

**21st International  
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Postural Stability**

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**Book of Abstracts**

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## SCIENTIFIC PRESENTATION: FALLS, FRACTURES & TRAUMA (Abstract 330)

### Delayed Blood Pressure Recovery after Standing Independently Predicts Fracture in Community-Dwelling Older People

**K Doyle; A Lavan; R A Kenny; R Briggs**

*Mercer's Institute for Successful Ageing, St James's Hospital, Dublin, Ireland*

**Introduction:** Orthostatic hypotension, characterised by delayed blood pressure recovery (DBPR) after standing, is a risk factor for falls but the longitudinal relationship with fractures is not yet known. The aim of this study therefore is to explore the role of DBPR as a risk factor for incident fracture.

**Methods:** This study, embedded within the Irish Longitudinal Study on Ageing (TILDA), examined prospective risk of fracture (hip, wrist or vertebral) associated with DBPR at 8-year follow-up in a population-representative sample of >3,000 older people. Orthostatic blood pressure was measured using a finometer during active stand at TILDA Wave 1. DBPR was defined as systolic BP $\leq$ 20 mmHg lower and/or diastolic BP $\leq$ 10 mmHg from baseline value at 30, 60 and 90 seconds. Participants with a fracture reported at any of Waves 2-5 were defined as having 'Incident Fracture'. Logistic regression models were used to estimate odds ratios for the association between DBPR and incident fracture.

**Results:** DBPR at 30 seconds was a significant predictor of any fracture (OR 2.11 (95% CI 1.49–3.00);  $p<0.001$ ), and of hip (OR 4.29 (95% CI 1.97-9.34);  $p<0.001$ ) and wrist fracture (OR 2.01 (1.29-3.14);  $p=0.002$ ). DBPR at 30 seconds did not predict vertebral fracture. Findings remained robust after excluding participants who reported a prior fracture at initial assessment.

DBPR of 60 seconds also predicted any fracture (OR 1.87 (95% CI 1.27-2.77)) and hip fracture (OR 4.46 (95% CI 2.04-9.74) while DBPR at 90 seconds predicted any (OR 2.12 (95% CI 1.43 -3.13)), wrist (OR 2.21 (95% CI 1.36-3.58)) and hip fracture (OR 2.87 (95% CI 1.29-6.42)).

**Conclusion:** DBPR independently predicts fracture in community-dwelling older people, is potentially modifiable and can be measured in an ambulatory setting. Given the morbidity and mortality associated with fractures, identification of such risk factors is crucial in order to inform preventative strategies.

## SCIENTIFIC PRESENTATION: FALLS, FRACTURES & TRAUMA (Abstract 331)

### Impact of a Specialist Service in ED on Admission, Length of Stay and Readmission of Patients with Falls, Syncope and Dizziness

**K Jusmanova; C Rice; R Bourke; A Lavan; G McMahon; C Cunningham; R A Kenny; R Briggs**

*Mercer's Institute for Successful Ageing, St James's Hospital, Dublin, Ireland*

**Introduction:** Up to half of patients presenting with falls, syncope or dizziness are admitted to hospital. Many are discharged without a clear diagnosis for their index episode however, and therefore a relatively high risk of readmission.

The aim of this study was to examine the impact of ED-FASS (Emergency Department Falls & Syncope Service) a dedicated specialist service embedded within an Emergency Department (ED), seeing patients of all ages with falls, syncope and dizziness.

**Methods:** This was a pre and post cohort study, examining admission rates, length of stay (LOS) and readmission at 3 months were examined for all patients presenting with a fall, syncope or dizziness from April-July 2018 (pre ED-FASS) inclusive and compared to April-July 2019 inclusive (post ED-FASS).

**Results:** There was a significantly lower admission rate for patients presenting in 2019 compared to 2018 (27% (453/1,676) vs. 34% (548/1,620);  $\chi^2=18.0$ ;  $p<0.001$ ), with a 20% reduction in admissions. The mean LOS for patients admitted in 2018 was 20.7 (95% CI 17.4–24.0) days compared to 18.2 (95% CI 14.6–21.9) days in 2019 ( $t=0.98$ ;  $p=0.3294$ ). This accounts for 11,344 bed days in the 2018 study period, and 8,299 bed days used after ED-FASS. There was also a significant reduction in readmission rates within 3 months of index presentation, from 21% (109/1,620) to 16% (68/1,676) ( $\chi^2=4.68$ ;  $p=0.030$ ).

**Conclusion:** This study highlights the significant potential benefits of embedding dedicated multidisciplinary services at the hospital front door in terms of early specialist assessment and directing appropriate patients to effective ambulatory care pathways.

## SCIENTIFIC PRESENTATION: FALLS, FRACTURES & TRAUMA (Abstract 359)

### FRAX<sup>®</sup>, QFracture<sup>®</sup> and Garvan for Estimating Fracture Risk In Elderly Fallers: Performance and Correlations in the Real World

G Todorov, S Brook, N Q Qin Xian, S von Widekind, A N Comminos

*Chelsea and Westminster Hospital NHS Foundation Trust; Imperial College Healthcare NHS Trust*

**Introduction:** Falls are a major risk factor for fragility fractures. Fracture risk should be assessed using established calculators in patients with falls, to guide bone therapy initiation. Typically, FRAX<sup>®</sup>, QFracture<sup>®</sup> or Garvan are used. In this study we compared the correlation, performance and utility of these calculators in elderly fallers.

**Methods:** Data from patients  $\geq 70$  years admitted with falls to the Acute Medical Units of a West London Hospital over 4 months in 2019 was retrospectively reviewed. The 10-year predicted major osteoporotic and hip fracture risks, and percentages of patients recommended for treatment using FRAX<sup>®</sup>, QFracture<sup>®</sup> and Garvan, were calculated and compared. Predicted 1-year major osteoporotic and hip fracture rates from QFracture<sup>®</sup> were assessed prospectively against actual 12-month rates.

**Results:** 114 patients aged 70-95 years experienced 120 admissions. Mean 10-year major osteoporotic fracture risks for QFracture<sup>®</sup>, FRAX<sup>®</sup> and Garvan were 28.5%, 19.9% and 35.4% respectively, whereas 10-year hip fracture risks were 12.1%, 23.5% and 13.4% respectively. In those  $\leq 90$  years, correlation for major osteoporotic fractures and hip fractures between FRAX<sup>®</sup> and QFracture<sup>®</sup> was  $r=0.686$  ( $p<0.001$ ) and  $r=0.721$  ( $p<0.001$ ) respectively;  $r=0.704$  ( $p<0.001$ ) and  $r=0.164$  ( $p=0.293$ ) respectively between FRAX<sup>®</sup> and Garvan; and  $r=0.597$  ( $p=0.0567$ ) and  $r=0.262$  ( $p<0.001$ ) respectively between QFracture<sup>®</sup> and Garvan. QFracture<sup>®</sup> predicted mean 1-year major osteoporotic and hip fracture rates to be 2.2% and 1.6% respectively; actual rates were 2/114 (1.75%) with fractures meeting QFracture<sup>®</sup> criteria, and no hip fractures.

**Conclusion:** Garvan produced the highest 10-year risk estimates for major osteoporotic fractures, followed by QFracture<sup>®</sup> then FRAX<sup>®</sup>, with significant variation between each. Strongest correlations were observed between FRAX<sup>®</sup> and QFracture<sup>®</sup>. Here, we demonstrate for the first time the varying outputs of each risk calculator in elderly fallers. This has important clinical implications for bone therapy thresholds and decisions. Further studies are required to determine their accuracy in different patient groups.

## SCIENTIFIC PRESENTATION: FALLS, FRACTURES & TRAUMA (Abstract 362)

### EFFECT OF A MULTICOMPONENT EXERCISE PROGRAMME (VIVIFRAIL) ON COGNITIVE FUNCTION IN FRAIL COMMUNITY ELDERLY WITH COGNITIVE DECLINE

**F Ramón-Espinoza; I Marín-Epelde; I Antón-Rodrigo; A Cedeño-Veloz; J L Sánchez-Sánchez; M Sánchez-Latorre; C Chen; F Zambon-Ferraresi, M López Sáez de Asteasu, A Casas-Herrero**

*Complejo Hospitalario de Navarra*

**Introduction:** Some studies have determined a bidirectional relationship between frailty and cognitive disorders. This relationship may be justified because both entities share common pathophysiological bases and adverse outcomes such as hospitalization, falls, fractures, disability, institutionalization, and mortality. This relationship could also be revealed through a possible response to common interventions.

