

**communications  
to the  
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**programme of  
abstracts**

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Thursday 24 April 2008

### Platform Presentations

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1

**VITAMIN D DEFICIENCY IN OLDER PEOPLE IN ENGLAND: PREVALENCE AND RELATION TO NEIGHBOURHOOD DEPRIVATION**

**I A Lang, D Melzer**

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**Background**

Vitamin D deficiency in older people is associated with poor health outcomes but remediable by public health intervention. The association of vitamin D levels with socioeconomic status is unclear.

**Objectives**

To assess prevalence of vitamin D deficiency and its relationship with individual and neighborhood socioeconomic status.

**Methods**

Data were on 2820 adults aged 65+ in a nationally representative cross-section in England. Logistic regression was used to assess the association between vitamin D deficiency (25-hydroxyvitamin D <50nmol/l) and severe deficiency (<25nmol/l) and individual and neighborhood socioeconomic status, separately for men and women, controlling for potential confounders.

**Results**

45.1% (95% CI 42.4 to 47.9) of men and 54% (50.9 to 56.1) of women had vitamin D deficiency (25-hydroxyvitamin D <50nmol/l); 7.5% (6.0 to 9.0) of men and 11.0% (9.4 to 12.6) of women had severe vitamin D deficiency (<25nmol/l). In adjusted models there was a marked association between vitamin D deficiency and neighborhood, but not individual, socioeconomic status. For example, compared to those in the least deprived neighborhoods, men in the most deprived 20% of neighborhoods had an odds ratio of severe vitamin D deficiency of 2.97 (95% CI 1.29 to 6.82)

**Conclusions**

Around half those aged 65 and over in England have vitamin D deficiency, with those in deprived neighborhoods up to three times more likely to be severely deficient. Local interventions involving vitamin D supplementation may be important.

2

**A PROSPECTIVE OBSERVATIONAL STUDY OF FALLS AND RELATED OUTCOMES IN PRE-AND POST-OPERATIVE KNEE ARTHROPLASTY PATIENTS**

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**Introduction**

Knee arthritis is a risk factor for falling in older adults. It is not known whether knee arthroplasty influences falls risk.

**Method**

Consecutive patients added to the waiting list for knee arthroplasty were recruited. Subjects completed monthly falls diaries preoperatively and for 1 year postoperatively. At quarterly intervals they completed the Western Ontario and McMasters Osteoarthritis Index (WOMAC- a validated assessment of knee pain, stiffness and function), the Activities Balance Confidence Scale-UK (ABC-UK) and the Geriatric Depression Scale (GDS).

**Results**

The sample comprised 119 subjects aged 73.5±4.7 years, 61% female. Knee arthroplasty led to significant improvements in WOMAC score, ABC-UK score and a reduction in GDS (p<0.05 for all). These improvements were noted in the first quarter postoperatively and maintained at 1 year. Subjects who continued to fall postoperatively had significantly less improvement in ABC-UK and GDS scores. The number of people falling was lower at all post operative quarterly time points (21% preoperatively 11.6-12.9% per quarter postoperatively). In the last postoperative quarter the shift of preoperative fallers becoming non- fallers became significant (p<0.001). Preoperative low ABC-UK score (ie low balance confidence), high GDS and a history of falling were all significant independent risk factors of post-operative falls.

**Conclusion**

Total knee arthroplasty leads to significant benefits in falls and related outcomes in patients with knee arthritis.

3

**COMPUTER-BASED TEACHING IS AN EFFECTIVE ADJUNCT TO TRADITIONAL METHODS IN TEACHING REHABILITATION**

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**Introduction**

Teaching the science of rehabilitation, such as the domains of health, can be difficult but is important if rehabilitation is to be understood on a rational basis. There is growing emphasis on using computer-aided learning to enhance traditional teaching. We evaluated the impact of an electronic learning package designed to improve teaching of the International Classification of Functioning and Health (ICF) - an internationally agreed system for describing domains of health.

**Methods**

A retrospective two-group study design was used to evaluate the effect of the electronic learning package on 4th year medical students' understanding of the ICF. A standardised marking scheme (range of possible scores 0-5/5) was applied to coursework in which students were expected to demonstrate knowledge and understanding of the ICF.

