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ABSTRACTS

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SCIENTIFIC PRESENTATION: FALLS, FRACTURES & TRAUMA (REF: BH-1134)

Do current guidelines for the rehabilitation of older adults at risk for falls recommend interventions to improve postural stability? A Scoping Review and Gap Analysis

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Introduction: Practice guidelines provide a systematic and critical appraisal of relevant research and provide key practice points and recommendations, thus enabling clinicians to have access to up-to-date clinically relevant information for evidence-based practice. Reviews of guidelines for falls management have previously been performed; however, no review has used gap analyses to investigate whether recommendations are in-line with established models for postural control.

Methods: Searches were completed in MEDLINE (PUBMED), Psych Info, EMBASE, and CINAHL, with additional searches of guideline clearing houses, national governing bodies, and relevant institutions from the UK, USA, and Australia. A gap analysis tool was developed from an established model of postural control, detailing six modifiable domains that affect postural stability (cognitive/ biomechanical/ movement strategies/ dynamic control/ orientation/ sensory function). Recommendations for falls rehabilitation were extracted for narrative synthesis and further assessed using the gap analysis tool.

Results: Searches identified 5029 articles, with 140 articles selected for full text review, of which 19 were included in the final analysis. No guidelines used a model for postural control to rationalise intervention approaches. All guidelines recommended balance and/or strength training, although less than half provided any specific details on types of exercise or programme. Gap analysis identified that within our selected postural control model, guidelines addressed; one(n=2), two(n=13), three(n=3) or four (n=1) of the six identified domains as important for maintaining stability.

Conclusion: Current guidelines recommend strength and balance training; however, few provide specific details on recommended interventions. No guidelines use a theoretical framework for postural stability to justify their recommendations. Gap analysis identified only one third of modifiable domains are addressed by the majority of current guidelines (n=15). Future guidance and research studies should use theoretical frameworks to support clinical decision making and address gaps in the research evidence.

SCIENTIFIC PRESENTATION: FALLS, FRACTURES & TRAUMA (REF: BH-1136)

Randomised controlled trial of the effect of Tai Chi on postural balance of people with dementia

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Introduction: We investigated the effect of Tai Chi exercise on postural balance among people with dementia (PWD), and the feasibility of a definitive trial on falls prevention.

Method: We conducted a randomised controlled trial. Dyads, comprising community-dwelling PWD and their informal carer (N=85), were randomised to usual care (n=43) or usual care plus the intervention (n=42). For the intervention, over 20 weeks, Tai Chi classes were provided weekly and Tai Chi home practice was facilitated by the carer. The primary outcome was the timed up and go test. Secondary outcomes for PWD included functional balance, static balance, fear of falling, cognitive functioning, quality of life, and falls. Secondary outcomes for carers included dynamic balance, static balance, quality of life, and carer burden. Outcomes were assessed six months post-baseline, except for falls, which were collected prospectively over the six-month follow-up period.

Results: For PWD, there was no significant difference at follow-up on the timed up and go test (mean difference [MD] = 0.82, 95% confidence interval [CI] = -2.17, 3.81, standardised effect size [ES] = 0.14). Among the secondary outcomes, at follow-up, PWD in the Tai Chi group had significantly higher quality of life (MD = 0.051, 95% CI = 0.002, 0.100, ES = 0.51) and a significantly lower rate of falls (rate ratio = 0.35, 95% CI = 0.15, 0.81), which was no longer significant when an outlier was removed. Carers in the Tai Chi group at follow-up were significantly worse on the timed up and go test (MD = 1.83, 95% CI = 0.12, 3.53, ES = 0.61). The remaining secondary outcomes were not significant. No serious adverse events were related to participation in Tai Chi.

Conclusion: With refinement, this Tai Chi intervention has potential to reduce the incidence of falls and improve quality of life among community-dwelling PWD.

SCIENTIFIC PRESENTATION: FALLS, FRACTURES & TRAUMA (REF: BH-1137)

The effect of exergames on balance and falls in frail older adult: A systematic review

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Purpose: To systematically review trials that examine whether exergames training is effective in improving balance and falls in frail elderly population.

Methods: Three databases were searched: Scopus, Web of science, PubMed, and MEDLINE. The searches were limited to the period from 2007 to 2019. Frail adults, aged 65 and older, with no specific disorders. Interventions were exergames intervention with the aim of improving balance and falls and were compared to no intervention, traditional exercises, or standard care. The focus was on studies that used Nintendo Wii as a training device because of the wide variety of exergames it provides compare to other devices and it is the common device being used in the last decade in elderly rehabilitation. The outcome measures were balance and falls as measured by any validated outcome measure.