**Aims:** Examine whether an innovative multicomponent exercise programme (VIVIFRAIL) has benefits for cognitive function and mood status in pre-frail or frail patients aged 75 years, with a Barthel Index  $\geq 60$  and mild cognitive impairment or mild dementia (GDS  $\geq 4$ ).

**Methods:** Multicentre randomized clinical trial conducted in the outpatient geriatrics clinics of three hospitals in Spain, with a Barthel Index  $\geq 60$  and mild cognitive impairment or mild dementia, pre-frail or frail according to Fried criteria and having someone to help to supervise them when conducting the exercises, were randomly assigned to the intervention or control group. The VIVIFRAIL is a multicomponent exercise intervention programme ([www.vivifrail.com](http://www.vivifrail.com)) designed to improve functional capacity and decrease risk of falls for patients over 70 years old.

**Results:** Preliminary sample 160 patients out of a total sample of 220, mean age of  $83.45 (\pm 4.55)$  and Barthel  $92.29 (\pm 9.74)$ . Subjects assigned to the intervention group obtained improvements in cognitive function measured by MOCA test (pre =  $14.9 \pm 5.97$ , post =  $16.74 \pm 7.62$ ,  $p = 0.035$ ) compared to the control group (pre =  $10.98 \pm 8.09$ , post =  $10.34 \pm 8.69$ ,  $p = 0.035$ ). In contrast, physical exercise did not show statistically improved improvements in cognitive function measured by the MMSE ( $p = 0.941$ ). Using Yesavage test significant improvements were found in mood status in the intervention group ( $p = 0.047$ ).

**Conclusion:** If the preliminary results of this study are confirmed and the VIVIFRAIL exercise program is more effective than conventional care in improving cognitive

## SCIENTIFIC PRESENTATION: FALLS, FRACTURES & TRAUMA (Abstract 363)

### Tailored exercise and home hazard reduction for fall prevention in older people with cognitive impairment: the i-FOCIS RCT

**M E Taylor; J Wesson; L Clemson; C Sherrington; K D Hill; S Kurrle; S R Lord; H Brodaty; K Howard; B Toson; S O'Rourke; N Payne; L Webster; R Savage; G Zelma; C Koch; B John; K Lockwood; J CT Close**

*Neuroscience Research Australia, UNSW Sydney (NeuRA); University of Sydney; Monash University; Hornsby Kuring-gai Hospital; Flinders University*

**Introduction:** The evidence to support effective fall prevention strategies in older people with cognitive impairment is limited. The primary objective of this randomized controlled trial (RCT) was to determine the fall prevention efficacy of a home hazard reduction and home-based exercise intervention in older people with cognitive impairment.

**Methods:** RCT involving 309 community-dwelling older people with cognitive impairment. The intervention group (n=153) received an individually prescribed home hazard reduction and home-based exercise program during the 12-month study period. The control group (n=156) received usual care. The primary outcome was rate of falls. Secondary outcomes included faller/multiple faller status, physical function and quality of life.

**Results:** Participants' average age was 82 years (95%CI 82-83) and 49% were female. There was no significant difference in the rate of falls (IRR 1.05 95%CI 0.73-1.51). A sensitivity analysis, controlling for baseline differences and capping the number of falls at 12 (four participants), revealed a non-significant reduction in fall rate in the intervention group (IRR 0.78 95%CI 0.57-1.07). Analyses of secondary outcomes indicated the intervention significantly reduced the number of multiple fallers by 26% (RR 0.74 95%CI 0.54-0.99) when adjusting for follow-up and baseline differences. In planned subgroup analyses there was evidence of a differential impact on falls in relation to physical function (interaction term p-value=0.023) with a significant reduction in the rate of falls in intervention group participants with better baseline physical function (IRR 0.60 95%CI 0.37-0.98). There were no significant differences between the groups for other secondary outcomes.

**Conclusion:** This intervention did not significantly reduce the fall rate in community-dwelling older people with cognitive impairment. The intervention did reduce the fall rate in participants with better baseline physical function, and the proportion of multiple fallers while adjusting for follow-up and baseline differences.



## SCIENTIFIC PRESENTATION: FALLS, FRACTURES & TRAUMA (Abstract 371)

### The Influence of Body Mass Index on Falls and Other Health Outcomes- MELoR Five-Year Follow-Up Data.

**Nurul Nabilah Akmal Hashim<sup>1</sup>; Sumaiyah Mat<sup>1,2</sup>; Phyo Kyaw Myint<sup>3</sup>; Sheng Hui Kioh<sup>1,2</sup>; Mirela Delibegovic<sup>4</sup>; Maw Pin Tan<sup>1,2,5</sup>**

*1Ageing and age-associated disorder group, Faculty of Medicine, University of Malaya, Malaysia 2Geriatric Division, Department of Medicine, University of Malaya, Malaysia 3Ageing Clinical & Experimental Research Team, Institute of Applied Health Sciences, University of Aberdeen, United Kingdom 4Institute of Medical Science, University of Aberdeen, United Kingdom 5Faculty of Healthcare and Medical Sciences, Sunway University, Malaysia*

**Introduction:** The relationship between body mass index (BMI) and health outcomes in older persons has consistently demonstrated a paradoxical relationship. Few studies have, however, evaluated the relationship between BMI and falls in older adults prospectively. Hence, we aimed to evaluate the risk of falls, hospitalization, sarcopaenia and mortality among the older persons according to BMI. Method

Five-year telephone follow-up data was available for 796 individuals aged ≥55 years from the Malaysian Elders Longitudinal Research Study (MELoR). Enquiries were made on falls in the previous year and hospitalization. Sarcopaenia was detected using the SARC-F questionnaire. Vital status was obtained through the National Registry Department. Comparisons were made according BMI categories using logistic regression with normal BMI as the reference category.

**Results:** Overall, 424 (53.3%) participants were categorized as normal (BMI:18.5-24.9kg/m<sup>2</sup>), 32 (4.0%) underweight (BMI<18.5), 243 (30.5%) overweight (BMI: 25-29.9) and 97 (12.2%) obese (BMI≥30) BMI. Individuals in the obese category were more likely to report falls (risk ratio, RR (95% Confidence interval, CI): 1.80 (1.09-2.98)). Individuals with obesity were also more likely to be hospitalized (RR (95% CI):1.68 (1.04-2.72)) and to report sarcopaenia (RR (95% CI): 2.50 (1.49-4.19)) at five-year follow-up compared to those. Mortality was significantly increased in individuals who were underweight with unadjusted analysis and this was accounted for by age differences.

**Conclusion:** Among individuals aged ≥55 years residing in the Klang Valley, obesity was associated with increased risk of falls, hospitalization and sarcopaenia in five years. Further analysis will be conducted to identify potentially modifiable risk factors which may account for this difference. The role of weight loss intervention should also be considered.

# POSTERS

## CLINICAL QUALITY: PATIENT CENTREDNESS (Abstract 131)

### Reducing risk of falls and fractures in old age psychiatry patients: Are we checking vitamin D R Fromson; A Ramdin

*Highgate Mental Health Centre; Islington NHS Trust*

#### Introduction

Vitamin D is essential in maintaining bone integrity and function of the neuromuscular system. Its deficiency is a significant factor in metabolic bone disease and is linked to an increased risk of falls and fractures. The impact of this on morbidity and mortality in the elderly population contributes significantly to healthcare costs. NICE advises treating vitamin D deficiency (<25nmol/L) and insufficiency (25-50nmol/L with additional risk factors). Screening for medical comorbidities in psychiatric patients is well practised; however, vitamin D is not routinely assessed on old age psychiatry wards.

#### Methods

Retrospective study of patients admitted between June 2019 and January 2020 to Garnet Ward, Highgate Mental Health Centre. Demographics and blood results were recorded using hospital software. Patients were stratified by falls risk: low (no previous falls, no co-morbidities increasing falls risk), medium (one previous fall, no co-morbidities) and high ( $\geq 1$  previous fall,  $\geq 1$  co-morbidity). Vitamin D levels were classified as deficient or insufficient based on NICE guidelines.

#### Results

44 patients were admitted; 25 females, with an age range of 56-95. 26 patients (59%) were over the age of 70.

19 were high falls risk, 10 medium and 15 low.

19 patients (43.2%) had vitamin D checked on admission. The range was 13-131 nmol/L. 9 patients (47%) had vitamin D < 25, 6 (32%) between 25-50 and 4 (21%) > 50.

