Geriatric Society.

This study has been approved by the SJH/AMNCH and TCIN/Psychology Research Ethics committees. It is funded by the Health Research Board (€1.5 million euros). This study will continue until September 2011.

Research Team:

Lead Principle Investigator: Prof. RA Kenny, Professor of Clinical Gerontology

Principle Investigators: Prof BA Lawlor, Connolly Norman Professor of Old Age Psychiatry

Prof M Rowan, Lecturer in Pharmacology

Research Team:

Dr Orla Collins, Clinical Research Fellow,

Dr Christian Kerskens, Research fellow,

Shiela Dillon, Clinical Research Nurse

## **Bone Protection and Osteoporosis Unit**

The Bone Protection and Osteoporosis Unit continued to be active in both the clinical management and research aspects of patients with osteoporosis. Prof JB Walsh and Dr Miriam C Casey are the Principal Consultants within the bone health area and are involved in the co-ordination of the research activities and running of the service.

### **Summary of Unit**

- Clinical Nurse Specialist-Led Preassessment Clinics
  - Colles and Hip Fracture Clinics
  - Parathyroid Hormone Treatment Patients

- Intravenous Zoledronic Acid Clinic
- Orthogeriatric Liaison Service
- Early Discharge Service for the Acute Medical Assessment Unit
- Inpatient Falls and Fracture Prevention Service
- DXA service
- Research Projects

### Clinical Nurse Specialist (CNS)-Led Preassessment Clinics

CNS-led pre-assessment clinics (twice-weekly) continue to be the first point of contact for patients who are referred for assessment of their bone health. The patients are either referred from their general practitioner or from the various clinics within St James Hospital including the MedEL department. A comprehensive assessment is performed and includes risk factors for osteoporosis, falls risk factors and advice on dietary and lifestyle modifications and education on treatment.

On a patient's first attendance at this clinic a full initial screen is undertaken. This includes a DXA scan, a bone ultrasound, a full biochemical and hematological workup including an estimation of serum bone markers.

In 2009, a total of 870 patients were seen in these clinics, which is an increase of 36% from the previous year. The breakdown of patients seen in the Preassessment clinics is as follows:

- |                                  |              |
|----------------------------------|--------------|
| ▪ Colles Fracture:               | 44 patients  |
| ▪ Hip Fracture:                  | 75 patients  |
| ▪ GP Assessment/Review Patients: | 510 patients |
| ▪ Bone Health Appraisal:         | 116 patients |
| ▪ IV Zoledronic Acid:            | 125 patients |

### Parathyroid Hormone Treatment Patients

247 patients have been on or are currently on treatment with Parathyroid hormone. These patients have evidence of severe osteoporosis, which has been refractory to other forms of treatment or have evidence of fragility fractures. For patients who have sustained a vertebral fracture, treatment with PTH has shown to bring a substantial improvement in bone quality and a significant improvement in back pain. Since late last year, there has been a second PTH option available, Preotact (1-84 PTH), in addition to PTH 1.34 (Forsteo) which was already available. This has given further options in the management of patients with osteoporosis.

Recent research has demonstrated a dramatic improvement in quality of life and back pain with the use of PTH (Fosteo, (1-34) PTH). St James Hospital was one of the centres for the EFOS study which has recently shown an improvement in both the quality of life and improvement in back pain in patients treated with PTH (1-34). This has been presented both at European and American International Meetings this year and published in Bone Health Journals.

### Intravenous Zoledronic Acid Clinic

Intravenous Zoledronic acid is a very valuable treatment in the prevention of both vertebral and non-vertebral fracture patients. It has been shown to significantly reduce mortality in patients after hip fracture. It provides an alternative to oral

bisphosphonates in patients unable to tolerate oral therapy because of gastrointestinal side effects of the oral compounds.

Over the past 3 years, patients have been treated in the Robert Mayne Day Hospital. We have seen an increase in the past 6 months in the number of patients requiring IV zoledronic acid with 127 attending on a yearly basis for assessment and infusion of the IV zoledronic acid. It may be given 6 monthly and yearly and as a result the osteoporosis unit has expanded to creating an IV zoledronic acid clinic. Patients are assessed prior to the administration of the drug and for post infusion complications.

In July, a new protocol was implemented to monitor Serum Calcium and Vitamin D levels within one week following infusion to observe for any hypocalcaemia.

### Orthogeriatric Liaison Service.

Our expanding orthogeriatric service has developed within St James Hospital for over 5 years. Patients who have sustained a fracture and admitted under our orthopaedic colleagues service are reviewed on the ward or can be followed up if discharged from the Emergency Department. The more common fractures seen include hip, Colles', vertebral, humeral and pelvic fractures. The service has grown to incorporate all fracture patients over the age of 50 years attending the hospital. Each of these patients is offered a detailed screening for osteoporosis, including a DXA scan, biochemical bone markers and follow-up in the bone health clinics.

### Hip Fractures

Hip fractures are the most common fracture seen within the orthogeriatric clinics and ward rounds. Hip fractures are associated with increased morbidity and mortality and tend to occur in older patients. These patients require significant input from the multidisciplinary teams including nursing, physiotherapists, OT, social workers and medical staff. Hip fractures account for nearly 10% of all non vertebral fractures and for a much higher proportion of fractures in the elderly. This year we have seen a rise of the number of fractures referred to the service, due to awareness of the issue of osteoporosis and inclement weather.

With the above issues, Ms Niamh Maher, Ms Sheila McCarthy and Dr Joe Browne are currently researching in the area of fragility fractures in the elderly with particular emphasis on hip fractures.

Table 1. Number of Hip Fractures admitted to St James's Hospital every year since the setting up of the service

Year	2005	2006	2007	2008	2009
Hip Fractures	164	196	167	172	180

### Colles and Peripheral Fracture Follow-up Clinic

All elderly patients presenting with a peripheral fracture, particularly those who present with a Colles fracture are offered a follow-up appointment at a Specialised Osteoporosis Clinic, which takes place every 2<sup>nd</sup> Thursday morning. This nurse-led clinic reviews risk factors for falls and osteoporosis. Patients are commenced on treatment as indicated by the results of their assessments.

## Inpatient Falls and Fracture Prevention Service

Inpatients at high risk of falls are targeted for fall and injury prevention once they are admitted under the care of the MedEL department. Each patient is screened for their falls risk on admission using a falls risk assessment tool (STRATIFY).

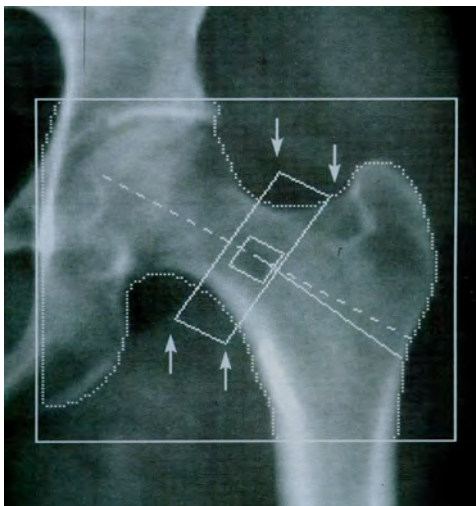
## Summary of Inpatient Falls and Fracture Prevention in 2009

- Total of 341 post-fall assessments carried out: 139 new patients assessed, 219 reviews on recurrent fallers.
- 34 Falls in Connolly Norman Ward (PsychEL).
- Injurious falls (MedEL & Connolly Norman): 80 (23%)
- Injuries among in-patients: 6 hip fractures, 3 Colles fracture, 2 Humerus, Superior pubic ramus fractures, 1 acetabular fracture.
- Remaining injuries included bruising, lacerations, haematomas and soft tissue.
- Twice-yearly audits on falls risk assessment and hip protector compliance are conducted.

## Fall Prevention Strategies in use throughout MedEL

- Fall alert sign over bed (if patient has consented to this)
- Fall (orange) wristband wearing by patients at risk of falls (if patient has consented to this).
- Nurse fallers adjacent to nurses station
- Chair/bed alarms for recurrent confused patients.
- Fall & Injury Prevention in-service at ward level run by MedEL/MIRA CNS.
- Notification by nursing/medical staff to MedEL/MIRA CNS regarding patients who have been admitted with a fall or is at high risk for fall so that pre-fall assessment can be carried out.
- Use of 'specials' for recurrent fallers prone to injury if indicated.
- Use of STRATIFY (now incorporated into nursing documentation)
- Use of fall diary on each faller.

## DXA (Clinical Densitometry Service) Service

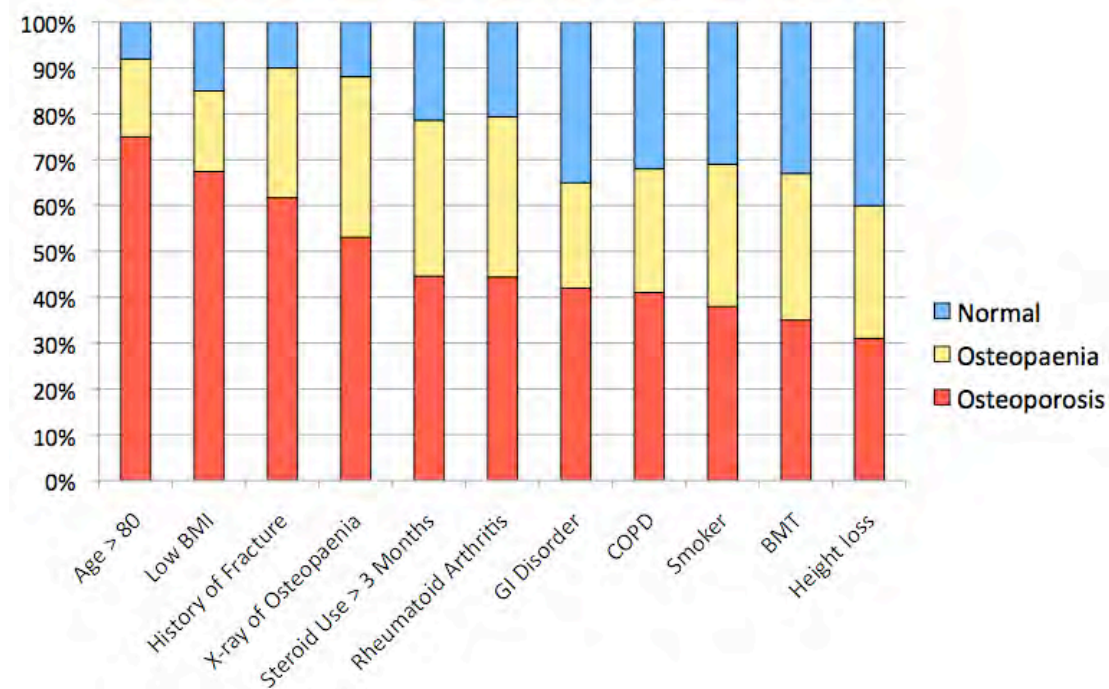


The DXA service has increased further the number of scans per year. 2180 patients were scanned in 2009, which is an increase of 11.6% from the previous year. This is in part due to a stream-lining of referrals and improvement in administration of appointments.

The service is available both to community GPs and hospital consultants. Patients identified as having significant osteoporosis are offered appointments for the Pre-assessment clinics and are assessed appropriately.

9208 new patients have been assessed since the DXA scanning commenced in 2003, with over 11,000 DXAs being performed in the last 6 years. Patients are prioritised according to risk factors with those having significant factors for osteoporosis having an early scan.

Lateral vertebral assessment is performed on all patients attending for DXA. This is an invaluable tool for assessing for vertebral fractures which may be asymptomatic at the time of assessment.



**Figure 2.** This diagram demonstrates the breakdown of 3,691 patients referred for DXA by Reason for Referral. Age was the most predictive factor for osteoporosis, with 75% of 80 yr old patients having osteoporosis on DXA.