**Results**

The control group came from the 2003/4 year group (before introduction of package) and the intervention group from 2004/5 (after introduction of package). There were no significant differences in baseline characteristics between cohorts. The median control score was 2/5 compared to 3/5 in the intervention cohort,  $p=0.0022$ . The proportion scoring  $\geq 3/5$  marks rose from 49% (50/103) for the control cohort to 59% (103/175) after the intervention. Student feedback on the package was generally positive.

**Conclusions**

The package improved understanding of the ICF without adversely affecting student satisfaction. Using an electronic learning package as an adjunct to teaching was an effective intervention.

4

**ARE WE READY FOR THE BABY BOOMERS? THE HEALTH AND HEALTH NEEDS OF THE AGEING BABY BOOM GENERATION**

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**Introduction**

The ageing of the baby boom generation may strain the capacity of geriatric healthcare provision. Despite this, there is little understanding of the health status and health needs of the baby boomers compared to previous cohorts.

**Methods**

Data from the Health Survey for England were used to compare the health of those aged 50 to 59 in 1994/5 ( $n=2004$ ) with those aged 50 to 59 in 2004/5 ( $n=3641$ ), i.e. those born 1946-55.

**Results**

Compared to those in their 50s ten years earlier, the baby boomers were taller and better educated but had higher levels of obesity (around 29% versus around 20% had BMI  $\geq 30$ ), more long-standing illness, and poorer self-reported health. Changes in disease status were assessed using sex-specific logistic regression models adjusted for age, smoking, BMI, educational level, and social class. Compared to their age peers in 1994/5, baby boomers had increased likelihood of endocrine or metabolic diseases, mental disorders, diseases of the heart and circulatory system, and diseases of the musculoskeletal system. For example, compared to men in 1994/5, men in 2004/5 had an odds ratio of reporting endocrine or metabolic diseases of 1.84 (95% CI 1.17 to 2.89); for women the odds ratio was 2.01 (1.33 to 2.03).

**Conclusions**

Our findings suggest the health needs of the ageing baby boom generation will place an increasingly heavy burden on geriatric healthcare providers.

5

**EFFECT OF WEATHER ON PHYSICAL ACTIVITY LEVELS IN OLDER PEOPLE**

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**Introduction**

Regular physical activity is vital for maintaining the health and independence of older people. Little objective data exists on the effect of weather on physical activity levels in this group.

**Methods**

Baseline daily activity counts were measured using the RT3 tri-axial accelerometer over one week in 127 participants >65 years enrolled in a randomised controlled trial. Local weather data including daily maximum temperature, sun, rain and 9am wind strength measured were obtained from the Scottish Meteorological Office. Weather data were correlated with activity counts in univariate and multivariate analyses.

**Results**

Mean age was 78.6yrs. 90/127 were female. 720 usable daily counts were obtained for the 127 participants. Mean daily counts showed a striking seasonal variation with maximum activity in June and minimum in February (137557 vs 65010 counts per day,  $p < 0.001$ ). Daily counts showed moderate correlation with day length ( $r = 0.358$ ,  $p < 0.001$ ), maximum temperature ( $r = 0.345$ ,  $p < 0.001$ ), duration of sunshine ( $r = 0.313$ ,  $p < 0.001$ ) and rain ( $r = -0.098$ ,  $p = 0.008$ ) but not with wind speed ( $r = 0.093$ ,  $p = 0.12$ ). Multivariate analysis showed that day length, sunshine duration and maximum temperature were independent predictors of daily activity (adjusted  $R^2 = 0.16$ ).

**Conclusions**

Physical activity levels amongst older people are much higher in summer than in winter. Day length, sunshine duration and maximum temperature have a significant influence on physical activity levels.

6

**OPEN PILOT STUDY OF THE FEASIBILITY OF USING Pedometers PLUS ADVICE TO INCREASE PHYSICAL ACTIVITY IN SEDENTARY OLDER WOMEN**

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**Introduction**

Older people are the most sedentary segment of the population. The aim of this study was to evaluate the feasibility of using pedometers and advice to increase physical activity in sedentary older women.