Everyone with a vitamin D of < 25 or 25-50 was prescribed colecalciferol.

#### Conclusion

Our patient demographic is elderly and co-morbid, with a majority at high falls risk. Only 43% of patients had Vitamin D checked on admission. Where it was found low, colecalciferol was prescribed. We advise including Vitamin D as part of admission bloods for every patient. Further investigations could include a routine FRAX score.

## CLINICAL QUALITY: PATIENT CENTERDNESS (Abstract 166)

### Falls Risk and Anticoagulation: Audit on anticoagulation prescribing in older people at University Hospital Lewisham

**V Bushell; K Price; S Awatramani; J Gossage**

*Kings College Hospital; University Hospital Lewisham; University Hospital Lewisham; University Hospital Lewisham*

#### Introduction

Anticoagulation in older people, at risk of falls, can be a difficult balance between potential stroke and bleeding risk. However, NICE advises not to withhold anticoagulation solely based on falls risk and that risk-stratification scores (eg. HAS-BLED and CHADSVASC) should be used to aid prescribing decisions. This audit examines adherence to guidelines by reviewing anticoagulation prescribing and the documentation of the associated risk-stratification in elderly patients.

#### Method

A retrospective review of medical notes of all discharges (including deaths) from elderly care wards at a London General District Hospital in August 2019 was performed. Data was collected regarding patient background, anticoagulation prescribing and its related documentation.

#### Results

A total of 235 discharges were reviewed. On admission, 24% (56/235) of patients were anticoagulated; 68% (38/56) DOACs, 27% (38/56) warfarin and 5% (3/56) low molecular weight heparin. 9% (20/235) of patients had an indication for anticoagulation but no prescription on discharge. When compared to the total sample of patients, these patients were older with higher Rockwood frailty scores and they were more likely to have fallen prior to and during admission. 65% (13/20) had no discussion with the patient/family regarding anticoagulation and only 1 patient (1/20) had CHADSVASC or HAS-BLED documented. 30% (6/20) of these patients had falls as the rationale for not anticoagulating and in 35% (7/20) bleeding risk. In the group where falls risk was given as the reason to withhold anticoagulation, 50% (3/6) had sustained a previous serious fall related injury.

#### Conclusion

Oral anticoagulants are often not prescribed despite a clear indication. This group of patients appear to be frailer, older and at higher risk of falls. Falls risk was often used as a reason to withhold anticoagulation. There was poor documentation of risk-stratification. Communication and involvement of patients and family are an essential part of decision making.

## CLINICAL QUALITY: EFFICIENCY AND VALUE FOR MONEY (Abstract 175)

### **Orthostatic Hypotension: Are we getting it right?**

**S Goyal; A Faisal**

*Lincoln County Hospital*

#### Introduction

Orthostatic hypotension (OH) is a key risk factor for falls in over 65s. Accurate assessment is imperative to reducing long hospital stays. Management of OH in 2017 was audited by the Royal College of Physicians highlighting key methods for recording OH. This Quality Improvement Project (QIP) investigated the documentation, assessment and management of OH in a large district general hospital (DGH).

#### Methods

Patients with a primary diagnosis of fall on the Frailty Assessment Unit (FAU) and were transferred from the Medical Emergency Assessment Unit (MEAU) were audited using proformas to collect data during the year February- March 2020. In addition to this, clinical staff were retrospectively audited regarding their methods to record blood pressure.

#### Results

9 patients were audited during February - March 2020, 78% were females and 22% were males, Age range was 75-94 years. The number of times blood pressure was recorded ranged between 0-4. 89% had L/S BP requested by the FAU team. Of these only 22% patients had their l/s bp recorded on the day requested whilst 11% failed to record one at all. 89% in FAU had medication reviews and all of these were documented.

100% of the nursing team were able to correctly identify how long patient should lie down before their BP should be recorded. 33%(n=3) answered correctly the duration at which the patient should stand for their 1st recording. 67% answered correctly the duration at which the patient should stand for their 3rd recording.

#### Conclusions

OH is a preventable risk factor rigorous assessment and management should be undertaken in MEAU by clinicians. Nursing teams need to be retrained in how to measure L/S BP with a standard method used throughout the trust. Documentation and medication review should be robust by clinicians.

## CLINICAL QUALITY: PATIENT SAFETY (Abstract 204)

### Direct acting anticoagulants and fragility hip fractures

M Khan; I Looby; M Ali Fazal

*UCL Medical School, University College London; Royal Free London NHS Foundation Trust*

#### Background

Surgery is often delayed in patients who are taking direct-acting oral anticoagulants (DOAC). The purpose of our study was to compare the outcomes of elderly hip fracture patients taking DOACs with those not on any anticoagulants.

#### Methods

A retrospective comparative analysis of patients on DOACs and those who were not on any anticoagulants was performed. There were 47 patients in each group. Data was collected from electronic patient records and the local hip fracture database. Time to surgery, haemoglobin drop, blood transfusion, length of stay, wound oozing and 30-day mortality were recorded.

#### Results

The mean age in the DOAC group was 84.9 years and 84.2 years in the control group. The mean Charlson Morbidity Index for the DOAC group was 7.87 and was 5.64 for the control group ( $p < 0.05$ ). The mean time to surgery was 49.5 hours in the DOAC group, and 31.3 hours in the control group ( $p < 0.05$ ). The mean haemoglobin drop for DOAC patients was 16.9 g/l, and 15.9 g/l for control group ( $p > 0.05$ ). Seven (14.6%) patients required blood transfusion in DOAC group while 6 (12.5%) in the control group ( $p > 0.5$ ). The mean length of stay in patients on DOACs was 14.6 days, and 18.1 days in the control group ( $p > 0.5$ ). The 30-day mortality in patients on DOACs was 12.7%, and 4.2% in patients who were not on DOAC ( $p > 0.5$ ). There were five oozy wounds in DOAC group, and none in the control group ( $p < 0.5$ ).

#### Conclusion

There was no significant difference in haemoglobin drop, transfusion rate, length of stay and 30-day mortality but a delay in surgery and a higher rate of oozy wounds in DOAC group. Our results demonstrate that a surgical delay of about 24 to 48 hours in elderly patients with hip fractures on DOACs is a safe approach.

## CLINICAL QUALITY: PATIENT SAFETY (Abstract 329)

### **TRIPPER: Trying to Reduce Inappropriate Prescribing in Patients who are Elderly and at Risk of falls**

**A O'Kane; N McGarry; J Baillie; R Plumb**

*Care of the Elderly, Belfast City Hospital*

#### Introduction

Falls in older adults are common, and a major cause of mortality and morbidity. Polypharmacy is associated with a greater number of falls and is prevalent but preventable. The American Geriatrics Society Beers Criteria for Potentially Inappropriate Medication (PIM) Use in Older Adults are used worldwide. This project focused on Table 3 of the 2019 Beers Criteria which recommends an explicit list of PIMs to be avoided in older adults with a history of falls. We aimed to increase documented discussion about PIMs on discharge letters for elderly patients at risk of falls over 6 weeks.

#### Method

A retrospective review was undertaken to define baseline data on falls, PIMs and documented discussion of PIMs on discharge letters.

Stickers for Kardexes were introduced to highlight PIMs for review. A table documenting discussion of PIMs was incorporated to discharge letter templates. Data was then collected on falls, PIMs and documented discussion of PIMs on discharge letters over 6 weeks.

#### Results

Of patients discharged over 10 weeks, 44% had a history of falls. Of patients with a history of falls, 73% were taking at least one PIM pre-admission.

Following intervention, the median percentage of discharge letters with documented discussion of PIMs increased from 4% to 30%. Following intervention, there was an 11% greater average reduction in prescribed PIMs on discharge in patients with a history of falls.

#### Conclusion

We confirmed a significant burden of falls and PIMs in our patient population. Our intervention increased documentation of PIM discussion and reduced the volume of PIMs prescribed on discharge. Communicating PIM discussion on discharge letters encourages deprescribing; informs primary care and future admissions; and promotes patient centred decision-making in this important risk area. Further work includes collecting feedback from primary care and introducing a PIMs review table to discharge letter templates throughout the hospital.