## St. James's Clinical Biochemistry Department and MIRA

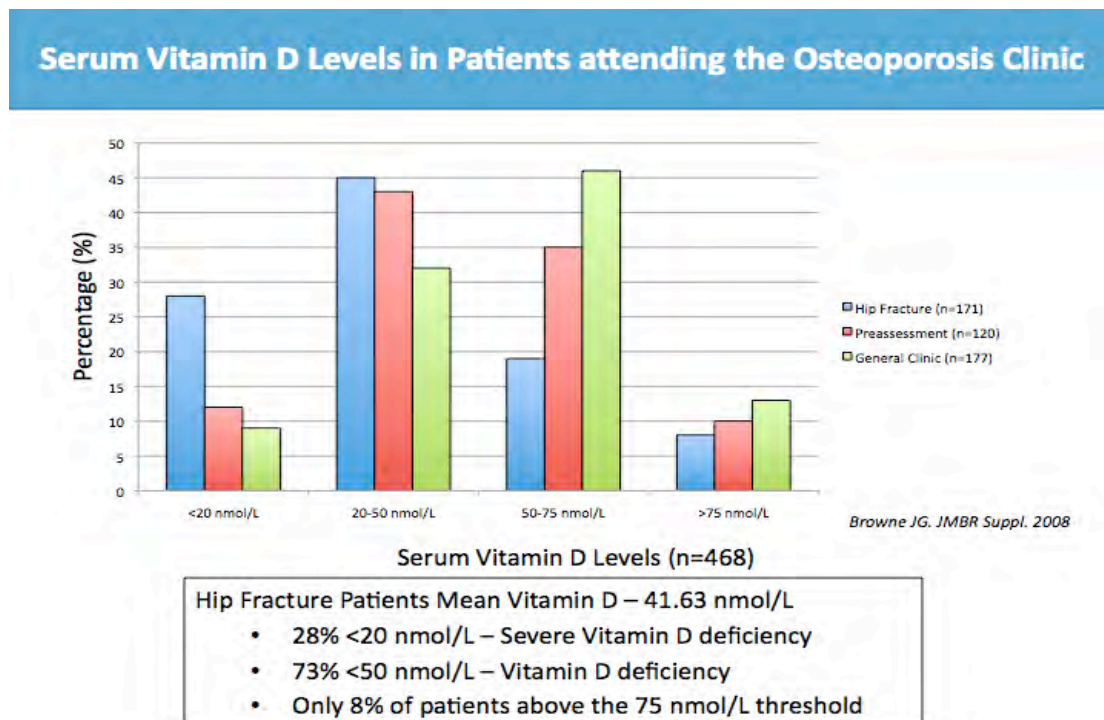
Our close links with consultant chemical pathologist Dr. Vivion Crowley and senior biochemist Dr. Martin Healy have been indispensable in enabling us to provide the comprehensive biochemical studies and bone markers on patients attending the various clinics within the Falls and Osteoporosis Unit.

These bone markers provide us with critical information on the rate of new bone formation and the rate of bone turnover and bone loss in individual patients. We also gain essential information on patients' individual Vitamin D status and bone turnover marker levels. With the help of this information we are able to make critical choices on the correct therapy for each individual patient where in the absence of this knowledge we would be making these clinical decisions purely on the basis of clinical information and bone imaging.

Dr. Martin Healy is a leading international expert in the area of bone biochemistry and Vitamin D. Dr Healy's insight into newer markers and diagnostic techniques have added greatly to the treatment decisions in the osteoporosis clinic, particularly in the area of vitamin D deficiency. Various projects have been carried out with the department of biochemistry looking at TRAP and 25(OH)D levels. This year the department of Biochemistry acquired a new Mass Spectrometer, which has allowed



for a more rapid measurement of Vitamin D and for a greater range of analysis of Vitamin D metabolites and active forms of the Vitamin D hormone.



**Figure 3.** The above shows recent data that has been presented internationally of the serum vitamin D levels in patients attending the osteoporosis service. Levels above 75nmol/L are now considered ideal. We can clearly see that most patients attending our Osteoporosis Clinics are vitamin D deficient, requiring supplementation and monitoring of their serum vitamin D levels. The above work would not be possible without Dr M Healy's and Dr Crowley's input.

## Research Areas

### “Bone for Life” Group

This is a collaborative research partnership between the Departments of Mechanical and Tissue Engineering in Trinity College, Dublin, the Department of Anatomy in the Royal College of Surgeons and Department of Veterinary Medicine in University College, Dublin. Members of the group include Professor Patrick Prendergast, Professor Clive Lee and Professor David Taylor, Prof. Fergal O'Brien and Dr. Jackie Daly. This work covers research in animal models of osteoporosis and links this knowledge with the study of therapeutic compounds, which are used in humans suffering from this disease.

### Investigating Bone Quality in Hip Fracture and Osteoarthritis Patients using Novel Bioengineering Techniques

Principal Investigator: Dr Joe Browne

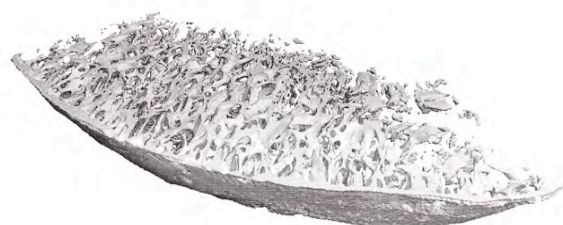
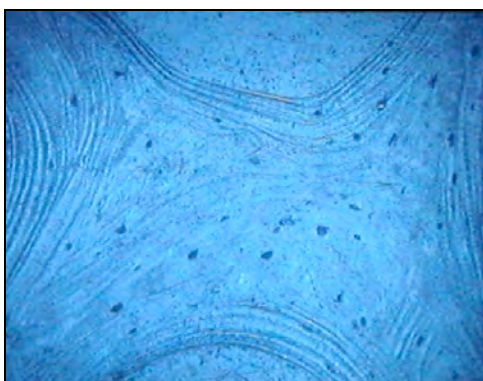
Supervising Investigators: Prof David Taylor (Department of Mechanical and Tissue Engineering in Trinity College, Dublin Bioengineering, TCD), Prof JB Walsh, Dr MC Casey



Hip fractures are often a consequence of reduced bone quality and increased propensity to falls. However not all these patients show evidence of osteoporosis on DXA. Previous studies within the Osteoporosis Service have shown that approximately 30% of patients do not have osteoporosis on subsequent DXA scanning after the fracture. Figure 4 (across) demonstrates bone being cored and sampled in Trinity College Dublin.

The objective of the study is to investigate differences between patients with normal, osteopaenia and osteoporosis who have fractured their hips. It is becoming more evident that DXA does not identify all the risk for subsequent fracture. Bone samples from the femoral heads of hip fracture patients are being used to assess the quality of bone in these patients comparing them to the DXA results and will add to understanding of the biomechanics of bone structure and bone quality of these patients.

We are currently working in conjunction with the Royal College of Surgeons and Bioengineering Department in Trinity College Dublin. The use of quantitative CT scanning and nanoindentation will explore the microarchitecture and mineralisation respectively.



The above pictures demonstrate some of the results of the scanning of bone samples in Trinity College Dublin. On the left, we have a microscopic picture of a femoral bone with indents evident. On the right, is a MicroCT scan image of a section of femoral bone.

Further analysis of the bone will be performed in conjunction with the Department of Pathology and Dr Mary Toner where samples will be examined for evidence of underlying metabolic bone disease.

A further arm in the study is a collaboration project with the Midwestern Regional Hospital and Croom Orthopaedic Hospital, Limerick. Patients with hip fractures and those having elective Total Hip Replacements for Osteoarthritis will be asked for removed their hip bone to be donated to the research projects.

## Investigating the Effects of Vitamin D Deficiency on Balance and Muscle Strength

Principal Investigator: Dr Joe Browne

Several previous studies in the department have shown that there is a large proportion of patients either attending the osteoporosis clinic or being admitted with fractures having vitamin D deficiency. Up to one third of patients have severe vitamin D deficiency and almost three-quarters have a level less than 50 nmol/L, the optimal level being 75nmol/L.

Vitamin D in recent years has engendered much interest in several areas outside bone health and may be associated with muscular weakness, falls, reduced cognition, mood disorders, increased risk of cancer (particularly breast and bowel cancer) and orthostatic hypotension. This year we plan to study the effect of vitamin D supplementation in the older person, focusing on bone health, falls reduction and improvement of blood pressure control.

## Adjunctive Protein Supplementation in Osteoporotic Patients Treated with Recombinant Parathyroid Hormone (1-84)

Primary Investigator: Dr MC Casey, Professor JB Walsh, Dr N Kennedy

Research Team: Dr Choon Chan (Research Registrar)  
Caoimhe McDonald (Dietician)

An exciting and novel treatment for Osteoporosis has emerged in the form of Recombinant Parathyroid Hormone (PTH). Up until now, all therapies for the management of osteoporosis act mainly to inhibit bone resorption and reduce bone remodelling. PTH has the ability to build bone (anabolic effect), reduce fracture risk and increase bone density.

This study aims to investigate the benefit of adjunctive protein supplementation in Osteoporotic patients treated with Recombinant Parathyroid Hormone (1-84). This is a three year randomised controlled study (commenced July 2009) fully funded by Nycomed Products Limited aiming to recruit about 200 patients. The primary outcome is to compare the gains in bone mineral density between those treated with PTH and protein to those treated with PTH alone. Patients will be treated with PTH 1-84 for a total of two years and received protein supplementation for a period of one year. Currently there is one full time research registrar - Dr Choon Chan and one dietician – Caoimhe McDonald employed in this study.

## Fosavance 5600 Study

Clinical Investigator: Ms Georgina Steen

Dr JG Browne

This study is being done in conjunction with Merck Sharp and Dohme and is examining the effect of alendronate and vitamin D<sub>3</sub> on patients with vitamin D deficiency focusing on falls reduction and improvement in vitamin D levels.



## PACE Study

Clinical Investigators: Clinical Nurse Specialists  
Ms Georgina Steen,  
Ms Nessa Fallon,  
Ms Kara Fitzgerald

This study commenced in early 2009. It is a European observational study to collect information on adherence, demographics and clinical characteristics of patients prescribed PTH 1-84 (Preotact) and to monitor safety for 2 years following initiation of treatment. 13 patients have been enrolled and the study will conclude in 2012.

## Intervention of the Clinical Nurse Specialist in Hip Fracture Patients

Clinical Investigator: Ms Niamh Maher, Clinical Nurse Specialist

*"Post Hip Fracture in Older Adults: Interventional and Strategies for Improving Outcomes. The role and Function of the Clinical Nurse Specialist within an Elderly Falls Unit"*

Hip fracture patients are at increased risk of disability after hip fracture and may be at risk of further falls and fractures. Ms Niamh Maher has commenced a study in the area of optimising the management of hip fracture patients.

Patients are being assessed and advised with regards to osteoporosis in the nurse-led clinics, with particular interest in falls prevention as 90% of our hip fracture population have sustained a fall at the time of fracture. Niamh Maher, Clinical Nurse Specialist in Falls and Osteoporosis, is currently completing a PhD on the value of having a clinical nurse specialist intervening in patients who are at risk of falls and the optimisation of treatment for these patients assessing quality of life, improved mobility and compliance with medication.

## Biomarkers in Osteoporosis

Principal Investigators: Ms Laura Corrigan and Dr Jackie Daly  
Clinical Investigator: Dr JG Browne  
Ms Kara Fitzgerald, Clinical Nurse Specialist

The osteoporosis service has commenced an interesting study looking at the possibility of identifying proteins that vary between patient who have normal, osteopaenic and osteoporotic bones based on DXA.

This study is being done in conjunction with RCSI and is identifying patients with normal and low bone mass. Serum biomarkers are being used for identification of patients at higher risk of low bone mass and fracture. This may provide a screening blood test to identify high-risk patients. To date, 114 have been assessed in this research study. It is anticipated to have a further 60 patients assessed.