**Methods**

54 sedentary women (aged  $\geq 70$  years) were randomised 3:2 to two groups; pedometer plus advice ( $n = 32$ ) or advice alone ( $n = 22$ ). Participants in the pedometer plus advice group were randomised to monthly step count increases of 10%, 15% or 20%. All participants received individualised advice on increasing physical activity and kept daily activity diaries. The primary outcome was accelerometry (a measure of activity). Secondary outcomes were lower limb function, health related quality of life and the hospital anxiety and depression scale.

**Results**

The average age of participants was 74 (70-86). There was a strong correlation (0.78) between accelerometry and step counts indicating that walking was the main physical activity amongst participants. There was an increase in activity (accelerometry counts) in the 20% target pedometer group ( $p = 0.19$ ). Compliance with diary keeping was 96% in the pedometer group and 83% in the advice alone group. There was no difference in quality of life between the groups.

**Conclusion**

We have shown that it is feasible to use pedometers and advice to increase physical activity levels in this population. Further work is now required in a large randomised trial to evaluate the potential role of pedometers in older women.

7

**DRY MOUTH AFTER STROKE**

**G D Kerr<sup>1</sup>, L Bowie<sup>1</sup>, C Sellars<sup>1</sup>, J Bagg<sup>2</sup>, M P Sweeney<sup>2</sup>, P Langhorne<sup>1</sup>, D J Stott<sup>1</sup>**

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**Introduction**

A dry mouth is uncomfortable and can adversely affect nutritional status. We hypothesised that dry mouth was a common after stroke and might lead to a change in oral bacterial and fungal flora.

**Methods**

We carried out a prospective cohort study of consecutive stroke admissions to Glasgow Royal Infirmary between June 2004 and November 2005. The patients were identified within 7 days of admission. The presence of oral flora was determined by imprint culture, and salivary flow rates were measured by Salivette sampling.

**Results**

Of 412 patients, mean age 68 years, 225 (61%) had no salivary flow. *Candida glabrata* was found in 42 of 225 (18.7%) with dry mouth compared to 6 of 69 (8.9%) with a salivary flow of 1-120 uL/min and 4 of 74 (5.4%) patients with a salivary flow of >120 uL/min (Chi-squared  $p=0.006$ ). There was no significant association of dry mouth with other oral flora. Multivariate analysis showed only female gender (OR 1.8,  $p=0.014$ ), greater dependency post stroke [modified Rankin Scale] (OR 1.27,  $p=0.02$ ) and *candida glabrata* (OR 2.4,  $p=0.038$ ) to be significantly associated with dry mouth.

**Conclusions**

Dry mouth is present in most patients in the first week after stroke and is independently associated with female gender, dependency and oral *candida glabrata*.

8

**INFLAMMATION AND FRAILTY MEASURES IN OLDER PEOPLE**

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**Introduction**

Patients defined as frail according to Fried's phenotypic definition exhibit increased inflammation. However, Fried's model is based on physical parameters and this inflammation may be related to sarcopenia.

The aim of this study was to investigate inflammation in older patients according to varied frailty criteria.

**Methods**

Frailty status was determined in 110 patients (mean 83.9y) according to:

- functional status (dependent, intermediate, independent)
- Fried (> 3 items of exhaustion, weight loss, slow walking speed, low handgrip strength, low physical activity)
- handgrip strength (women < 17.5 kg; men < 30 kg)
- Rockwood Frailty Index (determined from 30 variables)

**Results**

Prevalence of frailty in this population varied from 27% (functional definition) to 57% (Fried and handgrip strength). The Frailty Index showed mathematical properties previously described in larger cohorts.

With increasing patient frailty as defined by all three categorical criteria, albumin significantly decreased ( $p < 0.005$ ) and tumour necrosis factor- $\alpha$  (TNF- $\alpha$ ) significantly increased ( $p < 0.005$ ). C- reactive protein (CRP) increased significantly ( $p < 0.005$ ) according to functional criteria only and IL-6 increased significantly ( $p < 0.005$ ) according to function and grip strength. Frailty Index correlated significantly with log CRP ( $r = 0.221$ ), log IL-6 ( $r = 0.369$ ), TNF- $\alpha$  ( $r = 0.379$ ) and albumin ( $r = - 0.545$ ).