Results: The database search resulted in 1540 articles, of which eleven papers were included. Exergame was compared to no intervention, standard care and traditional exercise. The total number of participants in all the five included studies was 388, with a mean age of 79 ± 5.7 years. 255 were included in the Wii group, while 181 were placed in the control group. A total of 15 games were used in all Wii studies, with number of games per study ranging from 3 to 6 with a mean of 3.7 (SD 1.5). The duration of exergames sessions ranged from 3 to 15 weeks with mean of 8.8 (SD 3.8) weeks. The total number of treatments ranged from 6 to 45 with mean of 20 (SD 11.1) session. The length of treatment ranged from 15 to 60 minutes with mean of 44 (SD 15.7) minutes. Four studies were rated as high-quality studies, three were rated as poor quality and the remaining four had fair quality. the effects of exergames on balance and falls could not be pooled for a meta-analysis, due to methodological variability and the different control intervention used across studies

Conclusion: Exergames was found to have positive effect on falls and postural balance among frail elderly. However, definitive judgment could not be obtained due to variation in training, outcomes and methodology. Future studies should focus on designing a standard protocol and include multicomponent exercise rather than just balance exercises.

SCIENTIFIC PRESENTATION: FALLS, FRACTURES & TRAUMA (REF: BH-1138)

Raising the bar on strength and balance: Joined up approaches to community based provision

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Introduction: Poor muscle strength and balance are the two most common modifiable risk factors for falls. Falls have a huge impact on people's ability to perform activities of daily living and to remain independent. Raising awareness of the risk of falls, as well as what can be done to prevent them, is an important part of engaging local populations. NHS rehabilitation services' strength and balance programmes are often of inadequate length. It is essential that there are effective community-based strength and balance programmes, yet such programmes are often underfunded, and there can be a significant gap between what the evidence says and what is delivered in practice. Local services are not always joined up, or delivered in partnership, leading to difficulties in ensuring that older adults undertake the right amount of evidence-based exercise to prevent falls.

Method: The Centre for Ageing Better commissioned work to bridge the gap between evidence and practice, to work directly with communities to better understand their local challenges, identifying practical examples of doing things differently. We administered a short survey to identify localities to work with, subsequently facilitating workshops, providing consultancy and highlighting good practice through the use of short films and case studies.

Results: With engagement from 15 localities, and knowledge from four further areas, we identified different models of delivery, issues, barriers and innovative solutions. Our findings are organised into five thematic areas: Raising Awareness; Encouraging Uptake; Exercise Referral Pathways that Work; Sticking to the Evidence; and Monitoring for Outcomes and Improvement. We produced a report including a large number of resources and case studies from across England, Scotland and Wales, to help inform good practice.

Conclusion: Translating evidence into practice is crucial if we are to improve uptake and adherence to fall prevention interventions. Through providing examples of good practice and recommendations to commissioners, service providers, exercise instructors, and healthcare professionals, we can make a large contribution to this effort.

CLINICAL QUALITY: PATIENT SAFETY (REF: BH-1139)

Post Inpatient Fall Medical Assessment (PIFMA) Performa quality improvement project

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Introduction: Inpatient falls are the most commonly reported patient safety incidents and in the United Kingdom, there are 250,000 reported falls per year¹. A rapid response report (RRR) issued in 2011 by the NPSA highlighted need for improvement in identifying fractures and neurological observations. These figures reflect significant implications to patients' health and financial burden to the NHS.

Aims: To improve assessment and documentation of inpatient falls assessment.

Method: Two PDSA cycles were completed. First PDSA cycle established a baseline of post fall assessment and documentation in which raising awareness and teaching (RAT) to junior doctors was done. Second PDSA cycle identified room for further improvement and post inpatient fall medical assessment (PIFMA) Performa was developed to aid assessment and documentation for use of junior doctors. Feedback regarding the usefulness of the PIFMA Performa was collected via survey.

Results: The RAT intervention involved 30 patients of the Elderly wards in November and December 2017 and the PIFMA intervention involved 29 patients in all Medical wards in January and February 2019. The PIFMA Performa improved the time taken to review patients as per doctors survey. On comparing the RAT against PIFMA Performa interventions, documentation improved in the categories of physical examination (from 80% to 97%), neurological observations (from 49% to 98%), medication review (from 53% to 83%), and measuring lying standing blood pressure (from 83% to 90%).

Conclusions: Feedback from junior doctors states that the PIFMA Performa was certainly a very useful guidance tool and help to speed up documentation. These improvements only translated if junior doctors utilize the PIFMA Performa and so this is now being implemented in the trust policy. Further PDSA cycle can reassess if improvements truly represent the population cross-section.

References

1. The incidence and costs of inpatient falls in hospitals. NHS Improvement; 2017.
2. National Patient Safety Agency NPSA/2011/RRR001 (13 January 2011).

CLINICAL QUALITY: PATIENT CENTREDNESS (REF: BH-1140)

Post falls osteoporosis assessment in a community hospital

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Introduction: As per NICE guidelines, osteoporosis assessment should be completed in all patients presenting with falls. However, this is not routinely done in acute hospitals.