## CLINICAL QUALITY: PATIENT CENTERDNESS (Abstract 351)

### Reducing anticholinergic burden through pharmacist review

H Stonehouse

#### Introduction

Many drugs commonly prescribed to elderly patients have anticholinergic properties, which can lead to adverse effects. Anticholinergic burden (ACB) is the cumulative effect on an individual taking medication with anticholinergic activity.<sup>1</sup> Measures have been developed to quantify anticholinergic burden and should be considered as an important component of medication management in elderly patients.<sup>2</sup>

#### Objectives

- Identify number of patients on medications with anticholinergic activity
- Calculate anticholinergic burden score on admission and on discharge.
- Evaluate if pharmacist review reduces ACB score on discharge

#### Method

Data collection on prescribed medications for patients on the elderly care ward was recorded through the month of March 2019. The ACB score was calculated using the ACB calculator on admission for each patient following the ward pharmacist's review. The ACB score was recalculated on discharge.

#### Results

70 patients were reviewed by a Pharmacist on admission. 61% were taking medications with anticholinergic activity. 24 patients admitted had anticholinergic side effects which could have contributed to their hospital admission. On discharge the number of patients on anticholinergic medications reduced to 42%. 7 patients had ACB score >3 on admission which were reduced to 0. There was a further 42% reduction in patients with ACB score of 3.

#### Conclusions

Evidence of anticholinergic adverse events in the elderly is growing. Various interventions, including pharmacist review and use of deprescribing tools has demonstrated significant reduction of anticholinergic prescribing.<sup>3</sup> Anticholinergic burden has been reduced through Pharmacist medication review and use of the ACB calculator in this project.

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## CLINICAL QUALITY: CLINICAL EFFECTIVENESS (Abstract 354)

### Assessment of Vision in Older Patients Admitted to Hospital Following a Fall

**M Rahimzadeh, A Moseley**

*St George's University Hospitals NHS Foundation Trust*

#### Introduction

People with reduced visual acuity are twice as likely to fall as those with normal eyesight. Accordingly, NICE guidelines recommend assessment of vision as part of a multi-factorial risk assessment in older people who present for medical attention because of a fall.

#### Methods

We included all patients admitted to a senior health ward at St George's hospital because of a fall. A baseline audit was conducted in May 2020. Our primary intervention was a departmental teaching session (first cycle data collection 27/06/20 - 23/07/20). Our secondary intervention was designing a clerking proforma to include a section for sensory impairment (second cycle data collection 24/07/20 - 31/07/20).

#### Results

Our baseline audit found that 0% of 24 patients admitted to the ward with a fall had any form of visual assessment. We subsequently trialled the Look out! Bedside vision check for falls prevention recommended by the Royal College of Physicians. Using this simple tool, we found 22% (n=2) of screened patients had significantly impaired vision with one patient's visual acuity being counting fingers. Following our primary intervention, 50% (n=7) of patients had some form of visual assessment on admission to the ward and after introduction of the proforma, this increased to 56% (n=5). Visual risk factors were identified in multiple patients, including outdated glasses prescriptions.

#### Discussion

Identifying reversible visual risk factors may reduce recurrent falls and hospital admissions in older patients. A simple teaching session was found to be an effective intervention, however a proforma may result in more sustainable and longstanding improvements. The reduction in ophthalmology and optometry services during the Covid-19 pandemic will inevitably increase prevalence of visual risk factors. Examples include delayed annual eyesight tests and suspended elective cataract operations. It is therefore more important than ever to ensure assessment of vision in older patients presenting with falls.

## CLINICAL QUALITY: CLINICAL EFFECTIVENESS (Abstract 356)

### Prevalence of falls in Geriatric Medicine Wards

A Younas, S Munir, A Michael

*Russells Hall Hospital*

#### Introduction

Falls are one of the common causes for an elderly patient to attend the Emergency Department. The aim of this audit is to assess the prevalence of falls and falls assessment in patients admitted to Geriatric Medicine Wards including Frail Elderly Assessment Unit, Frailty Short Stay Unit and General Geriatric Ward.

#### Methods

A snapshot audit; all patients who were in the Geriatric Medicine Wards in a UK teaching hospital in a specified day were included. Notes were reviewed to collect the demographics, and certain aspects of falls assessment; reason for admission, number of falls in the last six months, postural BP measurement, identification of the cause of falls, medications review and physiotherapist and occupational therapist review.

#### Results

69 patients were in the wards on the day of audit. 36/69 patients (52%) had falls in the last 6 months; of these 24(67 %) had 1-2 falls and 12(33 %) had more than 2 falls. 26/69(38 %) were admitted because of a fall; 23(64 %) females and 13(36 %) males. 50 % had their postural BP measurement recorded. The cause of fall was documented in 28/36 patients (78%). Medication review was documented in 25/36 patients (69%). Physiotherapy and occupational therapy assessment were done for 67% in first 2 days.

12 of the 19 patients (63 %) in the Frail Elderly Assessment and Frailty Short Stay Units (front door Geriatrics) were admitted because of fall.

#### Conclusions

- More than one third of the patients in the Geriatric Medicine Wards were admitted because of a fall and more than half had history of falls in the previous six months.
- Training of the staff is crucial to provide 'comprehensive' falls assessment, diagnose and manage the high workload of falls, especially at the front door, and reduce the risk of future falls.

## CLINICAL QUALITY: IMPROVED ACCESS TO SERVICE (Abstract 360)

### Stay Steady Virtual falls reduction service: a result of COVID-19

H Hyett; A Lloyd; C Williams; K Jones; R Jorgenson-Corfield; P Edwards; J Wood

Cardiff and Vale University Health Board; Public Health Wales; Cardiff Metropolitan University

#### Introduction

Due to the COVID-19 pandemic in 2020, many primary care services have been forced to suspend or find alternative arrangements; including over-the-phone and virtual alternatives. Consequently, a falls prevention service (Stay Steady) within Cardiff and Vale University Health Board has developed a virtual falls clinic.

#### Stay Steady's Story

Previously, patients would self-refer and attend an initial appointment which included multifactorial falls assessment and intervention. Patients would be prescribed strength and balance exercise and were reviewed at 8 weeks. Due to COVID-19 this service was forced to suspend.

Many older adults have been shielding or isolating during the pandemic, leading to lower levels of activity and potentially a decline in physical function that may lead to an increased falls risk. Therefore, the Stay Steady service has launched a virtual alternative to its face-to-face services to provide guidance to those who are a lower risk of falls and to ensure their falls risk does not increase during this time.

#### The Research' formal service evaluation of the Stay Steady Service

As there is a lack of literature surrounding virtual falls reduction services, the evaluation will seek to compare the previous clinic model to the virtual model. Outcomes to be compared will relate to:

- Effectiveness of the service (fall rates, functional outcome measures and patient satisfaction)
- Efficiency of the service (cost to patient and the health board as well as time consumption to the physiotherapists, administration staff and the patients with regards to waiting times).
- Demographics (gender, age category, ethnicity and geographical location).
- An additional follow-up at 6months to identify levels of engagement with prescribed exercise and additional recommendations made by the physiotherapist.

The service evaluation will be conducted by an external student researcher from Cardiff Metropolitan University as part of the KESS2 East research funding scheme.

## CLINICAL QUALITY: PATIENT SAFETY (Abstract 361)

### Improving measurement of lying and standing blood pressure - A quality improvement project S Patel; Y Kumari Gurung; C Yau

*Stoke Mandeville Hospital*

#### Introduction

Inpatient falls are the most commonly reported patient safety incident and can result in significant morbidity like hip fractures and brain injuries. Postural hypotension is one of the factors contributing to falls. Lying and standing blood pressure (LSBP) recording is one of the three standards set out in falls C-QUIN CCG7, mandatory for all hospitals to prevent inpatient falls. Payment threshold is met through 80% compliance to these standards.

#### Method

Patients admitted to the Geriatric and Ortho-geriatric wards, at Stoke Mandeville Hospital were included in this quality improvement project. The sample included all admitted patients aged 65 years or older, and patients aged 50 to 64 years who were judged by a clinician to be at higher risk of falling because of an underlying condition with length of stay at least 48 hours. Patients that were excluded were bedbound, hoist dependent throughout their stay or had died during their admission. The interventions included distributing to the staff LSBP information posters and lanyard cards taken from the Royal College of Physicians website. Additionally, we designed laminated information sheets for the bedside nursing folders and educated staff on the importance of LSBP.

#### Results

In December 2019, 32 out of 70 patients (46%) had their LSBP measured. Following our intervention in January 2020, 39 out of 44 patients (86%) had their LSBP measured.