**Conclusion**

Frailty prevalence varies according to criteria used but the association between frailty status and markers of inflammation is consistent.

**PREVALENCE OF GERIATRIC GIANTS AND FRAILITY IN OLDER MEN LIVING IN THE COMMUNITY: THE CONCORD HEALTH AND AGEING IN MEN PROJECT**

**R Cumming<sup>1</sup>, D Handelsman<sup>2</sup>, M Seibel<sup>2</sup>, H Creasey<sup>1</sup>, P Sambrook<sup>3</sup>, L Waite<sup>1</sup>, V Naganathan<sup>1</sup>, D Le Couteur<sup>1</sup>**

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**Introduction**

The prevalence of Isaacs' Geriatric Giants - immobility, incontinence, instability (falls) and intellectual (cognitive) impairment - among men living in the community is unknown.

**Methods**

The Concord Health and Ageing in Men Project (CHAMP) is a comprehensive study of a representative group of 1705 men (age range 70-97 years) living in the community in Sydney, Australia. Baseline assessment included an ADL scale, the MMSE, and questions about urinary incontinence and about falls in the past year. Frailty was defined using Cardiovascular Health Study criteria (exhaustion, low physical activity, muscle weakness, slow gait speed, weight loss).

**Results**

The prevalence of immobility (needing help walking across a small room or transferring) was 2% in 70-74 year olds, 5% in 75-79 year olds, 7% in 80-84 year olds, and 19% in 85-89 year olds. The prevalence of urinary incontinence at least daily in these age groups was 5%, 8%, 7%, and 15%; prevalence of instability (2 or more falls) was 6%, 6%, 13%, and 14%; and prevalence of cognitive impairment was 2%, 3%, 4%, and 16%. The prevalence of frailty was 5% among those 70-74 years, rising to 28% in those 85-89 years.

**Conclusions**

The Geriatric Giants and frailty are uncommon among men until they are well into their 80s. These findings should be useful to health service planners and to older men themselves.

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10

**CLINICAL AUDIT OF THE IDENTIFICATION AND INVESTIGATION OF CHRONIC RENAL IMPAIRMENT IN ELDERLY PATIENTS**

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**Problem**

Chronic renal impairment (CRI) is associated with increased morbidity, mortality and health costs.<sup>1</sup> Serum creatinine is an unreliable indicator of kidney function in the elderly but the MDRD formula provides a validated estimate of GFR in these patients.<sup>2</sup> TRCP provides guidelines for investigation of CRI.<sup>3</sup>

**Design**

Full cycle clinical audit in 2006/7 of two consecutive patient series admitted to Elderly Medicine without previously recognised CRI. Data from routine sources included: estimated GFR (MDRD formula), recognition of CRI (GFR<60l/min/1.72m<sup>2</sup>.) and renal tract imaging.

**Setting**

Elderly Medicine department in London teaching hospital, admitting elderly patients according to need.

**Improvement measures**

The three measures were Audit 1 feedback, introduction of automatic estimated GFR on the hospital's pathology system and introduction of structured discharge summaries.

**Change effects**

	Audit 1	Audit 2
n	42	92
% Female	71	62
Age (median, range)	85 (66-100)	82 (64-101)
Abnormal serum creatinine (%)	14	23
Reduced eGFR (%)	52	45
Reduced eGFR group		
Abnormal creatinine (%)	27	50
CRI recognised (%)	14	43
Renal imaging (%)	27	40

**Conclusions**

Improvement measures had a modest positive effect on the recognition and management of CRI. Further measures are planned to improve the quality of care.