Methods: We reviewed all patients with falls that were transferred from an acute hospital to a community rehabilitation hospital over a three month period. We looked for evidence of osteoporosis assessment including: calcium and vitamin D levels, Frax score, DEXA organised as needed and whether appropriate osteoporosis treatment was started.

Results: There were 49 patients who needed an osteoporosis assessment. Of them, 83.67% were above 75 years of age and 55.10% had a fracture on this admission.

Only 28.57% of patients had their calcium and vitamin D levels measured and only one patient had his FRAX score calculated prior to transfer.

48.77% of patients were started on treatment for osteoporosis in our rehabilitation hospital. None of these patients were reviewed for any treatment prior to transfer.

Of the 12.24% of patients requiring DEXA, only 4.08% were requested at the acute hospital.

Conclusion: In the acute setting, osteoporosis risk had not been routinely evaluated in patients with falls and fractures. This has highlighted the need for a change in practice of osteoporosis assessment in patients admitted with falls.

To ensure complete osteoporosis assessment in our rehabilitation unit, we introduced a treatment summary sheet that is completed prior to discharge by the junior doctor. This summary includes a bone health section where calcium and vitamin D, Frax score, Dexa scan appointments and osteoporosis treatment are documented. This summary prompts completion of osteoporosis assessment in all patients with falls and is potentially transferable for use by doctors in the acute hospital

SCIENTIFIC PRESENTATION: FALLS, FRACTURES & TRAUMA (REF: BH-1141)

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

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Introduction: Taking effective measures to improve gait and balance performance and, consequently, decrease the risk of falling in senior citizens is of vital importance. A newly developed technique to assess the dynamic stability during walking is using the harmonic ratio, derived from Fourier analysis of trunk accelerations, as an indicator of walking smoothness. The aim of the present study was to compare the effects of single-task and dual-task balance and gait training on gait harmonic ratio, gait speed and balance status of older adults.

Method: Sixty-nine community-dwelling individuals over 65 years old (49 females and 20 males) with mild balance impairments were recruited according to the eligibility criteria and randomized into three groups: single-task balance training, dual-task balance training, and control (no intervention). Subjects in the interventional groups received eighteen sessions of progressive balance training through six weeks. Outcome measures were Fullerton Advanced Balance scale (FAB), Timed Up & Go test (TUG), Activities-specific Balance Confidence (ABC), gait harmonic ratio and gait speed under single- and dual-task conditions, which were assessed before and after the trial.

Results: following the interventions, balance status and gait parameters improved significantly in both training groups. Although both single-task and dual-task training groups showed significant changes in comparison with the control group, there was no statistically significant difference between the two training groups.

Conclusion: The results of the present study show that both single-task and dual-task balance training can improve gait and balance in older adults, with no superiority of one method over the other.

CLINICAL QUALITY: CLINICAL EFFECTIVENESS (REF: BH-1142)

Management of risk of fragility fractures post-fall in an acute hospital setting

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Introduction: Elderly patients who fall are at risk of fragility fractures. Patients should be subsequently evaluated to reduce future fracture risk, including reviewing need for vitamin D supplementation and bone protection.

Methods: Data from patients aged ≥ 70 years admitted with a fall to the Acute Medical Units between 1st December 2018–28th February 2019 were retrospectively analysed, including age, sex, current/past fragility fracture, history of falls/osteoporosis, measurement of bone profile/vitamin D, drug history and initiation of vitamin D and/or bisphosphonate. Management of vitamin D deficiency and secondary prevention of fragility fracture was assessed against Trust guidelines.

Results: There were 91 admissions (35 male, 56 female; age range 70-95 years). Five sustained a new fracture. Fifty-two (57%) had a history of falls. Twelve had a previous clinical fragility fracture, four of whom were on a bisphosphonate. Six (6.6%) patients were already taking a bisphosphonate, all with known osteoporosis. Of the five patients sustaining a fracture, two were already prescribed alendronate (both for uncertain duration, one with uncertain compliance), a bisphosphonate was inappropriate for two due to co-morbidities and not commenced in the fifth for unknown reasons. 14 (15%) had radiological evidence of osteoporosis only (no documented diagnosis), i.e. wedge, compression fracture, vertebral height loss or 'osteoporosis' stated in radiology reports. None of these patients were started on bone protection. Bone profile was measured in >90% patients and vitamin D in 31% (including measurements in the last 3 months). Vitamin D levels ranged from <10.0 - 134nmol/l. Of the 29 patients with vitamin D <70nmol/l, replacement was commenced in ten (34%).

Conclusions: Bone profile is measured routinely on admission, but improvements could be made in frequency of measuring vitamin D and initiating its replacement. Secondary prevention of fragility fractures followed Trust guidelines in four out of five patients. Historical spinal radiology reports often hold evidence of osteoporosis and asymptomatic vertebral fractures but are not being routinely reviewed. These reports should help guide bone protection prescribing. Departmental posters now remind teams to review for radiological evidence of vertebral fracture. New flowcharts display the guidelines on vitamin D replacement and bisphosphonate prescribing in secondary prevention of fragility fractures. Re-auditing will occur in August.