## STRONGER Study

Clinical Investigator: Ms N Fallon, Clinical Nurse Specialist

Dr JG Browne

This study involves the review of patients commenced on strontium therapy for the treatment of osteoporosis. It will review the outcome, quality of life, benefits and sideeffects of strontium in these patients

## Falls and Blackout Unit (FABU)

This is an out-patient assessment clinic that runs five days a week where patients with unexplained falls and blackouts are investigated using state of the art cardiovascular technology. The clinics are currently staffed by:

Two consultants Prof Rose Anne Kenny (Director) and Dr Conal Cunningham

1 Clinical Lecturer in Gerontology

3 Clinical research registrars

3 Clinical registrars

2 Clinical nurse specialists in falls & Blackout

1 Specialist nurse overseeing clinical research

2 Administrative staff.

The clinic commenced in 2003 with Dr Conal Cunningham and with the arrival of Prof. Rose Anne Kenny moved to a new expanded site beside the Emergency Department in December 2005. An increase in staff and space, allowed for a rapid increase in numbers of patients being assessed. Activity continues to increase every year with the main source of referrals coming from the Emergency Department, Inpatient referrals, GPs, Cardiology services, Neurology services, MedEL services and Peripheral Hospitals from all around the country. It provides the largest syncope clinic service within Ireland and numbers of patients assessed increases on a yearly basis.

	New Patients	Return Patients	Total
2006	710	549	1259
2007	690	1178	1868
2008	710	1574	2284
2009	974	2144	3118

## Falls & Syncope Assessment

40% of individuals will have an episode of blackout or fainting at some point in their lives. In the majority of younger individuals this represents a benign faint and they do not need to be assessed or see 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 an underlying cardiovascular aetiology. The Falls & Blackout unit allows for a detailed investigative work-up of these patients negating the need for admission to hospital. It acts as a one stop assessment where all tests can be carried out and a diagnosis made with one visit alone. Likewise many individuals present with unexplained falls. In older individuals there is often amnesia for loss of consciousness. Technology within the unit allows for this to be teased out and assessed further.

All patients attending the unit have a detailed history and examination by a doctor which then determines the best investigative pathway.

Investigations carried out include:

- Active stand testing for orthostatic hypotension
- Carotid sinus massage to diagnose carotid sinus hypersensitivity
- Head-up tilt table testing for Vasovagal syncope

All testing is supervised by nursing staff trained in the use of finometer equipment which allows beat-to-beat blood pressure measurement. Those patients with mechanical or a multifactorial aetiology to falling can be linked in to Day Hospital services within MedEL. Otherwise treatment is instigated within the clinic with follow up of patients to assess response to treatment. The vast majority are dealt with solely by the clinic and discharged back to the community. Liaison with Cardiology, Neurology and ENT services within St. James's Hospital is accessed if required.

2009 saw the introduction of a “dizzy” Clinic within the unit led by Dr Mimi Fan. This clinic focuses in particular on assessment of patients presenting with dizziness secondary to vestibular disorders.

### Nurse led Clinics and Education in the Falls & Blackout Unit

Nurse led autonomic function testing clinics occur once a week in the FABU. These investigations are necessary in some patients to investigate underlying cause for syncope and falls.

Nurses within the clinic act as a direct line of contact from patients who phone in on a 9-5pm basis and are able to advise and instigate conservative measures often preventing unnecessary A&E attendances.

Nurses supervise the attachment of monitors for patients within the clinic and also on the wards. This allows for quick assessment of blood pressure and heart rate on a 24 hour or seven day basis. Monitors available are 24 hr BP monitors, 24 hr ECG monitors along with seven day event monitors. Downloading of results and reporting are carried out by nursing staff.

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.

### Education and Training

The unit welcomes **international** collaboration and is involved in training and education programmes nationally and internationally.

International visitors are welcome; on average one per month.

The staff are currently developing a training programme for **accreditation** in collaboration with colleagues in Newcastle University (Dr. Steve Parry et al).

The staff organize an annual **national** 'Syncope' training day. The annual syncope conference took place in Clontarf Castle in March 2009. The staff have developed comprehensive new information and education material for **patients and carers**.

Prof. Rose Anne Kenny co edited the new American and British Societies falls prevention guidelines.

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.

## Research

Ongoing research continues within the clinics. The FABU also works closely with the TRIL clinic; assessing participants identified by TRIL as being in need of further medical attention and referring research participants to TRIL.

The FABU is collaborating with colleagues in electrophysiology (Dr. Yvonne Langan and Dr. Sean Connolly) to understand EEG changes during prodromal symptoms and age related differences in clinical characteristics of patients with blackouts.

The FABU staff collaborate with Trinity Bioengineering to understand quantitative EEG output.

FABU have collaborated extensively with the medical physics department of St. James's Hospital, see Finucane and Boyle in the publications section.

Areas of research include neurocardiovascular instability and its relationship to falls, blackouts and cognitive deficits; causality for amnesia for transient loss of consciousness; diagnostic systems of syncope. Research is ongoing into symptom patterns in vasovagal syncope in different age groups and awareness of symptoms with hypotensive change on Head-up-tilt table testing. Over a two year period a subgroup of patients with vasovagal syncope will have EEG studies simultaneously with head-up-tilt to assess this further.

## Stroke Service

The stroke service has continued to progress despite the economic downturn. A six bed dedicated acute stroke unit was officially opened in May 2009. The stroke multidisciplinary team has developed with the provision of dedicated daily input from Physiotherapists, Occupational Therapists and Speech and Language therapists, all with a specialist interest in stroke. This means that all stroke patients attending St James's receive specialist medical and therapy review within one working day of admission. We have improved our capabilities to investigate patients with stroke with the introduction of a new CT perfusion capability to the hospital high-speed CT scanner. This enables us to rapidly identify rescuable brain tissue in patients who have suffered acute stroke. We are also about to receive delivery of a new portable Trans-cranial doppler ultrasound machine, which will enable us to measure blood flow in patients cerebral blood vessels at their bedside. We have developed a new

Telemedicine capability with the assistance of the hospital IMS team which means that patients' scans can be reviewed by a Consultant physician on a laptop with a wireless connection allowing the availability of expert opinion 24/7 to all stroke patients.

We have opened a new daily secondary prevention clinic in the Mercer's Institute which allows us to evaluate patients who have suffered strokes or TIAs ('mini-strokes') for risk of recurrent events and to effectively intervene to reduce these risks. The clinic is run by Suzanne Walsh, Clinical Nurse Specialist in Stroke medicine. The clinic has the facilities to perform 24 hour Blood pressure and ECG monitoring on patients without their having to wait for appointment with the cardiology department. Suzanne also screens for Diabetes, gives advice about medications, lifestyle, diet, exercise and discontinuing smoking. Suzanne also provides telephone advice for patients who have been discharged from the hospital. The availability of the clinic has reduced the length of time our patients need to spend in hospital, freed up appointments in the daily neurovascular clinic and reduced the need for patients to re-attend the hospital with minor problems.

Dr Harbison has also had a lead role in developing a new Diploma in Stroke Medicine in conjunction with the Royal College of Physicians of Ireland. This is the first taught diploma the College has developed and its first students were accepted in September 2009.

The stroke unit provides acute and hyper-acute care for patients admitted to St. James's. The St. James's Hospital Foundation is planning to support the development of a new acute gym for stroke patients, training of staff and changes to the infrastructure of the hospital to make care of stroke patients easier.

In October the first National Stroke Nursing Conference was organised by Sr. Suzanne Walsh from the Stroke Service and was attended by over 150 clinical and research staff with an interest in stroke nationally. It was a resounding success and we expect it to become an annual event.

In 2009 Dr. Joe Harbison was appointed Secretary of the Irish Heart Foundation Council for Stroke and Chair of the National Clinical Guidelines Group for Stroke and the St. James's Stroke Service organised and ran the first National Guidelines meeting and supervised the development of the multidisciplinary National Guidelines, which were released in October. From a research point of view we were successful in obtaining a HRB grant to research the role of Neuro-Cardiovascular Instability in the development of Lacunar and borderzone Stroke. Our new research Fellow, Dr. Daniel Ryan will commence work in MedEL and MIRA on his PhD thesis on this topic in June 2010. We will continue to pursue other research fields in respect of disorders of consciousness and fatigue in stroke, blood pressure variability and the vascular function in patients with stroke.

In May 2009 St. James's was selected as one of 80 hospitals worldwide to participate in the Desmoteplase in Acute Stroke (DIAS) study of a new Thrombolytic agent in stroke. This trial is expected to continue for 3 -4 years.

## Medical Physics and Biomedical Engineering.

### Measurement and Biophysics of Ocular Microtremor

Mohammed al-Kalbani successfully completed his PhD in research on ocular microtremor under the supervision of Prof. Davis Coakley, Dept. of Medical Gerontology, TCD and Dr Gerard Boyle, Medical Physics and Bioengineering Department (MPBE), St James's Hospital. Ocular Microtremor (OMT) is a minute eye movement related to brainstem function with diagnostic and prognostic potential in brainstem disease. In this research an improved, eye contacting OMT measurement system was constructed, new signal processing methods developed and approaches for extracting clinically useful data from the OMT signal compared. Some of Mr. al Kalbani's work was presented at the Photonics West conference in San Jose in January, the premier venue for the presentation of research work in biomedical optics.

Ms. Emer Kenny continued her SFI funded research work on developing optical methods for OMT measurement. As part of this work a high specification video camera was purchased which operates at much higher speeds and sensitivity than a standard video camera. Availability of this specialised device greatly extends the investigative capacity of the MIRA OMT group. The camera will be used to study laser light scattering by the eye in order to refine a non eye contacting OMT measurement technique. Ms. Kenny presented her work at the European Conference on Eye Movements in Southampton.

Dr. Niamh Collins continued her research on the clinical aspects of OMT and presented her findings on the effects of caffeine on OMT at the Association for Research on Vision and Ophthalmology scientific meeting in Fort Lauderdale.

### Health Technology Research Activity at MIRA

The results of a collaboration between MIRA, UCD School of Physiotherapy and St. James's Hospital Physiotherapy and Medical Physics & Bioengineering Departments were published in the journal *Age & Ageing*. In this work, a simple electronic balance testing device designed by Maura O' Sullivan, Physiotherapy and Ciarán Finucane at MPBE was found to correlate well with clinical measures of balance. The device, which is based on the measurement of body acceleration during balance tasks may form the basis of a simple quantitative method of clinical balance assessment.

### Syncope & Falls & Bioengineering Research

In this work, Ciarán Finucane is bringing engineering principles to bear on the problem of Carotid Sinus Syndrome (CSS), a major cause of unexplained falls in older people. This work is being carried out under the supervision of Prof. Rose Anne Kenny, Dept. of Medical Gerontology and Dr. Gerard Boyle, Medical Physics & Bioengineering. This project has taken a novel but comprehensive and coherent approach to the study of CSS. The components of the projects range from the study of the underlying physiological causes and signs of CSS to the development of improved tools for CSS diagnosis.

This work is nearing completion and several exciting findings and advances have been made, some of which have been published (Europace, 2010) and others have been submitted for publication (due in 2010). In this work a complete computer based mathematical model of the cardiovascular system has been implemented. The model integrates discrete mathematical models of elements of the cardiovascular system (e.g. the major vessels, heart chambers, the neck 'baroreceptors' or blood pressure sensors) into a single model showing how these elements interact to maintain blood pressure and heart rate. This is the first model designed and implemented to allow modelling of CSS. The model has already been demonstrated to replicate known blood pressure and heart rate features of CSS seen clinically. The model will allow hypotheses on the physiological causes of CSS to be tested.

A major objective of this work has been to simplify and improve the clinical tests used to diagnose CSS. Currently, CSS is diagnosed through Cardiac Sinus Massage (CSM) – the observation of heart rate and blood pressure responses to neck massage. Using signal processing techniques, the group has demonstrated that the analysis of ECG and blood pressure traces alone may form an alternative non invasive approach to the diagnosis of CSS with the potential to replace or augment the CSM technique. In addition, Ciarán Finucane has designed several technical improvements to help standardise and improve the accuracy of CSM, a work which has kindly been funded by the Irish Heart Foundation.