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11

**COMPARISON OF THE COCKCROFT-GAULT AND THE MODIFICATION OF DIET IN RENAL DISEASE METHODS OF ESTIMATING GLOMERULAR FILTRATION RATES AND THEIR INFLUENCE ON PRESCRIBING**

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**Introduction**

It has become routine practice for pathology laboratories to quote an estimated Glomerular Filtration Rate (eGFR) generated using the Modification of Diet in Renal Disease (MDRD) equation. However, the renal function parameters quoted in drug product characteristics commonly use the Cockcroft-Gault (CG) equation leading to potential confusion for prescribers. Our study aimed to demonstrate whether there would be a material difference in prescribing based on the different methods.

**Methods**

100 inpatients had their eGFR calculated by both methods. We examined whether each patient would be prescribed 3 selected drugs based on the recommendations in the product literature regarding renal function.

**Results**

	Eligible by both methods	Eligible by MDRD only	Eligible by MDRD only	Ineligible by both methods
Enoxaparin (GFR≥30ml/min)	83	10	1	6
Alendronic Acid (GFR≥35ml/min)	68	21	2	9
Gabapentin (1800-3600mg/day) (GFR≥80ml/min)	11	18	1	70
Gabapentin (150-300mg/day) (GFR<15ml/min)	0	0	3	97

The median filtration rate estimated by MDRD was significantly higher compared with CG (56.9 versus 42.0ml/min)(p<0.001). There was a significant difference between prescriptions of high dose Gabapentin, Alendronic acid and Enoxaparin depending on the estimate used (p<0.001).

**Conclusions**

Our study establishes that the decision to treat would be materially affected by our choice of glomerular filtration estimate, and would apply to other drugs in which renal function must be taken into account when initiating, ceasing or modifying a drug dose.

12

**CARDIOVASCULAR SAFETY OF NON STEROIDAL ANTI-INFLAMMATORY DRUGS (NSAIDS) IN ELDERLY PATIENTS, A SYSTEMATIC REVIEW**

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**Scope**

NSAIDs are widely prescribed for pain. Cardiovascular toxicity of NSAIDs initially raised concern following the voluntary withdrawal of Rofecoxib. Two randomised controlled trials had shown significant increased cardiovascular risk with Rofecoxib, a cyclooxygenase 2 selective inhibitor in patients whose mean age was below 65 years.

However it was less clear what the evidence was for traditional non selective NSAIDs and the cardiovascular risk to the elderly population.

**Search Methods**

The Cochrane Library, OVID, EMBASE & MEDLINE databases were searched for published evidence to date.

**Appraisal**

Evidence is limited to sixteen case control and cohort studies looking at risk of heart failure or acute myocardial infarction (AMI) in patients over 65 years of age and current use of non selective NSAIDs.

**Results**

These observational studies suggest that current use of NSAIDs may increase risk of hospital admission with heart failure especially if pre existing heart failure or heart disease is present. Risk of AMI was less consistent but overall there appeared to be slight increased risk in current NSAID users compared with non NSAID users.

The studies did not take into account the over the counter population of NSAID users and patient compliance. They also concentrated on hospital admissions.

**Conclusion**

The results suggest that in clinical practice NSAIDs should be used with some caution in patients with pre existing heart failure or heart disease.

13

**IMPROVING THE IDENTIFICATION AND MANAGEMENT OF PATIENTS OVER THE AGE OF 65 WITH DELIRIUM IN A GERIATRIC WARD**

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**Problem**

Delirium is a common occurrence in hospitalized elderly. Literature shows that delirium increases length of stay and healthcare costs. Our project attempted to determine if institution of standard practices can improve management.

**Design and Setting**

In a preliminary study in two geriatric wards, 7 out of 29 patients screened were delirious. None were appropriately managed. A review of current workflows showed that the main factors were lack of tools for identification and management of delirium. Poor knowledge of the subject matter was apparent in both medical and nursing staff.

**Improvement Measures/ Change strategies**

Teaching sessions were conducted for doctors and nurses. Patients admitted to one geriatric ward were assessed for delirium using the Confusion Assessment Method (CAM) Questionnaire. A standardized algorithm on the management of delirium was instituted. A survey of patients caregivers was done to identify awareness of the condition.