SCIENTIFIC PRESENTATION: FALLS, FRACTURES & TRAUMA (Ref: BH-1143)

Development of an implementation toolkit for the Falls Management Exercise (FaME) programme

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Introduction: Falls in older adults cause unintentional injury and are likely to increase unless more is done to reduce falls risk. Strength and balance exercise programmes such as the Falls Management Exercise Programme (FaME) are recommended in the UK but the availability is inconsistent.

The PHISICAL study investigated the implementation of FaME in England to determine whether the programme retains its clinical effectiveness and fidelity in non-research settings and identify barriers/facilitators to implementation. Findings were used to develop an implementation toolkit to maximise programme availability.

Method: The contents of the toolkit were derived from: quantitative analysis of FaME programme performance/outcomes; observations of FaME delivery, scoring against quality and fidelity criteria; thematic analysis of interviews with professionals/participants; analysis of resources used.

Results: 356 people took part in 29 FaME programmes; 79% aged ≥ 70 and 39% aged ≥ 80 . Participants had a range of health problems; 51% took ≥ 4 medications 32% had fallen in the last year, 30% were at high risk of future falls and 48% were very concerned about falling.

Overall 41% of participants completed at least three-quarters of the FaME programme classes. These people increased their physical activity by 170 minutes/week (p value=0.023), were more confident in their balance ($p < 0.001$) and less concerned about falling ($p = 0.01$). Falls reduced from 1.27 to 1.04/participant/year, though the sample size was too small to capture statistically significant differences in falls rate. Up to 78% of fidelity and 84% of quality criteria were met. Funding insecurity, instructor availability and drop-out were implementation barriers. Participants valued the social as well as physical programme benefits.

Conclusion: FaME can be implemented with high quality and fidelity and with clinical outcomes comparable to clinical trials. Results have been used to develop an evidence-based implementation toolkit for commissioners of the FaME programme.

SCIENTIFIC PRESENTATION: FALLS, FRACTURES & TRAUMA (REF: BH-1144)

Cortical activity during postural recovery in response to predictable and unpredictable perturbations in healthy young and older adults: a quantitative EEG assessment

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Introduction: Understanding the cortical function in postural recovery after external perturbations is crucial in planning for remediative strategies to prevent falling in older adults. Accordingly, it assumes great importance to obtain quantitative encephalographic (QEEG) data in order to identify potential neurophysiological mechanisms of postural control in this population. The aim of the present study was to investigate and compare the effect of predictable and unpredictable external perturbation on cortical activity in healthy young and older adults.

Method: Twenty healthy older and nineteen healthy young adults were exposed to predictable and unpredictable external perturbations. The coherence z-scores and spectral power of cortical oscillations upon postural recovery were measured using a 32-channel QEEG. The absolute power and coherence of cortical waves were analyzed through a 3-way mixed design ANOVA in both predictable and unpredictable perturbation tasks.

Results: During postural recovery from predictable perturbations, older adults exhibited higher frontoparietal beta power as well as higher alpha and beta coherence during the late-phase recovery than the young individuals. After unpredictable perturbations, the older group showed lower alpha power in the early phase and higher beta power in the late phase as compared to the young group. Results for the group×time interaction and group×location interaction in the older group showed a higher alpha and beta coherence over the late phase, as well as higher alpha coherence in F3–P3 and F4–P4 regions, and higher beta coherence in the F4–P4 region as compared to the younger group for both band spectra.

Conclusion: Our results revealed that cortical activation after external perturbations increases with aging, particularly in frontoparietal areas. A shift from automatic (subcortical level) to attentional (cortical level) processing may reflect the contribution of attentional resources for postural recovery from an external threat in older populations.

SCIENTIFIC PRESENTATION: FALLS, FRACTURES & TRAUMA (REF: BH-1145)

Targets for task-specific exercise-based fall risk assessment and intervention

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Introduction: Falls and their consequences are a major problem for our ageing societies and will be for the foreseeable future. It is well established that general exercise reduces the risk of falls, with further benefits when challenging balance tasks are included (Sherrington et al., Cochrane Database Syst Rev, 2019, CD012424). This work aimed to identify specific skills important for reducing the risk and consequences of falls that could further improve the specificity of exercise-based fall risk assessment and intervention.

Methods: Experimental work, literature reviews and biomechanical principles of balance control were synthesised to provide an evidence base from which distinct skills important for avoiding, resisting and mitigating the effects of falls could be defined. The most common causes of falls, trips and slips during walking (Berg et al. Age Ageing, 1997, 26, 261-8.; Talbot et al. BMC Public Health, 2005, 5, 86.), were used for this approach.