#### Conclusion

A programme of information and education was effective in improving the rate of measuring LSBP. Suggested interventions to ensure sustained compliance included developing the role of Practice Development Nurses for educating allied health professionals on taking LSBP and mandatory training on recording LSBP readings on electronic observation system.

## CLINICAL QUALITY: PATIENT SAFETY (Abstract 365)

### Developing and Implementing an Inpatient Falls Assessment Tool across NHS Forth Valley.

MJ Rodgerson; L McNeil; L McKay

*Forth Valley Royal Hospital*

#### Introduction

Falls are an important cause of morbidity in elderly inpatients and over 240,000 occur in UK hospitals annually<sup>1</sup>. This work aimed to improve the assessment and communication amongst the MDT regarding inpatient falls, whilst simultaneously educating new staff in falls assessment.

#### Methods

We developed an assessment tool for initial responders with reference to the Royal College of Physicians (RCP) Audit on Inpatient Falls recommendations<sup>2</sup>. During 3 PDSA cycles over 6 weeks in 2 wards, this evolved to include fields for medication-review, the time next-of-kin contacted, fall location and the availability of the call-buzzer. The format evolved into a fluorescent sticker to highlight recurrent falls through glancing at case-notes.

Completion of each field was audited weekly. Feedback was sought from the MDT throughout.

#### Results

Doctors and Nurse Practitioners reported the tool was a helpful framework. Nursing staff reported it improved handover by making outstanding elements of the assessment clearer. The wider MDT indicated it made recurrent falls (and the need to investigate/intervene) obvious from the case-notes.

A significant improvement in documentation was noted during the intervention. Baseline data showed the location and circumstances of falls were clearly recorded in 20% of cases (n=7). NEWS and GCS were recorded in 40% (n=5). In weeks 5 and 6 all fields were completed for all reviews (n=7).

#### Conclusion

We demonstrate a simple method for improving falls assessment whilst engaging and educating the MDT. Following encouraging initial results, it was implemented across all inpatient areas in our acute and community hospitals. Evaluation is ongoing to gauge whether further modifications can be made to further improve the prevention of, and care following, inpatient falls.

1. NHS Improvement. The Incidence and Cost of Inpatient Falls in Hospitals. Available from [https://improvement.nhs.uk/documents/1471/Falls\\_report\\_July2017.v2.pdf](https://improvement.nhs.uk/documents/1471/Falls_report_July2017.v2.pdf). Accessed 10/08/2020.
2. RCP. National Audit of Inpatient Falls. Available from <https://www.rcplondon.ac.uk/projects/falls-workstream-national-audit-inpatient-falls>. Accessed August 12/08/2020.

## CLINICAL QUALITY: CLINICAL EFFECTIVENESS (Abstract 366)

### **Audit assessing the use of the Fracture Risk Assessment Tool and Bone Protection in Geriatric patients admitted with falls**

**M Koundu; Z Khan; R Butt**

*Friarage Hospital; South Tees Hospitals NHS Foundation Trust*

#### Introduction

This was a regional audit evaluating the use of the Fracture Risk Assessment (FRAX) tool and Bone Protection, when assessing risks for fragility fractures in geriatric patients admitted with falls (NICE guideline 146). The aims of this audit were to:

1. Evaluate the use of the Fracture Risk Assessment (FRAX) tool when assessing risk for fragility fractures in geriatric patients admitted with falls.
2. Assess whether geriatric patients admitted with falls were being assessed for Vitamin D and Calcium deficiency.

#### Method

A sample of 50 patients over the age of 65 years, who were admitted to The Conquest Hospital in Hastings following a fall from 01/01/2020-01/06/2020 were identified. Patient notes were analysed using the hospital database and were checked to see if:

1. The FRAX Score had been calculated for patients.
2. Patient Vitamin D and Calcium Levels were checked.

Following the first audit cycle a 'Falls Risk Assessment Tool' was created and introduced into clinical practice. This included the FRAX Score, Calcium and Vitamin D levels in geriatric patients admitted with falls. A re-audit was then undertaken.

#### Results

The results following the first audit cycle showed that 0% of patients admitted following a fall did not have a FRAX score calculated. This was increased to 64% following the introduction of 'Falls Risk Assessment Tool'. Only 42% of patients had their Vitamin D level tested and this increased to 78% with the introduction of the 'Falls Risk Assessment Tool'.

#### Conclusion

Overall, the results of this audit led to an increase in the use of the FRAX tool to identify patients at risk of fragility fractures. In addition, the outcomes of this audit will mean that geriatric patients admitted with falls are being assessed for Vitamin D and Calcium deficiency and are started on appropriate bone protection medications.

## CLINICAL QUALITY: CLINICAL EFFECTIVENESS (Abstract 367)

### Improving Awareness and Recognition of Medication-Related Anticholinergic Burden (ACB) in an Acute Medical Unit.

MJ Rodgerson; L McNeil

*Forth Valley Royal Hospital*

#### Introduction

Anticholinergic burden (ACB) associated with medications is recognised to contribute to adverse outcomes including falls, delirium, cognitive-impairment and death. This work aims to raise awareness of iatrogenic ACB amongst the MDT for patients with brief admissions so opportunities to address it are recognised and taken.

#### Methods

During November–December 2019, 50 patients admitted to our Acute Medical Unit for less than 72 hours following falls were randomly selected and the case-notes reviewed. Those acutely unwell or intoxicated were excluded. For each patient, the number of admission drugs was recorded, and ACB quantified using the Anticholinergic Burden Calculator score<sup>1</sup>. A score of 3 or greater was considered representative of higher risk<sup>1</sup>. The level of review offered by the pharmacy team (i.e. technician or pharmacist review) was recorded. Due to COVID-19, planned education sessions for MDT members were disseminated electronically. A pre and post-session ACB awareness questionnaire is being analysed.

#### Results

The average number of admission drugs was 8.3(range: 2-28). The average ACB score was 1.86(range: 0-9). Nineteen (38%) had an ACB score of 3 or greater. The proportion of all patients whose medications were reviewed by pharmacy was 52%. Of those, 8(16%) were reviewed by pharmacists and 18(36%) by technicians. Of those with an ACB score of 3 or greater, 2(11%) were reviewed by pharmacists, 10(52%) by technicians and 7(37%) no review. None of the documentation reviewed considered the issue of anticholinergic burden. Our intervention to raise awareness and educate the MDT regarding iatrogenic ACB is currently being evaluated.

#### Conclusion

We have highlighted that iatrogenic anticholinergic burden is an under-addressed problem despite being well recognised. Qualitative and quantitative results of our intervention to educate the MDT will be presented and potential future interventions to address this issue explored.

1. ACB Calculator. Available at <http://www.acbcalc.com/>. Accessed 11/08/2020.

## CLINICAL QUALITY: PATIENT SAFETY (Abstract 369)

### **Audit of Lying & Standing Blood Pressure Recording of Older Patients in A UK Rural District General Hospital**

**Y Chua; M Seelarbokus; T Abdellatif; J Dunbar**

*Friarage Hospital; South Tees Hospitals NHS Foundation Trust*

#### INTRODUCTION

The National Audit of Inpatient Falls (NAIF) 2017 report by the Royal College of Physicians (RCP) reported over 240,000 hospital inpatients falls during the year 2015/16. Measuring Lying and standing BP (L/S BP) on admission is an important indicator of falls risk for older patients on admission. The 2017 NAIF reported that Friarage Hospital only had a 13% compliance rate.

#### METHOD

This was a prospective audit of the recording of L/S BP in patients aged 65 and above on admission. 52 inpatients were included in cycle one and 31 in cycle two after recommendations were implemented. The RCP NAIF 2017 report and NICE guidance CG161 were used to set the standard, which was a 100% compliance rate.

#### INTERVENTIONS FOLLOWING CYCLE 1:

- RCP L/S BP lanyard cards and RCP guidance were displayed on the ward and distributed to nursing staff.
- Results and guidance were disseminated to nursing and medical teams through teaching sessions' in particularly stressing on:
  - The importance of L/S BP recording
  - RCP recommended method of L/S BP measurement
  - Overview of orthostatic hypotension

#### RESULTS

52 patients were audited in cycle one, with 9 being clinically exempted. L/S BP was recorded for 26 patients (60%). Cycle two included 31 patients, with 1 clinical exemption. The L/S BP was recorded for 26 patients (87%).