**Change Effects**

By the end of the fifth month of the project, the team identified all delirious patients. Initially, only 20% of the patients were managed appropriately. This steadily increased and by the fifth month, 70% of delirious patients were managed appropriately. A cost analysis showed an average saving of \$3000 per patient per admission and a reduction in hospital stay by 7.6 days.

**Conclusion**

Delirium is a dangerous and costly condition. Timely identification and appropriate management reduces morbidity, mortality, length of stay and healthcare costs.

14

**CLINICAL AUDIT: IMPROVING DISCHARGE INFORMATION**

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**Background**

Appropriate information should be communicated to primary care on discharge from hospital. Improving discharge information contained in clinical abstracts was tackled in the context of an online combined discharge summary/TTA prescription ("eTTA").

**Audit Indicators**

Inclusion of required and irrelevant information in clinical abstracts concerning inpatient episodes.

**Methods**

In the audit and re-audit, the discharge information for a consecutive patient series was assessed by inspecting eTTAs (n=74, 40).

**Practice Change**

The intervention comprised introduction of policy for discharge information, distribution of model text for the clinical abstract, induction and education of medical staff.

**Results**

%	Audit	Re-Audit
Reason for admission	78	95
Treatment	58	95
Active problems	45	93
Complications	26	93
Relevant investigations	43	95
Mobility	30	75
PADL	9	68
Cognition (MMSE)	12	73
Outstanding investigations	27	43
Follow up arrangements	92	90
Unnecessary information	66	8
Word count – median (min - max)	81 (15 – 254)	89 (32 – 151)

**Conclusion**

Simple interventions can lead to major improvements in the quality of discharge information without significant increase in length.

15

**EVIDENCE-BASED HEALTHCARE AND REHABILITATION OF OLDER PEOPLE: THE HEALTH OF OLDER PEOPLE (HOP) PROJECT**

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**Introduction**

Rehabilitation forms the cornerstone of management of frail older people with disability, however often there is uncertainty both about how it should be best organised, and the effectiveness of specific components of treatment. The Cochrane Database of systematic reviews (CDSR) provides a robust synthesis of health-care evidence however reviews are presented in a way that makes it difficult for clinicians to find and interpret relevant information.

The objective of this project was to summarise and disseminate CDSR evidence for best practice in geriatric rehabilitation.

**Methods**

Titles and abstracts in the CDSR were hand searched for relevant content relating healthcare and rehabilitation of frail older people. Clinical questions were developed about the effectiveness of different interventions. Each review was critically appraised, and statements categorising the strength of evidence for each intervention were prepared. The information was organised into topics in two main groups – clinical problems and health service organisation.

**Results**

Evidence statements were written for over 250 interventions in relation to 19 different topics. These were organised into a free website [www.effectiveolderpeoplecare.org](http://www.effectiveolderpeoplecare.org) which was launched in September 2007.

**Conclusions**

The Cochrane Database of Systematic Reviews contains a large amount of valuable information that is relevant to geriatric rehabilitation. This has been summarised and organised in a searchable website to enable quick and easy access for health-care practitioners and providers of services for frail older people.

16

**COMMUNICATION WITH OLDER PEOPLE ATTENDING OUTPATIENT CLINIC: PATERNALISTIC APPROACH OR REAL CHOICE FOR PATIENTS**

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**Introduction**

Department of health in 2000 outlined a commitment for all patient correspondence to be copied to patients. In reality, different styles are used in communicating with the patient like sending copy of clinic letters or dictating in front of patients, while patients may not be interested in receiving copies of GP letter. This survey was focussed on older people's choice about written communication of clinic consultation.

**Methods**

A prospective survey of 170 patients attending clinic was performed using a structured questionnaire. Apart from demography the questions posed were:

1. If they would like to receive written communication about clinic consultation and results letter.
2. If so, would they want a copy of GP letter
3. Or separate letter avoiding medical jargons.

**Results**

Average age: 78.4 years; Female: Male= 92:78

Agreed to receive written communication	70% (120/170)
Declined	28% (47/170)
Unsure	2% (3/170)

Of these 120 patients

38/120 (32%)	Wanted copy of GP letter
82/120 (68%)	Separate letter without jargon
89% (107/120)	Additional result letter

**Conclusions**

Majority of patients (68%) wanted a separate letter without medical jargons. This has implication for healthcare workers. Patient involvement is needed to avoid practice of paternalistic medicine and give patients real informed choice about their clinic consultation correspondence. A pragmatic approach would be to ask patient at the end of consultation what they actually want and provide exactly that style of communication.