Results: Four distinct skills were defined: 1) foot placement adaptability; 2) gait robustness; 3) balance recovery responses; and 4) safe landing techniques. These task-specific skills relate to 1) the avoidance of potential threats to balance; 2) the tolerance to perturbations without the need for specific balance recovery responses; 3) executing effective balance recovery responses when balance is lost; and 4) rapid adjustments during a fall to reduce the impact and risk of injury. There is evidence in the literature that each of these skills can be specifically improved through intervention.

Conclusions: Fall risk assessment and intervention have the potential to be more effective and efficient by exploiting the principles of specificity. The current work suggests that four distinct skills can be defined, assessed and improved in relation to walking stability and fall risk.

CLINICAL QUALITY: CLINICAL EFFECTIVENESS (REF: BH-1146)

Collaboration to avoid Trips and Falls Occurring in Residential Dementia Homes (CATFORD) Project: A collaborative approach to training to improve the management of falls in Lewisham Care Homes

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Background: A six month mapping exercise of 15 Lewisham Care Homes found a falls rate of 45.2%. The greatest numbers of falls occurred in residential homes. Most of those who had fallen had a diagnosis of dementia (71%). Only 7 homes had completed a falls risk assessment within 24 hours of admission and there was a lack of consistency between care homes regarding staff training in falls.

The improvement work involved collaboration between Lewisham Community Falls Service, Lewisham Mental Health Care Home Intervention Team and Lewisham Clinical Commissioning Group made possible by a Health Innovation Network grant. The work involved the development, delivery and evaluation of a new falls training programme.

Method/Interventions: Results of the mapping exercise were fed back to care home managers and 3 care homes were identified for the pilot study. Following a review of the literature a new training programme was developed. Self-report visual analogue scales were used to establish pre and post training staff confidence and knowledge linked to falls risk factors and intervention in residents with dementia. A total of 39 care home staff received training. The mapping exercise was repeated for the 3 month period following training.

Results: Improvements in knowledge and confidence were demonstrated on all scales. Participants identified a number of outcomes and areas to change practice. Post-training mapping showed an improvement in identification of residents at risk with all residents having a falls risk assessment completed with 24 hours of admission and regular reviews. Managers provided examples of raised staff awareness of falls post-training.

Conclusion: A collaboration between a community and specialist mental health service enabled the development of a training programme that improved staff skills and knowledge with regards to falls in dementia. The project highlighted skill gaps in carers in providing support to patients around mobility and transfers.

SCIENTIFIC PRESENTATION: FALLS, FRACTURES & TRAUMA (REF: BH-1147)

Creating a tiered approach of strength and balance programmes in community settings. (1 year outcomes of a multi-tiered postural stability programme in Leeds)

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Introduction: Falls in older people create a significant pressure on the health and social care system and quality of life in Leeds. Of 2,924 hospital admissions due to falls in 2014/15, 748 suffered hip fractures.

A falls pathway review in 2015 (Funded by Better Care Fund), highlighted gaps in preventative services and de-escalation activities following specialist falls service intervention. Community-based strength and balance programmes were piloted to address these gaps, with long-term aims to shift from reactive to proactive interventions.

Method: A tiered postural stability programme was offered with 8 weeks physiotherapy led community-based programmes, 20 week physical activity instructor led groups underpinned by maintenance programmes. This enabled the escalation or de-escalation of patients into relevant activities based on functional ability and need. Services were integrated to support patient flow with robust evaluation methodology to evidence outcomes.

Results: Evaluation of the 20-week programme using a merged health and care dataset, showed a statistically significant reduction in the mean falls efficacy score for the 28 patients with completed tests at the start and end of the course (15.3 to 13.2, $p < 0.05$), the mean time for TUG similarly fell from 23.0 to 16.3 seconds ($p < 0.001$).

The average number of GP consultations 92 to 182 days before training started was 1.9, which increased to 2.25 in the 91 days prior to training. This reduced to 1.6 (reduction from 1.9 $p < 0.01$) in the 91 days after training started, and then to 1.2 (reduction from 1.9 $p < 0.05$) in the 92-182 days after training.

Conclusion(s): A multi-tiered community-based strength and balance programme, delivered by appropriately qualified exercise instructors, has great potential to reduce falls, their severity and the number of healthcare contacts in people living with frailty. The evidence gained from the pilot has ensured that the programme is a central part of the falls pathway enabling further evaluation to happen.

SCIENTIFIC PRESENTATION: FALLS, FRACTURES & TRAUMA (REF: BH-1148)

Reflective learning from conducting a large multi-centre care home trial (FinCH): A Research Assistant's experience

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Introduction: The Falls in Care Home (FinCH) study is a large randomised controlled trial (87 care homes, 10 UK sites) evaluating whether a systematic falls programmes, the Guide to Action Tool (GtACH), reduces falls for care home residents. Research assistants from each site were involved in the fieldwork stage of the trial. This work reports the experience and learning of one research assistant. It will describe key issues when undertaking research in care homes and gathering information from staff and residents. Strategies used to navigate challenges, practical lessons learned, tips for future research, and illustrative examples from practice will also be shared.