#### CONCLUSION

The results of the second audit showed 87% compliance rate following interventions. Although failing to meet the set standard, an increase of 17% was observed in the second cycle which may be the direct result of interventions from the first audit. Limitations included small and differing sample sizes and the difficulties in ensuring L/S BP was done correctly. Further study is required to ensure that the standardised technique and timing recommended by the RCP guidance are followed robustly.



## CLINICAL QUALITY: PATIENT SAFETY (Abstract 373)

### Prevention and management of acute kidney injury in post-operative hip fracture and other orthopaedic surgery patients

**K P Fadahunsi; O Ajayi-Bello; I Allen; M Soufi; K Sakthivel; P Mathew**

*Lincoln County Hospital*

**Introduction:** Acute kidney injury (AKI) is a common cause of morbidity and mortality in post-operative patients. This quality improvement project was conducted to improve prevention and management of AKI in post-operative hip fracture and other orthopaedic patients.

**Method:** We audited AKI management in eleven post-operative patients (9 hip fracture, 1 washout and exchange of total knee replacement, 1 below knee amputation) in December 2019 in a busy UK general hospital. Audit findings and recommendations to promote local guidelines for AKI management (AKI BOMB) were disseminated to the nurses, junior doctors and other departmental staff through information leaflet, infographic poster and departmental meetings. We conducted a re-audit of ten post-operative patients with AKI (8 hip fracture and 2 shaft of femur fracture) in March and April 2020.

**Results:** Improvement was evidenced in pre-operative intravenous fluid (82% vs 100%), nephrotoxic medication review (71% vs 100%), post-operative blood tests (81% vs 100%), initiation of AKI BOMB (27% vs 100%), urine dipstick (18% vs 100%) and ultrasound scan (54% vs 100%). There was also a noticeable reduction in the incidence of the most severe form of AKI (46% vs 0%). However, immediate post-operative fluid prescription, daily fluid status review and bladder scan remained sub-optimal even after the interventions.

**Conclusion:** The quality improvement project led to a considerable improvement in prevention and management of AKI in post-operative hip fracture and other orthopaedic patients. Further interventions, such as integration of AKI guidelines into junior doctors' induction, are required to sustain the gains and address residual gaps in AKI prevention and management.

## CLINICAL QUALITY: PATIENT SAFETY (Abstract 379)

### Postural Hypotension in Older Patients in the Community- an under-recognised problem

S Kar, H Mon

*Hull University Teaching Hospitals NHS Trust*

**Introduction:** Postural hypotension (PH) is common in older people with an incidence of 5-30% and a recognized risk factor for falls. Lying and Standing blood pressure (BP) is routinely checked in patients attending Jean Bishop Integrated Care Centre (ICC), a new community service to provide integrated multi-disciplinary CGA in frailer older people living in Hull. We aimed to ascertain the incidence of PH in frailer older patients in the community and its association with frailty.

**Methods:** Retrospective study of patients, >65 years, who attended ICC, over a month in December 2019. We looked at system 1 and reviewed medical documentation, care plan and observations for any PH, postural symptoms, Clinical Frailty Score (CFS), Co-morbidities and Medications.

**Results:** 80 patients (48 female and 32male), mean age of 80 years, were studied. Most common comorbidities were Diabetes (n=14), Dementia (n=12) and CKD/CCF (n=9).

PH (SBP $\geq$ 20mmHg and/or DBP 10 mm Hg) was detected in 33% (27/80). 88% patients with PH were symptomatic with of postural dizziness and 33% had history of falls. 80% (64/80) had significant frailty and 25/27 patients with PH had mild (33.3%, CFS 5), moderate (40.7%, CFS 6) and severe (18.5%, CFS 7) frailty. All but one patient had no previous PH.

Culprit medications for PH were identified in 59%. Diuretics (n=9), CCB (n=9), beta blockers (n=6), ACEI/ARB (n=6) were the commonest medications and these were either stopped or swapped or reduced.

**Conclusion:** PH in older people in the community is an under-recognized condition. In 3 patients attended in ICC was found to have a new diagnosis of PH. We noticed higher association of PH with frailty and it can be asymptomatic. Routine measurement of postural BP in frailer older community dwellers would help early detection of PH and appropriate intervention including medication optimization to minimize the future falls risk.

## SCIENTIFIC PRESENTATION: FALLS, FRACTURE & TRAUMA (Abstract 199)

### Does social participation protect against falls and frailty in Malaysia?

S Risbridger; R Walker; M P Tan.

Newcastle University; Northumbria Healthcare NHS Foundation Trust; University of Malaya

#### Introduction

The global population is ageing rapidly, with most dramatic increases in developing countries like Malaysia. Older people face geriatric conditions such as frailty, with falls being an outcome of frailty. Greater social participation could reduce the incidence of frailty, falls, and recurrent falls. The aim is to identify the relationship between social participation and frailty, and social participation and falls.

#### Methods

Data from 1383 individuals, aged 55 years and above, from the Malaysian Elders Longitudinal Research (MELoR) study were included. Fallers were individuals who reported to have fallen in the previous 12 months. Frailty was defined using an operationalised Fried phenotype, with 3 of: low body mass index, cognition, physical activity, hand-grip, and walking speed. Social participation was determined with employment status, social network, and community activity.

#### Results

Fallers comprised 22.9% of the population, 7.4% were recurrent and 9.3% frail. Social isolation (OR= 2.119; 95% CI=1.351-3.324), and non-engagement in community activities (OR=2.548; 95% CI=2.548-5.865) were associated with increased risk of frailty. Falls risk increased with social isolation (OR=1.327; 95% CI=1.004-1.754), but not falls recurrence.

#### Conclusions

Previous studies do not agree whether social participation may help or hinder the geriatric population. Frailty is associated with all three social participation measures; after regression it was found that risk of frailty increases with increased social isolation, and non-participation in community activities. Falls is associated with increased social isolation. Reasons for discrepancies between the two falls outcomes include the tendency for Malaysian families and healthcare providers to limit activities of older people. Growing prevalence of frailty and falls within ageing populations could be prevented with social interventions therefore reducing multimorbidity and the burden on healthcare providers.

## SCIENTIFIC PRESENTATION: FALLS, FRACTURE & TRAUMA (Abstract 207)

### Non-pharmacological Treatment of Bone Health in Fallers

**E Moran**

*Huddersfield Royal Infirmary*

#### Introduction

1 in 2 women and 1 in 5 men will suffer a fragility fracture. Research into calcium and vitamin D supplements has found no consistent evidence to suggest that they reduce the risk of osteoporotic fractures. There has been little research to suggest that dietary calcium is effective at reducing the risk osteoporotic fractures, but supplements have been linked to increased risk of cardiovascular disease and urinary stones. Bisphosphonates have been shown to reduce the risk of osteoporotic fractures and are usually taken in combination with calcium and vitamin D supplements given that deficiencies must be corrected prior to starting. This study set out to assess the dietary calcium intake of patients who attend the falls clinic and explore their attitudes towards dietary change, as an alternative or adjunct to a calcium and vitamin D tablet.

#### Methods

Data was collected during private interviews conducted with patients who attended the falls clinic. The Edinburgh University Centre for Genomic and Experimental research (CGEM) food frequency calculator was used to calculate dietary calcium intake. Microsoft Excel was used to collate and analyse the data.

#### Results

No association was found between dietary calcium intake, age and sex. We did find that mean dietary calcium intake was significantly less than the recommended daily amount for adults with osteoporosis, with 80% not getting their recommended daily intake ( $p < 0.05$ ). We identified patients who don't receive a calcium and vitamin D supplement as an at-risk group who would benefit from advice on sources of dietary calcium and 83% of patients said that they would be interested in a leaflet on sources of dietary calcium.

#### Conclusion

This study has identified a group of patients who will benefit from a leaflet on sources of dietary calcium and as result improve their bone health.

## **SCIENTIFIC PRESENTATION: FALLS, FRACTURE & TRAUMA (Abstract 215)**

### **National Audit of Inpatient Falls (NAIF): Developing a continuous national clinical audit J Whitney; E Davies; C Gallagher**

*Kings College London; Royal College of Physicians London; Royal College of Physicians London*

#### **Introduction**

In 2018 the Royal College of Physicians was commissioned to implement a continuous audit of inpatient hip fractures across acute, community, mental health and specialist trusts in England and Wales. Clinical audit seeks to improve clinical care by measuring performance against standards. The results provide a scientific method for clinical teams to identify areas for service improvement.