As an interesting offshoot of this overall project a study of the relationship between vision and falling was undertaken. A group of older subjects with a history of falling were found have overall poorer visual acuity compared to non fallers. Similarly a subject group showing a larger drop in blood pressure than normal on standing – a known cause of falling – were also found to have poorer visual acuity. A link between vision and falling had not been made previously and this finding may ultimately help develop interventions to reduce the incidence of falling.



## THE IRISH LONGITUDINAL STUDY ON AGEING 2009 ANNUAL REVIEW



### Introduction

The Irish Longitudinal Study on Ageing (TILDA) is the most comprehensive study of its type ever conducted in Ireland. It began collecting baseline data in 2009 on all aspects of the lives of people aged 50 and over living in Ireland, including the economic dimension (pensions, employment, income and assets, etc.), health aspects (physical, mental, service needs and usage, etc.) and social aspects (contact with friends and kin, formal and informal care, social participation, etc.). Subsequent waves of data collection will occur every two years.

### TILDA Aims:

To develop an environment for ageing well we need to understand the older Irish citizen and explore factors which determine successful ageing. TILDA, as a nationally representative survey of the older population in Ireland, will contribute towards this understanding.

The basic mission of TILDA is to bring about a significant improvement in the quality, quantity and prominence of information and research about ageing and older people in Ireland. The study will deliver a comprehensive database of information about this population which will assist not only in service provision and policy making but also deliver quality cutting edge research consistent with the emerging national initiative towards a “knowledge society”, built on innovations in science and technology.

### Project Description:

A nationally representative sample of at least 8,000 adults aged 50 and over, resident in Ireland, are selected using a population sift. Each address in the nation will have an equal probability of selection. If all eligible households participate, the study will represent the urban/rural mix in the country as well as income, education, gender and geographical groupings.

### The study explores the current status and changing needs of older people, in particular:

- Living standards, quality of life and pensions of people at older ages
- Physical and mental health needs of older people.
- Social care needs and social networks of older people
- Health and social needs of families and carers of older people
- Biological and environmental components of “successful ageing”



- Contributions that older people are making to society and the economy
- How each of these key components (health, wealth, happiness) interact such that we can ensure that Ireland meets the needs and choices of its citizens in a personalised and positive environment and with due dignity and respect
- What direction policies related to older people should take.

The selected addresses are visited by a fieldworker and all persons aged 50 or over (and their spouses of any age) are canvassed to participate in the survey. Fieldwork involves interviews using computer-aided personal interviewing (CAPI) techniques and either a visit by the respondent to a local TILDA Health Assessment Centre where appropriate medical measurement facilities will be available, or a visit to the respondents' home by a qualified research nurse to take bio-medical samples. A self-completion questionnaire is also administered to all respondents. All the information that is given is treated with the strictest confidence and is anonymous.

Participants selected for the main TILDA study will have a follow-up interview every two years and health assessment every three to four years for a ten year period.

### Major Developments in 2009

In 2009, TILDA completed a national pilot of the data collection methods and fieldwork procedures. More importantly, TILDA launched its main wave of data collection. This involved:

- Registering TILDA with the Data Protection Commissioner to ensure confidentiality and anonymity of all respondent data;
- The Economic and Social Research Institute (ESRI) preparing a random sample of over 25,000 addresses in Ireland from which to determine eligibility;
- The recruitment and training of over 100 interviewers to conduct fieldwork by asking eligible householders to participate in the study;
- The re-opening of Health Assessment Centres in both Dublin and Cork to collect biometrics from participating respondents, and in cases where respondents were unable to attend a centre, the availability of specially trained nurses to collect a subset of the TILDA biometrics in respondent's homes;
- The recruitment and training of over 12 nurses to conduct health assessments according to strict standard operating procedures;
- Hiring of a data manager and recruitment of a statistician to provide more research capacity to prepare and analyse data

### The Social Interview

The face-to-face questionnaire is done in the participants own home at a time that is convenient for them, by an experienced, trained interviewer. TILDA aims to collect information on all the aspects of people's lives in order to improve planning and policy.

## The Self-Completion Questionnaire

After the social interview, a short self-completion questionnaire is left for respondents to complete privately and at their convenience. This questionnaire covers some additional topics such as alcohol consumption, relationships with spouses/children/friends, sexual relationships and the participants' own views and experiences about getting older.

## The Health Assessment

After completing the interview and questionnaire, participants are invited to attend a dedicated centre in Trinity College Dublin or Cork city centre for a health assessment at a time that is convenient to them. This assessment is carried out by a trained nurse. Some of the measurements include: height, weight, blood pressure, walking speed, memory function, eyesight as well as bone and muscle strength. In addition, we collect blood samples. While it is preferable for respondents to come to a dedicated TILDA health assessment centre with calibrated equipment and dedicated space, for respondents who are unable to come to a centre, TILDA can send a nurse to their home to conduct a subset of health measures. It is important for Irish residents of all health status be represented in the study's sample.



## Plans for 2010

Complete first wave of the study's data collection. Generate interest in collaborative research analysis and work.



Prof. Rose Anne Kenny and Provost John Hegarty welcomes President Mary McAleese to launch the new TILDA centre at TCD in May 2009.

## Institutions Involved

The Irish Longitudinal Study on Ageing is being carried out by Trinity College Dublin along with scientific researchers from the following institutions:

- Dundalk Institute of Technology [www.dkit.ie](http://www.dkit.ie)
- Economic and Social Institute [www.esri.ie](http://www.esri.ie)
- National University of Ireland Galway [www.nuigalway.ie](http://www.nuigalway.ie)
- Royal College of Surgeons Ireland [www.rcsi.ie](http://www.rcsi.ie)
- Trinity College Dublin [www.tcd.ie](http://www.tcd.ie)
- University College Dublin [www.ucd.ie](http://www.ucd.ie)
- Waterford Institute of Technology [www.wit.ie](http://www.wit.ie)

## The TILDA Team

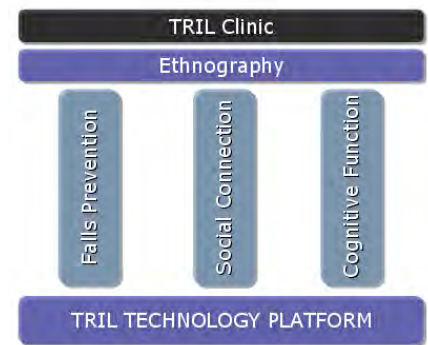
The core research team for TILDA, in addition to the Principal Investigator and the Research Director, consists of several researchers, a data manager, an applied statistician, a project manager and two executive officers charged with administration. The researchers have advanced qualifications and training across a wide range of disciplines including epidemiology, geriatric medicine, demography, social policy, psychology and economics. Ongoing recruitment will help TILDA provide research outcomes as quickly as possible once the data is collected and available for analysis.

The TILDA team is supported by a number of Steering Groups. These groups constitute a major reservoir of expertise and experience since all the members are active researchers and come from a wide range of disciplinary backgrounds.

## Technology Research for Independent Living (TRIL)

The TRIL Clinic is an essential asset for the TRIL centre.

It provides the clinical environment for our research, as well as acting as the source of research cohorts and baseline assessment data.



### Highlights of 2010

The IDA conducted their Annual review in January 2009

The final TRIL participant was assessed in May 2009. In total over 624 older people were assessed in St. James's Hospital as part of the TRIL Programme.

### Visits to the TRIL clinic

**Steve Agritelley visited the TRIL clinic.** Steve Agritelley is the Director of Product Research and Innovation, Digital Health Group based at Intel Corporation, Portland, Oregon

**North Eastern University Boston** – Kathleen McDonough and a group of her post graduate and undergraduate nursing students came to the clinic in July 2009, the purpose of this visit was for them to learn about TRIL, to see the assessments that we performed and to see how research findings were applied in a clinical context.

Dr Clifford Fullerton – Baylor Healthcare Texas visited the clinic in October 2009, he wished to view the model and see if could be translated to the primary care facility he operates in Dallas.

**TRIL Clinic Video-** Dr David Prendergast took the lead in developing a video describing the TRIL clinic and its activities. This has subsequently been placed on the TRIL website and is a useful resource for participants.

### Academic Research Plan

The clinic was very much involved with the development of the Academic research proposal for 2010, a number of planning sessions were held involving all of the TRIL Academic Principal Investigators, seniors researchers, Doctors, Nurse and research assistants. The plan was developed and submitted to the TRIL directors and Intel PI's where it was further refined prior to submission.

### Good Clinical Practice Training;

The researchers and many of the staff and Principal Investigators (Academic and Intel) participated in Good Clinical Practice training. This was facilitated by the TRIL Clinic and provided by the Irish Clinical Research Infrastructure Network (ICRIN) which is a publicly funded body (HSE, HRB and DOHC). There was good engagement with this process which seeks to harmonise research practice and standards across clinical research facilities in Ireland with the objective of making Ireland a more attractive destination in which to conduct clinical research. Mercer's Institute for

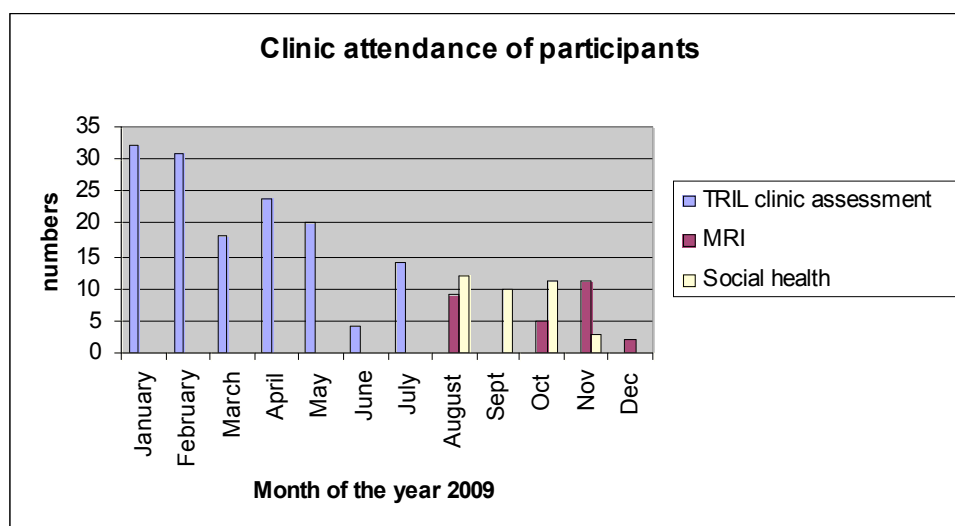
Research in Aging will be taking part in ICRIN's research readiness programme in 2010 and it is anticipated that the TRIL clinical centre will play an active role in this process and will benefit significantly.

### TRIL Clinic Audit

Following a recommendation from the TRIL Board an independent Audit was conducted of the TRIL clinical data. This was to assess the correctness and completeness of the TRIL data Base and to make recommendations for improvements in process and systems to inform research practice going forward. This audit took place in August and September 2009 and the findings were presented in October.