Methods: Each of the 12 care homes across one UK site (Bradford) was visited five times over one year: at baseline, three, six, nine and 12 months. At each time point, data was gathered from staff and residents with capacity. During this period, a reflective diary was kept by the research assistant. Content analysis was used to find salient features and patterns in the diary.

Results: Three key-themes emerged from the researcher's experience and were grouped into: i) open and effective communication; ii) culture and routines within each care home; and iii) time to work with participants and to adapt to challenges.

Conclusions: Care home research is a national priority, but undertaking research in the care home environment can be challenging. This work will highlight specific issues relating to research in care homes and offer recommendations when designing and implementing future studies in these complex care settings. By learning from the experiences of other researchers, care home research can be improved for both the academics and participants.

SCIENTIFIC PRESENTATION: FALLS, FRACTURES & TRAUMA (REF: BH-1150)

Effectiveness of lower limbs muscle stretching exercises to reduce falls among institutionalized elderly in the urban area

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Introduction: Falls are a major public health issue and a leading cause of disability and the death of elderly people. Different risk factors have been identified for falls among the elderly in the community based but not in the elderly homes in Sri Lanka. The objective of this study was to identify the risk factors for falls and to evaluate lower limbs muscle stretching exercises programme with respect to fall incidence of elderly who live in the elderly home in an urban area.

Method: The study was conducted in two phases.

Phase 1 – A descriptive study design was selected. Convenience sampling method was used for this study and 40 subjects were selected. Data collection was done by using a validated questionnaire. Participants who were ill and did not give consent for the study were excluded.

Risk factors for falls among the elderly were identified.

Phase II - A pilot study with lower limbs muscle stretching exercises training protocol was implemented with already assessed subjects for three months and fall incidences were recorded after three months' time. Effectiveness was assessed in relation to falls incidence.

Results: Mean age was 78.5years and there were 17 male and 23 female participants. Personal related and environmental-related risk factors were highly significant (>70 %). In female fall incidence has been reduced by 25% and male it was 35%.

Conclusion: According to the finding of this study, most of the risk factors have been identified are preventable and the exercise regime has an effect on reducing falls incidence among the elderly in the home.

CLINICAL QUALITY: CLINICAL EFFECTIVENESS (REF: BH-1151)

Measurement of Lying and Standing Blood pressure in #NOF patient with fall

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Introduction: In the older population hip fractures are a significant cause of disability and functional impairment with a 30 day mortality of 5%. The majority of hip fractures occur following a fall. Lying and Standing Blood pressure (L/S BP) is a recognised part of a falls assessment. In 2019 Falls CQUIN included L/S BP measurement as one of the parameters to measure.

In the Royal College of Physicians guideline on falls assessment, there is a standard procedure for measuring L/S BP. Using this guideline as a standard we have been implementing a system in Newdigate ward to measure L/S BP more efficiently. PDSA cycles are used to implement and improve our performance.

Method: We used a number of different methods to improve the recording of L/S BP: Our initial improvement strategies were: training staff in RCP guidelines, using L/S BP chart, including L/S BP in our discharge template, incorporating in daily morning safety huddle, daily rotas specifying member of staff responsible for documenting L/S BP. These all showed promise but were not all sustainable. Therefore a further attempt has been made. The new idea included introducing a visual control (using a simple colourful sticky note at the bedside as an indicator of patients who need L/S BP). Also we incorporating this in our 11.30 walking MDT huddle, gave further training to Nurses, Health care assistants, PT and OT.

Results: We audited our performance repeatedly. Before initiating the measures, our performance in a snap shot audit was 30% having had L/S BP which improved to 68% by using different measures especially the visual control as it was easier to identify to needs L/SBP. We maintained our consistency in our further audit which is now around 85% (based on discharged patients).

Conclusion: This quality improvement project helped us to change our practice and to improve efficiency. Introduction of the visual control was the key step in improving measurement from 30% to 68%. The 3rd audit indicates that we have improved measurement of L/S BP significantly (85%). This helped in identifying falls caused by postural hypotension and in preventing further falls by thoughtful interventions. Experience gained from this project will help us in 'Falls CQUIN' implemented in 2019.

CLINICAL QUALITY: PATIENT CENTREDNESS (REF: BH-1152)

iCOP - An MDT approach to managing people living with frailty in Swansea Bay. A service improvement project

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Introduction: The Integrated Care of Older People (iCOP) service is a fully integrated Multidisciplinary team that supports older people living with frailty. The demographic characteristics of this population commands a model of care tailored to the needs of people living with frailty attending Swansea's Singleton Hospital Assessment Unit (SAU). The original model did not deliver the high quality, integrated, person centred care that older people require. As set out in the British Geriatric Society (BGS) 'Fit for Frailty' document, CGA is identified as the gold standard for assessing older people living with frailty and leads to better outcomes for patients. Following a successful pilot within SAU Singleton Delivery Unit during 2017, a business case was prepared and delivered to the Executive team of ABMU. Funding was granted, allowing the service to become embedded as a sustainable acute frailty service. The aim is to increase the percentage of discharges directly from SAU, thus facilitating admission avoidance, and reduced length of stay.