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**PRESCRIBING - AN INTERVENTION PACKAGE TO MAKE IT SAFE AND EFFECTIVE**

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**Background**

Accurate transfer of information on patients' current medication across care interfaces is vital in providing seamless, safe, appropriate care. However this process of 'medicines reconciliation' is known to be prone to error. A package of interventions was designed to reliably deliver improved standard of medicines reconciliation at admission and discharge from secondary care.

**Innovation**

An integrated package of multidisciplinary interventions was devised including:

- an admissions medicines reconciliation form prompting for medication and prescribing intention incorporated into admission proforma.
- 'green bag' scheme encouraging patients to bring their medicines into hospital.
- redesigned discharge form prompting for medication changes.
- medication reminder card for patients at discharge.

Each element of the package was individually refined using improvement methodology (Plan - Do - Study - Act) and then introduced with appropriate training.

**Evaluation**

The impact of interventions was evaluated using monthly random notes reviews and a patient survey.

**Results**

	Pre-intervention	Post-intervention
% unintentional medicine changes at admission	>30%	<10%
% medication changes communicated to GP at discharge	<10%	59%
% patients/carers expressing improved confidence in knowing medication regimen	N/A	90%

**Conclusion**

Evaluation demonstrated improved accuracy, quality and reliability of medication information transfer across the interface. The strength of the package is in the embedding of processes into standard, routines so that transfer of information is no longer reliant on individual good practice but is inherent in standard process.

18

**DOES AGEISM TRAINING CHANGE STAFF ATTITUDES?**

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**Introduction**

The National Service Framework for Older People denounced ageism in healthcare. A survey of staff attitude in 2002 formed a baseline following which ageism training was given. The survey was repeated to assess the effect of training.

**Methods**

A questionnaire was sent to 5,000 hospital staff (anonymously).

**Results**

Response rate was 29% of the sample. Twenty two percent in 2002 and 34% in 2005 thought older people are disadvantaged mainly in regards to respect and communication ( $p < 0.0001$ ). Eighty five percent were not aware of any ageism at work. In both surveys, 96% felt that older people should have equal access to health services whilst 4% this time felt that older people should have greater access because of complex needs. Eighteen percent in 2005 and 23% in 2002 thought older patient waited longer for elective surgery ( $p = 0.0045$ ). Thirty four percent (36% in 2002) felt they are given less expensive treatment ( $p = 0.23$ ). Sixty nine percent thought that older people are involved in healthcare decisions in 2005 verses 57% in 2002 ( $p < 0.0001$ ). Only 19% indicated that they received age discrimination awareness training.

**Conclusions**

A minority of staff expressed ageist attitudes. Training has increased awareness of ageism. Whilst previously staff were concerned about inequality of healthcare, more recently lack of respect and poor communication are the areas of concern. Further actions required include increasing numbers of staff trained in ageism and communication.

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**SPECIALIST REGISTRAR (SPR) SATISFACTION WITH GERIATRIC MEDICINE TRAINING IN NORTH THAMES**

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**Introduction**

As little is known about trainees' views of their training, we assessed levels of satisfaction amongst SpRs in geriatric medicine.

**Methods**

A questionnaire was distributed to SpRs in a region who rated their satisfaction with the overall quality and organisation of their training. The SpRs rated different topics on a 5-point scale ("poor" to "excellent"). Those rating training as "satisfactory", "good" or "excellent" were classed as satisfied with their training.