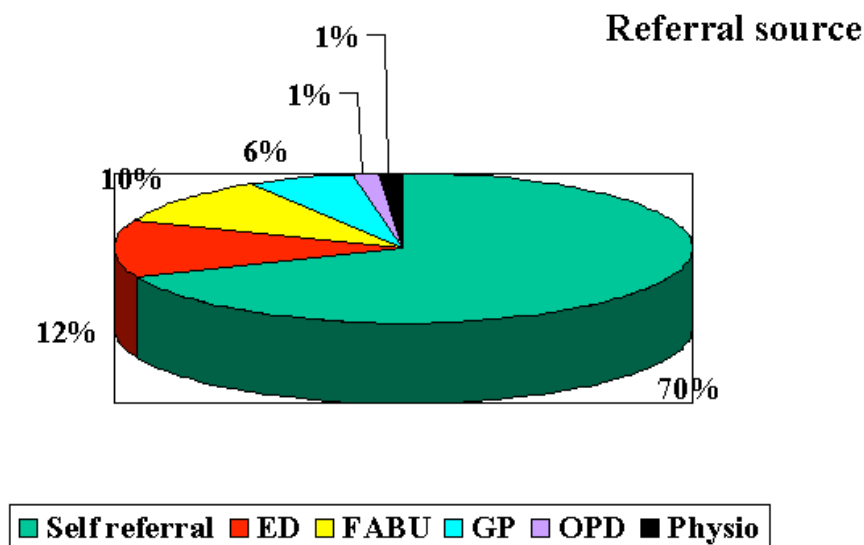
### Update on Cohort Assessments

234 participants underwent a comprehensive assessment in the TRIL clinic in 2008/2009.



The majority of the patients assessed in 2009 were fallers. In general these participants were more complex than the non fallers and the assessment and levels of further referral increased. The TRIL clinic finished the characterisation of the 600 participants in May 2009. 624 participants were seen in total.

Referral Source 2009	Percentage
Emergency Department SJH	23.7
Falls & Blackout Unit SJH	3.8
GP	5.3
Self referral	65.6
Outpatients Clinic SJH	1.5
Total	100.0



## Description of TRIL clinic Projects from May 2009

### Analysis of Clinic Activity

Following the completion of the TRIL 600 a number of additional projects were undertaken in the second quarter of 2009. All of these projects required Ethical approval and applications were submitted and permission received by the St James's/AMNCH Research ethics committee. These included.

Social Health Clinic -36 participants

A Magnetic Resonance Imaging Study of Brain Structure and Function - 27 participants. Balance and Strength Exercise at home -16 participants

### Staff Changes

Patricia Malone finished as TRIL Clinic Programme Manager in late 2008 and returned to a position in St. James's Hospital. We wish to thank Patricia for her great organisational skills and commitment in helping establish the clinic and putting the processes in place that have helped it to function so effectively. Jennifer Feighan started as TRIL Clinic Programme Manager in January 2009.

Dr Roman Romero left TRIL in July and is now working in St James's Hospital on the SpR programme. Dr Lisa Cogan left in November to take up the position of Medical Director of the Royal Hospital in Donnybrook.

Dr Mimi Fan, who holds the post of Clinical Director of Technology Research for Independent Living (TRIL) was the recipient of the Beeson Fellowship in 2009. The Paul B. Beeson Award for Ageing Research Programme expanded to Ireland in 2007 to help cultivate and train experts in the field of geriatrics and ageing research. Mimi is one of only two people in Ireland to be awarded the prestigious 2009 Paul B. Beeson Scholarship. She won the award for her research on Age-related Autonomic Dysfunction and its Impact on Cognition, Gait and Falls. Mimi developed the clinical protocols that form the research programme that is TRIL.

The TRIL programme is delighted to announce that it has received funding from the IDA and Intel to continue into 2010 .

## Description of Some of the Research Projects that took place in TRIL 2009

Following the completion of the TRIL 600 a number of additional projects were undertaken in the second quarter of 2009. All of these projects required Ethical approval and applications were submitted and permission received by the St. James's /AMNCH Research ethics committee.

### Social Health Clinic -36 participants

One of the principal objectives of the TRIL Social Connection strand is to examine the reciprocal relationship between falls and cognitive impairment in older people and indices of social engagement, social activity and mental health. This responds to the underlying broader aim to understand the complex interplay between social engagement and health.

In 2008 TRIL agreed that there was scope for 'expanding the cohort to a longitudinal follow-up study with a sub-group of TRIL participants' which 'will provide TRIL with the basic science whilst also continuing to maintain a population to explore and test technology interventions. Unique data will be gathered on the changes of health status, triggers to the onset of depression and isolation, and the trajectory of ageing and social connection in Ireland.

As part of TRIL's funding plan for the IDA it was agreed that in the second half of 2009 several specific longitudinal studies would be undertaken. For these specific studies targeted individuals from the TRIL cohort would be requested to return for a follow-up. One such study would investigate the long-term effects of stress on health. Loneliness and social networks both independently affect mood and wellbeing in older people, underlying a very significant proportion of depressed mood, and loneliness is associated with adverse health consequences both from a mental and physical health point of view. It was established from the findings of earlier TRIL work that there was a need for an increased understanding of the longitudinal dynamics of these complex relationships in order to aid the development of meaningful intervention strategies, including technologies. The benefit of this longitudinal perspective has been proven internationally. However, the initial TRIL study was not designed to complement the cross sectional data with longitudinal insights from subsamples.

There was very solid cross sectional results based on the TRIL cohort supporting the creation of a longitudinal follow-up clinic. The evidence on the relationship between lack of social support and risk of malnutrition is compelling. The existence of clear cut "clusters" of older people as defined by types and levels of loneliness suggests the existence of different prognostic categories. We are looking at potential transition pathways that could be understood longitudinally to target the most at-risk groups with interventions. This clinic came into operation in August 2009 and involved a reduced version of the existing TRIL assessment which included:

- General medical and social history and targeted physical examination.



- Psychosocial assessment which will be a replication of the current TRIL psychosocial assessment, plus addition of quality of life questionnaire, expanded personality questionnaire and Ryff scales of psychological well being.
- Physical assessment using existing underlying TRIL Clinic infrastructure (orthostatic blood pressure measurements, heart rate variability including nocturnal and 24 hour studies, gait assessments and 24 hour ambulatory blood pressure monitoring).

## Magnetic Resonance Imaging Study of Brain Structure and Function - 27 participants

The purpose of this study was to discover what changes occur in the brain during the aging process and how these relate to walking ability and memory function.

Participants were invited to attend the Centre for Advanced Medical Imaging (CAMI) at St James's Hospital to have a set of magnetic resonance images (MRI's) taken of their brains. This allowed the researchers to look at the structure of the brain and its blood supply. In addition patients attended the TRIL Clinic for a brief physical assessment. In the TRIL Clinic blood pressure and heart rate as well as walking and memory function were assessed.

The TRIL programme offered a wealth of information about gait and cognitive performance in the elderly population. However, it was decided that interpretation of the data collected in the TRIL programme would benefit greatly from knowledge of the integrity of the brain white matter connections relevant to performance in these domains. Hence it was decided to incorporate the option of magnetic resonance imaging (MRI) data collection, using the 3 Tesla research scanner at St James's Hospital, into the current TRIL protocol. The aim of this sub-study was to investigate the relationship between white matter changes identified with MRI and gait and cognitive performance in elderly volunteers.

Structural changes in the brain are considered an inherent part of ageing. Changes in structure that can be identified with MRI include brain atrophy, ventricular enlargement, 'silent' infarcts, dilated perivascular (Virchow-Robin) spaces and white matter hyper- intensities. These changes tend to be subclinical in nature. They result in subtle impairments in physical and cognitive function. Because they do not present with acute stroke-like signs their occurrence commonly goes unnoticed. However, the accumulation of such changes can lead to substantial neurological, psychiatric and medical morbidity.

For example, cross-sectional studies of volunteers covering the ages of TRIL participants (i.e. 60+ years) show that the presence of white matter hyperintensities and small infarcts are correlated with increased gait variability, as measured by gait speed, stride length and double limb support times (Rosano et al, 2006, 2007). In addition, silent brain infarcts are associated with worse cognitive ability, arm and leg disturbances, frailty, and reduced physical function. White matter hyperintensities are also associated with cognitive dysfunction, dementia, depression and hand incoordination. The functional deficits that have been linked with the presence of these structural changes may result from disrupted connectivity between brain regions. However, previous studies of ageing cohorts have not focused on the



anatomical localisation of discrete white matter findings relative to specific fibre bundles - instead images have been classified on the basis of occurrence, estimated volume or gross localization of white matter findings.

By conducting this study using the TRIL cohort, it was possible to identify major fibre bundles in individual participants and correlate relative disconnection and location of discrete sub clinical to particular behavioural measures, obtained as part of the current TRIL assessments. This will lead to better understanding of the causes of deficits in gait and cognitive performance in older people and may help to inform the development of future treatment plans.

The recruits included participants at risk of falls, as well as healthy controls. The inclusion criteria were identical to those for the standard TRIL assessment with additional MRI specific exclusion criteria. Volunteers were invited to participate in a single MRI scanning appointment at CAMI in St James's Hospital after they had attended the TRIL Clinic for their initial assessment. A series of MRI scans were collected to assess brain structure, perfusion and function. All scans were non-invasive; and there was no injection of tracer compounds. In addition, participants also attended the TRIL Clinic for a brief re-assessment of blood pressure and heart rate during sit-to-stand, as well as gait and memory measurements. These assessments formed part of the initial TRIL assessment.

### Balance and Strength Exercise (BASE) at home

This involved the application of technology to deliver a strength and balance retaining programme in the home. Falls can occur for a number of different reasons (or a combination of reasons). Some of these reasons can be treated (e.g. change of medication) and some cannot (e.g. age). Strength and Balance retraining has been shown to reduce the risk of falling more than any other method of treatment.

The purpose of this study was to investigate if technology can help older people to do strength and balance training in their own homes. This technology was designed to demonstrate the exercises and to measure any improvements.

Participants were assessed by a doctor and a nurse or a physiotherapist in the TRIL Clinic in St James's Hospital. If they were deemed suitable candidates for the exercise programme, a further assessment was arranged in University College Dublin where a TRIL physiotherapist and sports scientist assessed balance and strength and designed a personalised exercise programme.

Once this is complete a researcher from TRIL contacted the participants to organise a suitable day and time to call around and meet the participant in their homes. Following this meeting a device was installed to demonstrate the exercises. The participant was to use the computer 3 times a week for 6 weeks to do these exercises. Information about performance was to be sent back to the physiotherapist for modification as required. At the study end strength and balance will be measured in the TRIL Clinic again to assess any change in performance.

The participants for the BASE programme have undergone assessment in the TRIL Clinic and in UCD.

## Future of the TRIL clinic

The current TRIL contract expired in December 2009. IDA and Intel-GE have agreed to support a transition year in 2010. The purpose of this transition year is to support the delivery of an ambitious set of research protocols which builds on our success to date and contributes to the wider research agenda which we envisage for TRIL in the future (2011-2015).

The TRIL team of researchers will perform a more in-depth data analysis of the 600 TRIL patient cohort data in the domains of Frailty and Loneliness to explore novel bio-psycho-social correlations. It is anticipated that the conclusions emerging from the further interrogation of the TRIL 600 and from the additional supporting research protocols will help to inform the development of a longer term research programme for the TRIL Centre, including inviting other Industry partners to fund and participate in the programme

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

TUDA is a large collaborative study involving the Mercer's Institute, Trinity College Departments of Gerontology, Old Age Psychiatry and Biochemistry, the University of Ulster and the Department of Agriculture. It aims to create a nutritional genotype / phenotype database of 6000 subjects on the island of Ireland (north and south) with certain age related diseases. This research is part of a wider National Nutritional Phenotype database that is being conducted across several sites.

Three cohorts of 2000 subjects over sixty years of age, each with evidence of impairment of cognitive, cardiovascular and skeletal function are being recruited. Four thousand subjects, 2000 with cognitive impairment and 2000 with brittle bones will be recruited from outpatients attending the MedEL Directorate at St. James's Hospital and two thousand with hypertension will be recruited from GP practices in Northern Ireland between 2009-2011.

Detailed cognitive, psychosocial and physical assessments and blood and genetic biomarkers are being collected. Suitable patients attending any of the several outpatient services at the MedEL directorate are being offered assessment. This large scale project has enabled the integration of research and clinical projects pioneered by the Mercer's Institute and has been made possible through the combined cooperation of all of the above institutions including cross border collaboration with the University of Ulster.