Method: The development of iCOP has been undertaken using a PDSA cycle. Based within the Singleton Assessment Unit (SAU) in Singleton Hospital the iCOP team identify people aged >75 admitted with a frailty syndrome such as falls, delirium, immobility and dementia. A CGA is commenced by the team and early intervention, discharge planning and support with the transition of care to wards. A key component of the iCOP model is the close relationship that has been nurtured with local community based services. This enables people to be managed in their own homes whilst continuing to address non-acute problems such as a reduced level of functional independence which may have contributed to their admission.

Results: iCOP assessing 40% of people aged >75 in SAU.

48% of people discharged directly from SAU compared to previous level of 28%.

55% of iCOP patients with a length of stay of 0-1 days in SAU.

57% of iCOP patients requiring hospital admission successfully transferred to ward 3 (care of the elderly) to receive ongoing specialist care.

Conclusion: Better clinical outcomes via:

- Earlier decision making and implementation of medical, social and therapeutic intervention.
- Admission avoidance and community outreach
- Excellent links established with community medical and Therapy teams
- Improved transitions of care, reducing length of stay.

CLINICAL QUALITY: CLINICAL EFFECTIVENESS (REF: BH-1153)

The use of wearable inertial measurement units to measure gait and postural differences between younger and older adults

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Introduction: Among older adults falls are a common occurrence resulting in many health and social consequences. The aims of the study were to identify gait and postural stability differences, between younger and older adults during walking and quiet standing, which can be related to fall risk with the use of wearable inertial measurement units (IMUs). Additionally, to identify any differences between the use of wearable IMUs and traditional fall risk measures of quantitative data collection.

Methods: Synchronised kinematic data was collected from 34 participants (17 older adults and 17 younger adults) with the use of five wearable IMUs. Participants performed walking trials at a comfortable pace, a fast pace and during a cognitive dual task. Participants also completed quiet standing trials in different conditions. Wearable IMUs were compared to the use of a stopwatch when determining walking speed. Walking intensity was quantified by the root mean square of the acceleration signal. Trunk displacement was calculated by using double integration of the acceleration signal. All measures were compared using a two-way repeated measures ANOVA.

Results: Walking speed and intensity were greater among younger adults compared to older adults during all walking conditions, with slowest speeds occurring under a cognitive dual task (dual task: younger 1.20 ± 0.18 m/s² Vs older 1.05 ± 0.26 m/s²). There were also greater trunk displacements and sway among older adults during quiet standing, with greatest movement occurring in the anteroposterior direction (eyes opened on a hard surface: younger 1.13 ± 0.06 cm Vs older 1.78 ± 0.14 cm), particularly when conditions became more difficult (eyes closed on a foam surface: younger 1.51 ± 0.08 cm Vs older 2.41 ± 0.13 cm).

Conclusion: Younger and older adults were responsive to a cognitive dual task when walking, resulting in reduced walking speed and intensity. Older adults also had greater displacements during quiet standing. Wearable IMUs identified differences in walking speed, even when a traditional stopwatch method could not. Cognitive dual tasks and quiet standing balance tests with the use of wearable IMUs should be considered for future fall risk assessment tests.

CLINICAL QUALITY: CLINICAL EFFECTIVENESS (REF: BH-1154)

Nutrition assessment of older adults in General Medicine Ward compared to Geriatric Ward

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Background: Every country in the world is experiencing growth in number of older adults. Older adults are very vulnerable to malnutrition. NICE recommended all inpatients are screened on admission to hospital and all outpatients are screened at their first clinic appointment; to improve care standard through addressing nutritional need of patients in General Medical ward especially older adults and increase the compliance of documentation of nutrition score in general medical ward

Methods: The MUST score data was collected from Nursing Assessment Document booklet. This is the prevalence data collected at particular time. 32 patients from General Medical Ward (GM) and 23 patients from Care of Elderly ward (COE), with mean age of 77 years at GM (range 41-92) , 84 years at COE (range 69-72) respectively. There were 84% (n=27) over 65 years at GM ward.