#### **Method**

This pilot phase of the new continuous NAIF tested the feasibility of using the National Hip Fracture Database (NHFD) to identify patients aged over 60 who had sustained a hip fracture while an inpatient in an NHS trust / health board. When NHFD identified a hip fracture resulting from an inpatient fall, NAIF audit teams were alerted to the case and asked to complete a small dataset of questions about the circumstances of the fall and post fall management. Descriptive statistics were used to analyse the findings.

#### **Results**

All health boards in Wales and 95% of acute, 48% mental health, 8% specialist and 68% community trusts in England participated.

Completion rates were excellent with only one missing question from one of the 901 cases captured in the first 8 months of 2019.

#### **Conclusion**

This is a hugely encouraging result and local falls teams are to be commended for their participation and enthusiasm.

NAIF has demonstrated the feasibility of continuously auditing inpatient hip fracture cases in a range of settings. The next steps have been to build the dataset to include more questions about the fall prevention measures in place prior to the inpatient hip fracture. We hope that audit data will be used to inform local quality and service improvement programmes.

## SCIENTIFIC PRESENTATION: FALLS, FRACTURE & TRAUMA (Abstract 350)

### Comparing the effects of single-task versus dual-task balance training on gait harmonic ratio and balance status in older adults

1.S Javadpour; 2.E Sinaei; 3.A Motealleh; 4.R Salehi; 5.S Zahednejad

1,2,3. Shiraz University of Medical Sciences (Shiraz, Iran); 4. Iran University of Medical Sciences (Tehran, Iran);

5. Ahvaz Jundishapur University of Medical Sciences (Ahvaz, Iran) London

#### Introduction

Declined trunk smoothness during walking is an underlying mechanism of postural instability among older adults which can increase risk of falls. The smoothness of walking is calculated as the harmonic ratio (HR) of trunk accelerations for a given stride recorded by a body-mounted accelerometer, with higher HRs representing greater gait smoothness. The aim of the present study was to evaluate and compare the effects of single-task and dual-task balance exercises on the HR index and balance status of healthy older adults with mild balance impairments.

#### Method

In this randomized clinical trial, a convenience sample of 69 asymptomatic older adults over 65 years old was recruited and randomly allocated to three parallel groups of single-task training, dual-task training and control (no intervention). Participants in the dual-task balance training group received the same balance exercises given to the single-task group (18 sessions over six weeks), but concomitantly performed a cognitive task during exercises. To measure the gait HR, trunk linear accelerations were collected along vertical, anterior/posterior, and medial/lateral axes by a tri-axial accelerometer, before and after the trial. Balance performance was also assessed through Fullerton Advanced Balance scale, Timed Up & Go test, Activities-specific Balance Confidence, and Gait Speed under single- and dual-task conditions.

#### Results

Pre/post assessments showed statistically significant improvements in all variables in both balance training groups. In the control group only the medial-lateral direction of dual-task HR and ABC changed significantly. Between-group comparisons revealed statistically significant differences in the mean change of all variables between the interventional groups and the control group, but no significant difference was reported between the balance training groups.

#### Conclusion

The results of the present study showed that both single-task and dual-task balance training can improve gait and balance in older adults with mild balance impairments.

**SCIENTIFIC PRESENTATION: FALLS, FRACTURE & TRAUMA (Abstract 353)**

**Poster withdrawn**

## SCIENTIFIC PRESENTATION: FALLS, FRACTURE & TRAUMA (Abstract 358)

### Can smartphone Technology be used to support an Effective Home Exercise intervention to prevent falls amongst community dwelling

**Hawley-Hague, H; Tacconi, C; Mellone; Martinez, E; Easdon, A; Yang, F; Su, T; Mikolaizak, A; Chiari, L; Helbostad, J; Todd C.**

*University of Manchester; University of Bologna; University of Bologna; Manchester Local Care Organisation; Manchester Local Care Organisation; University of York; University of Manchester; Neura; The University of Bologna; The Norwegian University of Science and Technology; the University of Manchester*

#### Introduction

Strength and balance training is effective in reducing rate/risk of falls. However, patients do not carry-out the required unsupervised home-exercise needed for adequate dose. We explored whether co-designed smartphone apps can support patients to adhere to their programme at home. Primary outcome was feasibility of intervention, study design and procedures.

#### Method

A two-arm, pragmatic feasibility randomised controlled trial was conducted with five falls/community rehabilitation teams. We recruited patients aged 50+ years eligible for a falls rehabilitation exercise programme. Patients received standard service (CG), or standard service plus motivational smartphone app (IG). Key outcome measures were Berg balance scale and adherence. Interviews with health professionals/participants further explored feasibility of the intervention and study procedures. Primary analyses is descriptive.

#### Results

24 patients were randomised to CG, 26 to IG, mean age 77.6 (Range 62 to 92) years, 36 (72.0%) were female, 38 (76%) white British. We recruited 37.5% of eligible participants, although fewer participants were recruited than planned. 77% completed their full exercise programme (including use of the app), with only one participant withdrawing from using the app. There was loss of data across both groups due to 18 episodes of acute illness and 11 hospital admissions. Mean exercise adherence (adherence scale) indicated higher adherence in the IG at 3 (17.65, SD 6.84 vs 13.09, SD 6.52) and 6 months (15.25 SD 7.79 vs 14.87 SD 7.79). There was a mean 4.87 (SD6.58, Cohen D=0.41) point difference between groups in change in BERG balance score from baseline to 3 months and mean 3.95 (SD5.72, Cohen D=0.52) point difference from baseline to 6 months, the IG made larger improvements. There were no serious adverse events linked to the intervention. Interviews indicated patients and health professionals were willing to continue to use the apps.

#### Conclusion(s)

Although recruitment was slower than expected, study procedures and intervention were feasible.



## SCIENTIFIC PRESENTATION: FALLS, FRACTURE & TRAUMA (Abstract 364)

### Nutritional Care Practices in Falls Prevention Services

**M Dabbous; C Baldwin, C. E Weekes**

*King's College London; King's College London; Guy's and St. Thomas' NHS Foundation Trust*

#### Introduction

Risk factors for falls and functional decline with increased age are loss of muscle mass and strength, and malnutrition. Key contact with nutritionally vulnerable older adults include multidisciplinary teams working within falls services, however nutrition appears limited within these services. This study aimed to identify the current nutritional care practices in falls services across England.

#### Methods

From September 2019 to January 2020 a cross-sectional online survey of falls services across England was circulated via falls prevention and physiotherapy networks, social media and by email. Questions focussed on the inclusion of nutritional care, types of nutritional practices and the staff delivering any routine nutritional care. Data were collected on service demographics. Descriptive data were reported and analysed using Microsoft Excel and SPSS v.23

#### Results

Seventy-three survey responses were returned and results from 63 respondents representing falls services across England were included for analysis. Thirty-five (73%) respondents were physiotherapists and 31 (65%) falls services were community-based. Forty-eight (76%) respondents reported that they did not have a nutrition care policy and thirty-five (65%) services did not involve a dietitian. Nutritional screening was most commonly performed by physiotherapists (N=24; 61%), nurses (N=21; 54%), or occupational therapists (N=17; 44%). Physiotherapists primarily provided written information regarding nutrition as either falls specific leaflets which included nutrition information (73%, n=37) or general leaflets which included nutrition information (67%, n=34) or verbal information related to nutrition (73%, n=37). Eleven (22%) reported neither providing written nor verbal nutritional information within their service.

#### Conclusion

This survey indicates a lack of policy on nutritional management within falls services in England and limited inclusion of nutritional practices. Nutrition practices were primarily carried out by HCPs who likely have limited experience in nutritional care. Future research should explore the potential for empowering physiotherapists and other HCPs to deliver timely and effective nutritional care in falls services.

## SCIENTIFIC PRESENTATION: FALLS, FRACTURE & TRAUMA (Abstract 368)

### Active ageing in the outdoors? preliminary results from the ENJOY Seniors Exercise Park project in the community

**P Levinger; M Panisset; J Dunn; T Haines; B Dow; F Batchelor; S Biddle; G Duque; K D. Hill**

*National Ageing Research Institute, Melbourne Australia; School of Primary and Allied Health Care, Monash University, Melbourne Australia; Centre for Health Research, Institute for Resilient Regions, University of Southern Queensland, Springfield, Queensland; Australian Institute for Musculoskeletal Science (AIMSS), Melbourne Medical School, Melbourne University, Melbourne Australia; Rehabilitation, Ageing and Independent Living Research Centre, Monash University, Melbourne Australia*

#### Introduction

The ENJOY project (Exercise interveNtion outdoor project in the cOmmunitY for older people) is a community research project aiming to actively promote community well-being through the provision of a unique exercise and social support program using outdoor multimodal exercise equipment (the Seniors Exercise Park <https://youtu.be/PaYuCMtnlYk>).