The Watts Clinical Research Fellow, Dr. Kevin Mc Carroll is recruiting patients for the bone cohort and will be using relevant data to explore the relationship between vitamin D, cognition and other clinical parameters as part of his doctoral thesis. Two clinical research nurses (Sinead Mc Niffe and Helen Toohey) are recruiting subjects for the cognitive cohort. To date, over one thousand patients from St. James's Hospital have participated in TUDA.

Once completed, the database will represent a very important national resource for further investigation of these diseases and will be one of the largest of its type in Ireland. It will also provide a large bank of clinical data for future research at the Mercer's Institute. It is hoped this information will help identify clinical, biochemical and genetic risk factors and how their interaction may increase the susceptibility to these diseases. This may enable the development of targeted treatments for patient groups most likely to benefit.

Dr. Robert Coen, with assistance from Dr. Kevin McCarroll and Philip Coey, an MSc Psychology student from University College Dublin, has begun a preliminary analysis of the normative interpretation of data on the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS).

The TUDA consortium are now collaborating with universities in England, Sweden and Greece and several industrial partners to develop a research program into how healthy eating and food supplements may influence cognition, bone health and the cardiovascular system. This is the subject of a current seventh framework program grant application (FP7). If successful this program (the "Food Age" study) will fund a series of long term randomised intervention studies. The nutrients to be tested with clinically relevant end-points in the long-term intervention studies are vitamin D, vitamin B12 and PUFA (using a mixture of n-6 and n-3 fatty acids that contains a high proportion of (n-6) linoleic acid). In our opinion, current literature contains most consistent evidence for these nutrients as important factors in the maintenance of functional integrity during old age and therefore the greatest need is to establish these nutrients as proven effectors in long-term randomised trials. The composition of the foods fortified with these nutrients also adds novelty and scientific interest in relation to elderly populations. There are obvious economic as well as scientific benefits to investigating if fortified foods have special benefits in preventing these common conditions of ageing.

It is planned for the TUDA database to be used in collaboration with other partners so as to maximise the research benefit from this novel cohort.

### **The Beeson Fellowship Award**

Dr. Chie Wei Fan was awarded the Paul B. Beeson Career Development Award in Aging Research Program in June 2009. This award, created in 1995 in the United States to address the need for more geriatricians and to advance the field of aging research, started in Ireland in 2007, with support from Atlantic Philanthropies. Dr. Fan is one of the five Beeson Scholars in Ireland.

Beeson Ireland creates enormous opportunity and a platform for Irish researchers to share and sharpen research concepts with leading experts and provide for collaborative research with other networks of universities.

Her research theme is autonomic function in ageing and its impact on gait and cognition. The two components of the research focus on the characteristics of cardiovascular autonomic function in older persons with and without a history of falls and the prevalence of cardiovascular autonomic dysfunction and its relationship with gait function and cognition in a large nationally representative sample of older

persons, The Irish Longitudinal Study on Ageing (TILDA). The initial research will be conducted in the Mercer's Institute for Research on Ageing

A better understanding of autonomic nervous system behaviour will enable early detection of risk and inform the development of new technologies and therapies for prevention and intervention.

## Awards 2009

Dr Joe Browne was awarded the Presidential Medal at the 57<sup>th</sup> Irish Geriatric Society Annual Scientific Meeting in Belfast for his work on Investigating Bone Quality in Patients with Hip Fractures Using Newer Bioengineering Techniques.



Professor J Bernard Walsh congratulates  
Dr Joe Browne, Bone Research Fellow MIRA  
IGS 2009 AGM Presidential Medal winner



Professor J Bernard Walsh congratulates  
Dr Choon Chuan, MIRA Research Fellow  
IGS 2009 AGM Prize winner

Ms. Niamh Maher was awarded Best Poster at the recent 2<sup>nd</sup> Annual Nursing Research, Audit and Quality in Practice Seminar with her poster entitled "Can past and Present Exercise in Addition to Dietary Intake of Dairy Products Influence Bone Density?"

Eli Lilly contributed €10,000 towards the Study of Bone Quality in patients with hip fracture in conjunction with Trinity College Dublin and RCSI.

Dr Martin Mulroy, Specialist Registrar in Geriatric Medicine, was awarded an MSc in Geriatric Medicine from Keele University this year. His research dissertation investigated the superiority of serum Tartrate Resistant Acid Phosphatase over serum C-Telopeptide in the assessment of bone disease in patients with advanced renal failure. This was supervised by Dr MC Casey.

The Royal Academy of Medicine in Ireland (RAMI), section of Psychiatry, senior registrars' research competition was held on 1<sup>st</sup> of December 2009. Dr Damien Gallagher was awarded 1<sup>st</sup> place.

The Royal Academy of Medicine in Ireland (RAMI), section of Psychiatry, registrars' research competition was held on 9<sup>th</sup> April 2009. Dr Aine Ni Mhaolain was awarded 3<sup>rd</sup> place and Dr Damien Gallagher was awarded 2<sup>nd</sup> place.

Finalist in the Lundbeck Neuroscience Research Bursary Award 2009: A proposal submitted by Dr Aine Ni Mhaolain and Dr Damien Gallagher for the Lundbeck

Research Bursary entitled *"Inflammation and Alzheimer's disease: adverse health effects in patients and caregivers."* has been shortlisted.

The Department of Medical Gerontology and Mercer's Institute for Research on Ageing Clinical Research Day was held on 19 March 2009 in the Science Gallery, Trinity College. Clinicians who are registered for Ph.D and M.D.'s with the Department presented their research projects and an award was presented at the end of the day to the best presentation. Professor Oliver James, Senior Research Investigator University of Newcastle and Professor of Geriatric Medicine (retired) was the invited external assessor. Dr. Sean Kennelly was awarded the prize for his presentation on: *The safety and tolerability of nilvadipine, when used for the treatment of Alzheimer's Disease.*

Professor Oliver James, external assessor at the Clinical Research Day



## Programme

### Department of Medical Gerontology & the Mercer's Institute for Research on Ageing M.D. and Ph.D. Clinical Research Day March 2009

Chairperson: Professor Rose Anne Kenny, Head of Department of Medical Gerontology  
External Adjudicator: Professor Oliver James FMedSci, Newcastle University

9.30 – 9.45	Welcome Address Professor Rose Anne Kenny
9.45 - 10.00	Dr. Hilary Cronin, TILDA Research Fellow. <i>"The under diagnosis and under treatment of osteoporosis: results from the first pilot of The Irish Longitudinal Study of Ageing"</i>
10.00 – 10.15	Claire O'Regan, TILDA Research Nurse <i>Community prevalence of depression in older Irish adults – results from the SHARE study"</i>
10.15 – 10.30	Dr. Sean Kennelly, Research Fellow, Roskamp Study <i>The safety and tolerability of nilvadipine, when used for the treatment of Alzheimer's Disease</i>
10.30 – 10.45	Dr. Orla Collins, Research Fellow, HRB MCI Study <i>Neurocardiovascular influences on cognitive functioning.</i>
10.45 – 11.00	Dr. Clodagh O'Dwyer, Lecturer, Medical Gerontology <i>Characteristics and awareness of prodromal symptoms in those presenting with vasovagal syncope.</i>

11.15 – 11.30	Dr. Lisa Cogan, TRIL Research Fellow <i>"Blood pressure variability during exercise: Young versus Old"</i>
11.30 – 11.45	Donal Skelly, TCD Institute of Neuroscience <i>'The relationship between falls, delirium and dementia: Role of acute systemic inflammation.'</i>
11.45 – 12.00	Tim Foran TRIL Medical Physicist <i>Gait Kinematics – a window to signs of subclinical disease?</i>
12.00 – 12.15	Ciarán Finucane, Medical Physicist & Bioengineer, MIRA <i>Neurocardiovascular control in older adults: Analysis Techniques and Recent Insights.</i>
12.15 – 12.30	Dr. David Robinson, Watts Clinical Research Fellow, MIRA <i>Vitamin B12 – rise and falls</i>
1.45 – 2.00	Mohammed Al-Kalbani & Emer Kenny Medical Physicists MIRA <i>Measurement &amp; Processing of Ocular Microtremor</i>
2.00 – 2.15	Sarah Donnelly, Social Work, AMNCH <i>To explore the relationship between the practice of healthcare professionals and the participation levels of stroke patients within Care Planning Meetings in a hospital setting'.</i>
2.15 – 2.30	Dr. Carol Stone, Research Fellow, Our Lady's Hospice <i>Risk factors and impact of falls in patients with advanced cancer; are they different?</i>
2.30 – 2.45	Dr. Damien Gallagher, MIRA <i>"Enhancing Care in Alzheimer's Disease (ECAD) Study"</i>
2.45 – 3.00	Dr. Aine Ní Mhaolain, MIRA <i>"Frailty in Alzheimer's disease and carers"</i>
3.30	Award to best presentation by Professor Oliver James.  Closing address Professor Rose Anne Kenny



(L-R) Professor Oliver James presenting first prize to Dr. Sean Kennelly



## Communication & Information Sharing Strategy

Information and communication play an increasingly important and more sophisticated role in health care research and delivery systems. The directors of MIRA, as part of a pro-active strategy to enhance the skills and talent of the incumbent team have created a new 'communications' role intended to frame and highlight the issues around ageing with a particular emphasis on research and clinical achievements that will also raise the profile of the Institute in a positive and strategic manner. The communications unit will focus on the synergies and linkages in place now and for the future; it will facilitate the sharing of ideas, information and opinions and reflect the growing trend to shift focus from providing direct aid to capacity building, empowerment and collaborating with other organisations and institutions.

The deliberate design of a communication strategy which interprets the MIRA vision, values, goals and intentions to its stakeholders is currently in place. A flow of information which promotes MIRA's research, clinical programmes and talent is disseminated both internally across the institute and sideways through the multi disciplinary teams creating a congruency of direction and vision. External communiqué to the public has succeeded in delivering key information and messages regarding the unique knowledge and talent at work within MIRA. to a wider audience, both locally and nationally.

Proactive communication enhances the Institution's ability to help determine better institutional support and to promote a higher standard of performance for the field of gerontological research as a whole. Some key performance indicators for the department are:

- to enhance the image and reputation of the Institute
- profile the dedicated and talented individuals who work within the Institute
- strengthen alliances within the community through networking and relationship building
- help to deliver a more professional image and culture through the creation of a set of communication guidelines
- develop a programme of events aimed at the health professional
- develop a programme of events aimed at the public with specific emphasis on the ageing themselves
- promote MIRA as a 'national' resource

In order to deliver a sustainable and robust external communications and messaging approach, our Communications Manager, Sharron Kelliher, has developed strategic relationships with media organisations such as The Independent newspaper, TV3, The Irish Medical Newspaper, The Irish Medical Times, The Evening Herald, various radio stations as well as a number of health and mainstream journalists. MIRA's prolific history and solid foundation has allowed the department to develop strong alliances and facilitate the high level of goodwill with the media and the public. A number of regular and ongoing columns which engage directly with the public have been implemented in both mainstream and age related media.

Other communication efforts include the delivery of age related and research seminars as well as other information sharing events. Local community events,

health professionals seminars and national 'best practice' study days form the basis of our information sharing strategy with each event designed to ensure a specific remit focusing on local, national or/and international audiences.

Information, action and good deeds are increased in value when shared by the many and the relevant. The innovative work currently underway within MIRA will also be communicated across new media electronic frameworks. With almost 2 billion people worldwide currently using the internet and a growing ageing population user network, the communications department is currently cultivating a website, social networking facilities and a range of other digital communications, all in various stages of development.

The integrated communications approach taken by the department reflect MIRA's integrative and multi disciplinary approach whilst delivering key messages and information about the individual strands of pioneering and progressive such as our

- Research and development projects
- Education programmes
- Health promotion policies
- Excellent care and treatment
- Industrial and academic collaborations

A small sample of the communications and information sharing projects is outlined below:

## PRINT MEDIA

**The Independent Newspaper Health Supplement:** MIRA. personnel respond to the concerns of the public around issues of ageing such as stroke, falls, bone health and so on. This column appears on a fortnightly basis.