The data were collected as

1. Compliance of MUST scoring records
2. Pattern of MUST score calculation (within 48 hours, within 3-7 days, after 7 days)
3. No proper MUST scoring records (BMI not calculated at all or a score is selected at random)

Results: 28% (n=9) patients were identified no documented MUST score in GM ward compared to 13% (n=3) in COE ward. 72% (n=23) and 87% (n=20) has MUST score documents which has been recorded at least one time, GM ward and COE ward respectively. 78% (n=18) were recorded within 48 hours, 9%(n=18) within 3-7 days after admission. 31%(n=3) after 7 days in GM ward. In COE ward, 90% (n=18) were documented within 48 hour and 10% within 3-7 days. 69% (n=16) of patients had no proper MUST scoring records in GM ward. All the patients in COE ward had proper MUST scoring record. The rest of the patients in GM ward who had 31% (n=7) with proper MUST scoring record , 22%(n=5) were identified with the score calculated wrongly. Among 23 patients in GM ward, only 9% (n=2) patients had correct scoring.

Conclusion: Malnutrition is one of the important risk factors for sarcopenia and frailty. Not only in Geriatric ward but also most of the patients' in General Medical ward are older adults. Further action plan will be educate healthcare professionals towards understanding the nutritional challenges faced by older adults, to educate complications and consequences of malnutrition.

SCIENTIFIC PRESENTATION: FALLS, FRACTURES & TRAUMA (REF: BH-1155)

Don't Lie About; Stand Up for Postural Blood Pressures: A retrospective cohort study of requests and completion of lying and standing blood pressures on Geratology wards at a tertiary centre

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Introduction: Falls are associated with increased length of stay, complications and cost to the NHS. National and Local Trust guidelines recommend a multifactorial falls assessment for all in-patients deemed at risk of falls. Lying-standing blood pressure (LSBP) is an important modifiable cardiovascular component of falls assessment. In the National Safety Agency of Falls Audit 2015 report, 16% of in-patients did not have a LSBP recorded within three days of admission.

Method: Retrospective data was collected from all patients on four Geratology wards at the John Radcliffe hospital over a one-week period. The medical records, nursing notes and prevention of falls care plan were reviewed. Exclusion criteria: hoist transfer/bed-bound, low GCS, end of life. Data collected included: reason for admission, history of falls, visual impairment, mobility status, whether LSBP was requested and completed.

Results: A total of 54 patients, female 27 (50%), with age range of 68-94 years. Overall, 23 (42.6%) patients were admitted following a fall and 38 (70.4%) had a history of falls. No patients had LSBP completed on the prevention of falls care plan. Only 16 patients (26.9%) had LSBP requested and of these, 11 (68.8%) had LSBP completed. No LSBPs were recorded with a manual cuff. The average time of completion of LSBP was 4.7 days from admission. 5 (9.3%) patients had LSBP recorded within three days of admission.

Conclusion: Requests and completion of LSBPs remains unsatisfactory. Raising awareness of the importance of measuring LSBPs through education and training is key. We have implemented an electronic prescription request for LSBPs and an education and training programme for junior doctors, nurses and allied health professionals. This will facilitate change in processes and behaviour to improve patient outcome by reducing the risk of falls. We will evaluate the impact of this strategy in 1 month.

SCIENTIFIC PRESENTATION: FALLS, FRACTURES & TRAUMA (REF: BH-1156)

Gamified strength and balance Exergames to reduce falls risk: Qualitative and quantitative findings from a cluster randomised controlled trial

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Introduction: Exergames (gamified active video-based exercises) are an emerging technology that may increase engagement to strength and balance exercises for older adults and therefore reduce falls risk but evidence is currently limited.

Method: A two-arm cluster randomised controlled trial with 3 month follow up of falls. Adults aged 55 years and over, living in 18 sheltered housing facilities in the UK (2 sites). A 12-week strength and balance Exergame programme, supported by physiotherapists or assistants plus standard care (leaflet and physiotherapy advice) against standard care only. Primary outcome measure was balance (Berg Balance scale (BBS)). Secondary outcomes included falls rate, fear of falling, timed up and go, self-reported physical activity, pain, fatigue, cognition and quality of life. Thirteen focus groups were conducted to capture qualitative feedback.

Results: Eighteen sites were randomised (56 to the intervention and 50 controls, almost 80% female, mean age 78 years). Mean attendance of Exergames sessions during 12 wks was 69% with a mean exercising time of 33 minutes/wk. Intention -to-treat analysis revealed a significant improvement of balance at 12 wks in the Exergame group with an adjusted mean increase in BBS of 6.18 (95% CI 2.38 to 9.97) and significant improvements in secondary outcomes of falls rate ($p=0.001$), fear of falling ($p=0.007$) and pain ($p=0.02$). In the control group 12 participants (24%) fell during the 3 month follow-up compared to 11 participants (20%) of the Exergame group. Falls rate was significantly lower in the Exergames group (incidence rate ratio 0.40, (95% CI 0.22 to 0.74, $p=0.001$). Qualitative findings suggest that users enjoyed using the Exergames and reported physical, psychological and social benefits.

Conclusion: Exergames for 12 weeks improve balance, pain, fear of falling and falls rate and may be considered as a fall prevention strategy in assistive living facilities for older people.