#### Method

Eighty older people (age  $72.8 \pm 7.5$  years, 81.3% women) recruited from the general community and independent residential living units underwent a three months supervised outdoors exercise program twice per week at three sites in Melbourne, Australia. Physical activity level (Community Healthy Activities Model Program for Seniors (CHAMPS)), physical function (30-second sit to stand test, two-minute walk test, 4 metre walk test, step test) and health related quality of life (EQ-5D-5L), wellbeing (WHO-5), UCLA 3-Item Loneliness Scale, Fear of Falls (Short FES-I), falls risk (FROP-Com), Geriatric Depression Scale, Lubben Social Network Scale) were measured at baseline and at completion of the 3 month program. Repeated measures ANOVA was used to compare the outcome measures between the two time points.

#### Result

High adherence (86%) to the program was reported with a significant increase in physical activity level following the intervention (CHAMPS,  $p < 0.01$ ). Significant improvements were also demonstrated in all physical function measures, quality of life, wellbeing, fear of falls, falls risk, depressive symptoms and loneliness ( $p < 0.05$ ).

#### Discussion

The Seniors Exercise Park program integrates multimodal exercise stations that target balance (unstable/uneven surfaces), strength, flexibility and functional movements. This offers an important combination of different physiological aspects to obtain broader health benefits in addition to falls prevention. Results of the ENJOY project suggest the outdoor physical activity program is effective in improving older people's physical function and wellbeing and reduce their risk of falling. The Seniors Exercise Park can be an important public health infrastructure investment in promoting physical activity for older people.

## SCIENTIFIC PRESENTATION: FALLS, FRACTURE & TRAUMA (Abstract 370)

### Falls in the Older Persons with Type 2 Diabetes in the Malaysian Elders Longitudinal Research (MELoR)

**W F Ong; S I B Kamaruzzaman; M P Tan**

*Department of Medicine, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia*

#### Introduction

Older persons with diabetes are at increased risk for falls and are more susceptible to fractures, poorer rehabilitation, and recurrent falls.

#### Objective

The aim of the study is to determine prevalence of falls and its associated factors among individuals with diabetes in greater Kuala Lumpur (the capital city of Malaysia) using the Malaysian Elders Longitudinal Research (MELoR) study first wave dataset.

#### Methods

Participants of MELoR study were community dwelling adults aged  $\geq 55$  years, selected through stratified random sampling from three parliamentary constituencies. Baseline data was obtained through face-to-face interviews in participants' homes using computer-assisted questionnaires. During their baseline assessments participants were asked whether they have experienced fall in the preceding 12 months. Diabetes was defined as self-reported physician-diagnosed diabetes, prescriptions of diabetes medications and HbA1c  $\geq 6.3\%$ .

#### Results

Diabetes was present in 44.4% of the overall 1610 participants. The prevalence for fall was 25.6%. Recurrent falls (odds ratio (OR) 1.78; 95% confidence interval (CI) 1.22  $\pm$  2.57) was more common among diabetics. Following adjustment for potential confounders, osteoporosis (OR 2.58; 95% CI 1.31  $\pm$  5.08) and dizziness (OR 1.50; 95% CI 1.01  $\pm$  2.23) were independent risk factors for falls. Better instrumental activities of daily living (IADL) score had a protective effect on falls risk (OR 0.75; 95% CI 0.58  $\pm$  0.97).

#### Conclusion

The presence of osteoporosis and dizziness was associated with increased risk of falls among Malaysians  $\geq 55$  years residing in the Klang Valley, with one in four individuals within this population reporting at least one fall in the preceding year. Our findings will need to be confirmed in future prospective follow-up of this cohort.

## SCIENTIFIC PRESENTATION: FALLS, FRACTURE & TRAUMA (Abstract 372)

### Life After Falls- A Prospective Study to Determine the Effect of Falls on Physical and Psychological Status Among Older Malaysia

L C Fatt; S Mat; K H Min; S Nyman; K Morgan; N I Saedon; M I Zakaria; M P Tan

*"Department of Medicine, Faculty of Medicine, University of Malaya; Bournemouth University, United Kingdom; Perdana University-Royal College of Surgeons in Ireland School of Medicine, Malaysia*

#### Introduction

While it is considered well-established that falls are associated with reduced physical and psychological function, this has yet to be accurately quantified in international studies. The protocol of the Life After Falls (LiAF) study and preliminary data from this study are presented here.

#### Methodology

The LiAF study aims to recruit 150 fallers and 50 non-fallers from the catchment population of the University of Malaya Medical Centre. Individuals aged  $\geq 65$  years who had a fall in the previous two months would be recruited from the emergency department, primary care, medical wards and community health event. Physical performance was determined using grip strength, timed-up-and-go (TUG) and functional reach. Psychological status was determined using the 21-item Depression, Anxiety and Stress Scale (DASS-21). Social participation and social network will be assessed using the Keele's Assessment of Participation and the Lubben's Social Network Scale. Haemodynamic responses will be evaluated using a complete haemodynamic monitoring system (Taskforce monitor) to determine postural and autonomic responses. Home environmental assessments will also be carried out. Participants will be re-evaluated at three months to determine change in physical and psychological status. Individuals with head injury and lower-limb fractures will be excluded.

#### Results

Results The baseline results of 59 fallers ( $76.3 \pm 7.8$  yrs), and 50 non-fallers ( $72.8 \pm 7.8$  yrs) are presented. There was no difference in gender ( $p=0.02$ ), race ( $p=0.36$ ), education level ( $p=0.51$ ), and marital status ( $p=0.07$ ) between fallers and non-fallers. Fallers were older ( $p=0.02$ ) with longer TUG time ( $p=0.01$ ) and poorer grip strength ( $p<0.001$ ). There were no significant differences in depression ( $p=0.25$ ), anxiety ( $p=0.16$ ), and stress ( $p=0.44$ ) levels between fallers and non-fallers.

#### Conclusion

Factors which influence changes in physical and psychological at three-month follow-up after fall will be determined in future. Our study will help identify cross-cultural differences in responses to falls and inform the direction of future fall prevention strategies.

**SCIENTIFIC PRESENTATION: EPIDEMIOLOGY (Abstract 376)**

**Poster withdrawn**

## SCIENTIFIC PRESENTATION: FALLS, FRACTURE & TRAUMA (Abstract 378)

### Rethinking 'off legs' -Think of Spinal Cord

M A Hashmi; A A Sheikh

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Falls are the main cause of morbidity and mortality in the elderly, most often present as multifactorial complex phenomenon. We are presenting a case series of falls 'being off leg' seen over last six months who were diagnosed with variable spinal cord conditions. It is to emphasise the importance of early recognition and timely, appropriate intervention in spinal cord injuries of variable etiology for better outcomes.

#### Case 1:

A 85 years female, with known Atrial Fibrillation (AF) presented with sudden onset of bilateral leg weakness, fall and a complete sensation loss at T10 -L1, double incontinence MRI spine did not show cord compression. MRI STIR sequence was arranged after 48 hours that confirmed lower thoracolumbar spinal infarct.

#### Case 2:

A 80 years old, frail gentleman with background of AF and frequent falls, presented unwell to ED with urosepsis. He developed acute urinary retention and autonomic instability followed by new onset of bilateral leg weakness followed by quadriplegia. MRI contrast showed cervical spine abscess secondary to MRSSA bacteraemia and cervical spine infarct. Patient did not survive the illness.

#### Case 3:

A 72-year male with AF on Apixaban presented with urosepsis post prostate biopsy. He had a fall from his hospital bed and was noted to have unilateral limb flaccid paralysis with facial sparing. MRI head and spine showed cervical discitis. He had a poor outcome post spinal surgery with severe disability and permanent tracheostomy eventually.

#### Case 4 :

A 72 years female presented with a week history of lower limb numbness including saddle area and double incontinence. MRI showed L4-5 impingement. Patient was referred to neurologist for out-patient management but deteriorated with recurrent falls and bilateral foot drop on examination. MRI contrast and vessel imaging at this stage showed thoracic spinal fistula requiring emobilization followed by spinal laminectomy.

**SCIENTIFIC PRESENTATION: PARKINSON'S DISEASE (Abstract 380)**

**Poster withdrawn**