**Senior Times:** A bi-monthly question and answer column is due to commence in March where members of MIRA will respond to concerns about ageing and age related illnesses

**The Irish Times:** 'Climate, age studies will aid policy, forum hears'

**The Practice:** 'Mental Health in the Elderly'



**Irish Medical News:** 'Professor Davis Coakley discusses the development of geriatric medicine in Ireland'

Other print media exposure has included the Sunday Business Post, The Irish Independent, The Evening Herald, as well as a number of community based papers.

## EVENTS

### Nurse Stroke Study Day – October 2009



**Speakers from L-R** Ms Maura Hopkins, Snr Occupational Therapist, SCOPE Occupational Therapy, SJH; Ms Siobhán Herdman, Emergency Dept. SJH; Ms Suzanne Walsh, Acting Nurse Specialist, Stroke Service, Ms Sarah Baidon, Snr Speech & Language Therapist, SCOPE, SJH, Ms Valerie O'Brien, NPDU, SJH, Ms Catherine Murphy, Medical Social Worker, Ms Donna Tynan, Clinical Nutritionist, SCOPE Clinical Nutrition, SJH; Ms Imelda Noone, Advanced Nurse Practitioner for the Elderly, St. Vincent's Hospital.



### Ageing Research - Advancements and Achievements Morning



**L – R** Professor Brian Lawlor, Consultant Psychiatrist for the Elderly at St. Patrick's and St. James's Hospitals, Professor Davis Coakley, Director of the Medical Directorate for the Elderly, Professor Rose Anne Kenny, Director of The Centre of Excellence for Successful Ageing and Head of Department Medical Gerontology, TCD, Dr. Brian Hofland, Director of International Ageing Programme, Atlantic Philanthropies (AP), Mary Sutton, Programme Executive for Ageing (AP), Dr. John Hegarty, Provost, TCD

## Winter Seminar Series

**WINTER SEMINAR SERIES**

THE MERCER'S INSTITUTE FOR RESEARCH ON AGEING  
IN COLLABORATION WITH  
THE DEPARTMENT OF MEDICAL GERONTOLOGY  
PRESENT

**27<sup>TH</sup> OCT** **THROMBOLYTIC TREATMENT OF ACUTE ISCHAEMIC STROKE**  
DR JOE HARBISON, CONSULTANT STROKE PHYSICIAN, ST JAMES'S HOSPITAL

**15<sup>TH</sup> DEC** **VASCULAR SURGERY FOR THE OLDER PATIENT**  
MR PRAKASH MADHAVAN, CONSULTANT VASCULAR SURGEON, ST JAMES'S HOSPITAL

**26<sup>TH</sup> JAN** **MULTISENSORY INTEGRATION AND AGEING**  
FIONA NEWELL, ASSOCIATE PROFESSOR,  
DEPARTMENT OF PSYCHOLOGY, TRINITY COLLEGE DUBLIN

**23<sup>RD</sup> FEB** **HYPERTENSION PROBLEMS IN AGEING**  
DR EAMON DOLAN, CONSULTANT GERIATRICIAN,  
CARE FOR THE ELDERLY, JAMES CONNOLLY HOSPITAL

ALL SEMINARS TAKE PLACE BETWEEN 12:45 AND 2:00 PM

**VENUE:** ROOM N12, CENTRE FOR LEARNING AND DEVELOPMENT,  
TRINITY CENTRE FOR HEALTH SCIENCES, ST JAMES'S HOSPITAL

## Radio & Television

A number of radio and television interviews with key MIRA. personnel have taken place on a series of high profile programmes such as McGurk on 4 (4FM), The Gerry Ryan Show (RTE 2FM), The Right Hook (NewsTalk), Morning AM (TV3) to name but a few.



Dr Joe Harbison, Director of the Stroke Service, Mercer's Institute for Research on Ageing, St. James's Hospital and George Hook surrounded by some of the 400 Trinity Med Day students. This year part of the MedDay fundraising went towards developing the New Stroke Service.

## Synergies of Communication

New knowledge is unlikely to deliver its full potential if it remains with the originators in the Institute. The core intention of the communication policy is to consistently provide high quality information sharing and communication opportunities which will positively impact on the stakeholders and will raise the profile of the Institute bringing its vision and values to a wider audience. The communications department is dedicated to the constant exploration of network possibilities, the motivation of interest, the advocacy on behalf of and the promotion of Mercer's Institute for Research on Ageing and the important work it facilitates.

## Partnerships

### St. James's Hospital

Medicine for the Elderly  
Psychiatry and Psychiatry for the Elderly  
Clinical Biochemistry  
Clinical Medicine  
Haematology  
Renal Medicine  
Endocrinology  
Histopathology  
Dementia Services Information and Development Centre

### Trinity College Dublin

Department of Medical Gerontology  
Department of Psychiatry  
Department of Old Age Psychiatry  
Department of Psychology  
Department of Bioengineering  
Department of Mechanical Engineering  
Department of Statistics  
Department of Sociology  
Department of Anatomy  
Trinity College Institute for Neurosciences

### Tallaght Hospital (AMiNCH)

Age Related Health Care, Adelaide and Meath Hospital incorporating The National Children's Hospital, Tallaght, Dublin  
Department of Psychiatry of Later Life, Adelaide and Meath Hospital incorporating The National Children's Hospital, Tallaght, Dublin

### Royal College of Surgeons in Ireland (RCSI)

Department of Anatomy

### St. Patrick's Hospital

### University College Dublin

Conway Institute  
Department of Veterinary Medicine

## Publications 2009

Allan LM, Ballard CG, Rowan EN, Kenny RA.

*Incidence and prediction of falls in dementia: a prospective study in older people.*

PLoS One. 2009;4(5):e5521. Epub 2009 May 13.PMID: 19436724

Allcock LM, Rowan EN, Steen IN, Wesnes K, Kenny RA, Burn DJ.

*Impaired attention predicts falling in Parkinson's disease.*

Parkinsonism Relat Disord. 2009 Feb;15(2):110-5.

Blanco-Campal A, Coen RF, Lawlor BA, Walsh JB, Burke TE. (2009) *Detection of prospective memory deficits in mild cognitive impairment of suspected Alzheimer's disease etiology using a novel event-based prospective memory task.* Journal of the International Neuropsychological Society, 15, 154-159.

Browne JG, Walsh JB, McDermott E, Healy M, Crowley V, Fallon N, Fitzgerald K, Maher M, Steen G, Casey MC. ECCEO Conference 2009. *Hip fracture patients with vertebral fractures have more severe osteoporosis and are candidates for more active treatment including parathyroid therapy.* Osteoporos Int (2009) 20 (Suppl 1):S75.

Browne JG, Casey MC, Fallon N, Healy M, Ryan D, Fitzgerald K, Maher N, Steen G, Walsh JB. *Vitamin D Deficiency is Highly Prevalent in Patients attending a Falls and Osteoporosis Clinic.* Bone (2009) 44 (Suppl 2):S355.

Browne JG, Messallati T, Reeve-Arnold K, O'Reilly P, Daly JS, Casey MC, Walsh JB, Taylor D. *Investigating bone quality in patients with hip fracture using newer bioengineering techniques.* Ir J Med Sci 2009 (Supp 8): 178:S312.

Browne JG, Lim Y, Casey MC, Walsh JB. *Osteoporosis Treatment in Patients Receiving Glucocorticoids Referred for Dual X-ray Absorptiometry (DXA).* Ir J Med Sci 2009 (Supp 8): 178:S322.

Browne JG, Toth Z, Thornton E, Steen G, Fitzgerald K, Fallon N, Casey MC, Walsh JB. *Referral for DXA Scanning: which risk factors are most predictive for Osteoporosis.* Ir J Med Sci 2009 (Supp 8): 178:S321.

Browne JG, Mesallati T, Picard C, Reeve-Arnold K, O'Reilly P, Daly JS, Casey MC, Walsh JB, Taylor D. *Investigating Bone Quality in Patients with Hip Fracture.* Age Ageing, January 2010; 39: i45 - i52.

Browne JG, Lim Y, Casey MC, Walsh JB. *The Value of Lateral Vertebral Assessment in Patients Receiving Glucocorticoids Referred for Dual X-Ray Absorptiometry (DXA).* Age Ageing, January 2010; 39: i45 - i52.

Byrne S, Chan C, Kennelly S, Cunningham C, Coakley D. *A Case for weight based prescribing?* Irish Geriatric Society Meeting 2009. Ir J Med Sci (Supp 8): 178:S325.

Cahill S, Diaz-Ponce AM, Coen RF, Walsh C. *The underdetection of cognitive impairment in Nursing Homes in the Dublin Area. The need for on-going cognitive assessment.* Age and Ageing (in press)



Chan GC, Healy M, Lee CL, Browne JG, Fitzgerald K, Walsh JB, Casey MC. *The importance of monitoring renal function and adequate vitamin D repletion in IV zoledronic acid.* Ir J Med Sci 2009 (Supp 8): 178:S319.

Coen RF, Cahill R, Lawlor BA. *Things to watch out for when using The Montreal Cognitive Assessment (MoCA).* [Letter] International Journal of Geriatric Psychiatry (in press)

Collins O, Dillon S, Coen R, Lawlor BA, Kenny RA. *Neurocardiovascular instability is more prevalent in mild cognitive impairment* Age and Ageing 2008 Nov; 37 9 (Supp 3): 54

Collins O, Dillon S, Finucane C, Kennelly S, Lawlor BA, Kenny RA. *Autonomic dysfunction – A biomarker of cognitive decline/dementia?* Age and Ageing 2009, Vol 38, (Supp 3)

Feeney S, Healy M, Trimble V, Fallon N, Mahmud N, Walsh JB, Casey MC. *Response to bisphosphonate use in celiac associated osteoporosis.* Ir J Med Sci 2009 (Supp 8): 178:S328.

Fan CW, Gasparro D, Crowley V, Cunningham CJ. *Acute haemodynamic response to sleeping head-up at 6 inches in older inpatients.* Clin Auton Res. 2009.

Fallon N, Walsh JB, Casey MC. *An Investigation into the Fear of falling amongst older people following a Colles Fracture.* NOS Conference 2009. Osteoporos Int (2009)20 (Supp 4):S306.

Fallon N, Walsh JB, Fitzgerald K, Steen G, Maher N, Casey MC. *The Side-effects of PTH reported by patients.* Ir J Med Sci 2009 (Supp 8): 178:S317.

Fitzgerald K, Steen G, Fallon N, Maher N, Cunningham C. *Does Cognitive Impairment and in appropriate footwear increase the risk of falls in the older population?.* Ir J Med Sci 2009 (Supp 8): 178:S317.

Gallagher D, Ni Mhaolain A, Coen R, Walsh C, Kilroy D, Belinski K, Bruce I, Coakley D, Walsh JB, Cunningham CJ, Lawlor BA. *Detecting prodromal Alzheimer's disease in mild cognitive impairment: utility of the CAMCOG and other neuropsychological predictors.* Int J Ger Psych 2009 (in press).

Gallagher D, Ni Mhaolain A, Greene E, Walsh C, Denihan A, Bruce I, Golden I, Conroy RM, Kirby M, Lawlor BA. *Late life depression: A comparison of risk factors and clinical characteristics according to age of onset in a sample of community dwelling older adults.* Int J Ger Psych 2009 (in press).

Gallagher D, NiMhaolain A, Lawlor BA. *The imperative for disease modifying therapies in Alzheimer's Disease.* Ir Med J 2009 Feb;102 (2):37-8.

Gallagher D, Lawlor BA. *Alzheimer's Disease: Clinical assessment and management.* Forum Distance Learning 2009; 26(6): 27-32.

Gallagher D, Ni Mhaolain, A, Coen RF, Walsh C, Kilroy D, Belinski K, Bruce I, Coakley D, Walsh JB, Cunningham C, Lawlor, BA. *Detecting prodromal Alzheimer's disease in mild cognitive impairment: utility of the CAMCOG and other neuropsychological predictors*. International Journal of Geriatric Psychiatry (in press)

Harbison JA, Walsh S, Kenny RA.

*Hypertension and daytime hypotension found on ambulatory blood pressure is associated with fatigue following stroke and TIA.*

QJM. 2009 Feb;102(2):109-15.

Horgan NF, O'Regan M, Cunningham CJ, Finn AM. *Recovery after stroke: a 1-year profile*. Disabil Rehabil. 2009;31(10):831-9.

Hu NW, Smith IM, Walsh DM, Rowan MJ.

*Soluble amyloid-beta peptides potently disrupt hippocampal synaptic plasticity in the absence of cerebrovascular dysfunction in vivo.*

Brain (2008) 131(Pt 9):2414-24

Irish M, Lawlor BA, O'Mara SM, Coen RF. *Autobiographical memory in amnesic Mild Cognitive Impairment: Exploration of auto-noetic consciousness and context-dependent memory*. Journal of the International Neuropsychological Society (revised, under review).

Irish M, Lawlor BA, O'Mara SM, Coen RF. (2009) *Autobiographical memory in amnesic Mild Cognitive Impairment: Exploration of auto-noetic consciousness and context-dependent memory*. The Irish Psychologist 35(15), 417

Kennelly SP, Lawlor BA, Kenny RA.

*Blood pressure and the risk for dementia: a double edged sword.*

Ageing Res Rev. 2009 Apr;8(2):61-70.

Keogh MB, Healy M, Walsh JB, Casey MC, Browne JG, O'Brien FJ, Daly JS. *3D Collagen based biomaterial as a solution to enhance bone healing*. Ir J Med Sci 2009 (Supp 8): 178:S290.

Langdahl BL, Rajzbaum G, Jakob F, Karras D, Ljunggren O, Lems WF, Fahrleitner-Pammer A, Walsh JB, Barker C, Kutahov A, Martin F.

*Reduction in Fracture Rate and Increased Quality of Life in Postmenopausal Women Treated with Teriparatide: 18-Months Data from the European Forsteo Observational Study (EFOS)*. Calcif Tissue Int. (2009) 84: 484-493

Lems WF, Karras. D, Langdahl BL, Ljunggren O, Walsh JB, Barker C, Fahrleitner-Pammer A, Barrett A, Rajzbaum-Jakob F, Marin F. *Fracture Incidence, quality of Life and Back Pain in Women with osteoporosis and concomitant glucocorticoid use treated with teriparatide: 18 month results from the European Forsteo Observational Study*. Bone (2009) 44 (Suppl 2):S448.



Lems W, Marin F, Langdahl B, Karras D, Barrett A, Walsh J, Fahrleitner-Pammer A, Rajzbaum G, Barker C, Jakob F. ECCEO Conference 2009. *Fracture Incidence, Quality of Life and Back Pain in Women with Osteoporosis Pretreated with bisphosphonates: 18 month results from the European Forsteo Observational Study (EFOS)*. Osteoporos Int (2009) 20 (Suppl 1):S75.

McAuley MT, Kenny RA, Kirkwood TB, Wilkinson DJ, Jones JJ, Miller VM. *A mathematical model of aging-related and cortisol induced hippocampal dysfunction*. BMC Neurosci. 2009 Mar 25;10:26.

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McCarthy F, McMahon CG, Geary U, Plunkett PK, Kenny RA, Cunningham CJ; *Management of syncope in the Emergency Department: a single hospital observational case series based on the application of European Society of Cardiology Guidelines*. Europace. 2009 Feb;11(2):216-24.

Maher N, Browne. JG, Steen G, Fitzgerald K, Fallon N, Walsh JB, Casey MC. *Hip Fracture Patients with Prior Fragility Fractures are Undertreated for Osteoporosis..* Ir J Med Sci 2009(Suppl 8): 178:S318.

Miller VM, Kenny RA, Oakley AE, Hall R, Kalaria RN, Allan LM. *Dorsal motor nucleus of vagus protein aggregates in Lewy body disease with autonomic dysfunction*. Brain Res. 2009 Aug 25;1286:165-73.

Moya A, Brignole M, Sutton R, Menozzi C, Garcia-Civera R, Wieling W, Andresen D, Benditt DG, Garcia-Sacristán JF, Beiras X, Grovale N, Vardas P; *Reproducibility of electrocardiographic findings in patients with suspected reflex neurally-mediated syncope*. International Study on Syncope of Uncertain Etiology 2 Group. Am J Cardiol. 2008 Dec 1;102(11):1518-23.

Ní Mhaoláin A, Walsh C, Cunningham C, Lawlor BA, Gallagher D, Coen RF et al. *Benzodiazepine use amongst community dwelling elderly: 10 years on*. [Letter] International Journal of Geriatric Psychiatry (in press)

Ni Mhaolain A, Gallagher D, O'Connell H, Chin, Bruce. I, Hamilton. F, Tehee. E, Coen. R, Coakley. D, Walsh. JB, Cunningham. C, Lawlor. BA. *Benzodiazepine use amongst community dwelling elderly: 10 years on*. Int J Ger Psych 2009 (in press).

Ni Mhaolain. A, Lawlor. BA, *Mental Health in the Elderly*; The Practice,

O'Sullivan M, Blake C, Cunningham C, Boyle G, Finucane C. *Correlation of accelerometry with clinical balance tests in older fallers and non-fallers*. Age Ageing. 2009;38(3):308-313.

O'Sullivan M, Blake C, Cunningham C, Boyle G, Finucane C. (2009). *Correlation of Accelerometry with Clinical Balance Tests in Older Fallers and Non-Fallers*. Age & Ageing, 38: 308-313

Parry SW, Steen N, Bexton RS, Tynan M, Kenny RA.  
*Pacing in elderly recurrent fallers with carotid sinus hypersensitivity: a randomised, double-blind, placebo controlled crossover trial*.  
Heart. 2009 Mar;95(5):405-9.

Rajzbaum, G. Jakob F, Karras D, Ljunggren O, Lems F, Langdahl BL, Fahrleitner-Pammer A, Walsh JB, Gibson A, Tynan J, Marin F.  
*Characterization of patients in the European Forsteo Observational Study (EFOS): Postmenopausal women entering teriparatide treatment in a community setting*  
Current Medical Research and Opinions. Vol. 24 No. 2. 2008 377-384

Richardson J, Kerr SR, Shaw F, Kenny RA, O'Brien JT, Thomas AJ.  
*A study of orthostatic hypotension in late-life depression*.  
Am J Geriatr Psychiatry. 2009 Nov;17(11):996-9.PMID: 20104056

Robinson D, Coughlan A, O'Lunaigh C, Tehee E, Browne JG, Healy M, Casey MC, Walsh JB, Kenny RA, Cunningham C. *Serum 25(OH)D<sub>3</sub> is lower in out-patients attending a falls and blackout unit than in matched community-dwelling controls*. Ir J Med Sci 2009 (Supp 8): 178:S321.

Romero-Ortuno R, Browne JG, Cogan L, Healy M, Casey MC, Walsh JB, Cunningham C, Kenny RA. *Seasonal Variation of Serum Vitamin D in Irish Community-dwelling older people: the St James's Hospital Experience*. Ir J Med Sci 2009 (Supp 8): 178:S299-300.

Romero-Ortuno R, Browne JG, Cogan L, Healy M, Casey MC, Walsh JB, Cunningham C, Kenny RA. *Seasonal Variation of Serum Vitamin D in Irish Community-Dwelling Older People*. Age Ageing, January 2010; 39: i45 - i52.

Romero-Ortuno R, Cogan L, Cunningham CU, Kenny RA.  
*Do older pedestrians have enough time to cross roads in Dublin? A critique of the Traffic Management Guidelines based on clinical research findings*.  
Age Ageing. 2010 Jan;39(1):80-6.

Romero-Ortuno R, Cogan L, Fan CW, Kenny RA.  
*Intolerance to initial orthostasis relates to systolic BP changes in elders*.  
Clin Auton Res. 2009 Oct 28.

Ryan D, Browne JG, Healy M, Casey MC, Walsh JB, Harbison J. *Biochemical Indices of Bone Turnover in Stroke Patients is Comparable to that of Hip Fracture Patients*. Bone (2009) 44 (Suppl 2):S276.

Ryan D, Steen N, Seifer C, Kenny RA.  
*Carotid Sinus Syndrome and falls, should we pace? A multi-centre, randomised control trial (Safespace 2)*. Heart. 2009 Nov 23. [Epub ahead of print]PMID: 19933747

Ryle JP, Al-Kalbani M, Collins N, Gopinathan U, Boyle G, Coakley D, Sheridan JT. *Compact portable ocular microtremor sensor: design, development and calibration.* Journal of Biomedical Optics. 2009;14(1):014021-12.

Walsh JP, Ryan D, Browne JG, Thornton E, Casey MC, Steen G, Walsh JB. *Vertebral Fracture Prevalence is High among osteopenic patients.* Ir J Med Sci 2009 (Supp 8): 178:S328.

Walsh JB, Lems W, Karras D, Langdahl B, Ljunggren O, Barker C, Fahrleitner-Pammer A, Barrett A, Razjbaum G, Jakob F, Marin F. *Fracture Incidence, Quality of Life and Back Pain in Elderly Women with Osteoporosis Treated with Teriparatide: 18-Month Results from the European Forsteo Observational Study (EFOS).* Bone Miner Res 24 (Suppl 1).

## **Presentations:**

Al-Kalbani M, Mihaylova E, Collins N, Toal V, Coakley D, Boyle G. (2009) *Ocular microtremor laser speckle metrology.* SPIE Photonics West, San Jose.

Collins N, Al-Kalbani M, Kavanagh P, Mahmud A, Boyle G, Harbison J, Coakley D, editors (2009) *Effects of caffeine on fixational eye movements* AROVA Fort Lauderdale, USA.

Finucane C, Fan CW, Boyle G, Kenny RA. (2009). *"Does Vision Play a Role in Postural Hypotension in Older Adults?"* ASM APSM 2009

Irish M, Lawlor BA, O'Mara SM, Coen RF, *Autobiographical memory In amnesic Mild Cognitive Impairment: Exploration of autonoetic consciousness and context-dependent memory.*

[Poster Presentation (RC), Neuroscience Ireland 3<sup>rd</sup> Annual Conference, Dublin, September 2009]

Irish M, Lawlor BA, O'Mara SM, Coen RF. *Autobiographical memory in amnesic Mild Cognitive Impairment: Exploration of autonoetic consciousness and context-dependent memory.*

[Platform presentation (RC) Psychological Society of Ireland Annual Conference, Wexford, November 2009]

Kenny E, Al-Kalbani M, Coakley D, Boyle G. (2009) *Non-contact ocular microtremor measurement.* ECEM 2009 - 15th European Conference on Eye Movements August 09; Southampton.

Kenny E, Al-Kalbani M, Collins N, Boyle G, Coakley D. (2009) *Laser Speckle Metrology for Ocular Microtremor Measurement.* ASM APSM 2009 , Kilkenny.

Martin MP, Coen RF, Walsh C, Hodder M, Keane O, Lawlor BA. *The Montreal Cognitive Assessment: review of utility in a Cognitive Studies Clinic.* Submitted to BGS Spring 2010 meeting

## Conferences

Annual Syncope Conference, Clontarf, February 2009.

Irish Gerontological Society (IGS) Annual Conference, Belfast, September 2009

Irish Osteoporosis Society Conference, Dublin, October 2009.

2<sup>nd</sup> Annual Nursing Research, Audit and Quality in Practice Seminar.

European Calcified Tissue Conference, Vienna, Austria. May 2009

American Society for Bone and Mineral Research, Denver, Colorado. September 2009

British Geriatric Society Meeting, Harrogate, October 2009.