**Results**

The response rate was 66%. There was great variation in satisfaction with different training topics:

Satisfaction category	Subject	% Satisfied
High (>80%)	Acute Assessment	94
	Hospital Consultations	94
	Stroke	88
	Orthogeriatrics	85
	Palliative care	82
	Elderly Medicine	82
	End-of-Life decisions	79
Moderate (50 - 80%)	Falls	76
	Rehabilitation	76
	Day hospital	76
	Capacity	73
	Home visits	65
	Respite	63
Low (<50%)	Community rehabilitation	46
	Pressure sores	44
	Parkinson's disease	44
	Continence	44
	Psychiatry	34
	Continuing Care	31

**Conclusions**

Although SpRs are generally satisfied with their training, we identified significant areas for improvement. This information has been presented within the region and to the Specialist Training Committee.

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**FAILING FRACTURED FALLERS! - AN  
AUDIT CYCLE OF FALLS  
ASSESSMENTS AND SECONDARY  
PREVENTION IN ELDERLY INPATIENTS  
WITH FRAGILITY FRACTURES**

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**Problem**

Our District General Hospital (DGH) had limited orthogeriatric liaison time (1 session/ week). We investigated whether we were undertaking basic falls assessments; and instituting secondary prevention for elderly patients admitted with fragility fractures as suggested by the Royal College of Physicians 1999, and later the National Institute of Clinical Excellence Health Technology Appraisal 2005.

**Design**

A retrospective notes audit of 52 inpatients ≥78 years admitted with fragility fractures (July-October 2004); followed by a re-audit of 52 patients ≥78years (October 2005-January 2006).

**Setting**

A DGH with one weekly orthogeriatric session.

**Improvement Measures**

Number of patients prescribed secondary osteoporotic fracture prevention on discharge.  
Basic Falls Assessment: History; Evidence of medication review; Postural blood pressure (BP); Gait assessment.

**Change Strategies**

Education of ward pharmacists and orthopaedic surgeons.  
Change to orthogeriatric ward round format.  
Posters: simple fall assessment and secondary prevention.

**Change Effects**

	Initial Audit	Reaudit	Percentage Change
Discharged on Bisphosphonate (%)	6	44.2	38.2
Discharged on Vitamin D and Calcium (%)	27	50	23
Falls circumstances documented (%)	79	67	-12
Medication Review (%)	33	40.4	7.4
Postural BP (%)	6	7.7	1.7
Gait assessment (%)	87	96.2	9.2

**Conclusions**

Education has improved secondary prevention of fragility fractures despite limited orthogeriatric liaison sessions. However, assessment of falls risk remains inadequate. Further measures have now been implemented, and the Healthcare Commission's 'Falls service' audit should drive even further local service improvement.

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**DOES THE SOUTH GLASGOW HIP  
FRACTURE REHABILITATION UNIT  
(HFRU) COMPLY WITH SIGN 56?**

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**Problem**

Hip fracture is associated with high rates of morbidity and mortality. Rehabilitation is essential after hip fracture surgery. Different models of care exist. South Glasgow HFRU opened in November 2004. This provides focused, multidisciplinary assessment and rehabilitation in a single ward following surgery.

SIGN 56 (Prevention and Management of Hip Fracture in Older People) was published in 2006 and an audit opportunity arose to assess compliance with the recommended guidelines.

**Design**

Retrospective case note review was conducted of patients discharged from HFRU March-May 2006. Changes were implemented. The reaudit consisted of reviewing case notes of patients discharged from HFRU March-May 2007.

**Setting**

HFRU (32 beds) based in Department of Medicine for the Elderly.

**Improvement measures**

The main objectives included identification of patients who had assessment of cognition, falls, nutrition, thromboprophylaxis and osteoporosis.

**Change Strategies**

The initial audit was presented to members of the multidisciplinary team and orthopaedic department. Thromboprophylaxis, osteoporosis and dietician referral policies were reviewed and altered. Admission proforma and observation charts were altered.

**Change effects**

Changes included improvements in lying/standing blood pressure measurements (1st loop 44%, 2nd loop 70%), medication review (1st loop 84%, 2nd loop 90%) and dietician referral (1st loop 33%, 2nd loop 40%).

**Conclusions**

Better documentation and multidisciplinary team awareness of various components of hip fracture assessment and rehabilitation led to improvement in compliance with SIGN 56.

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**FAST TRACK HIP FRACTURE: THE ESTABLISHMENT AND EVALUATION OF A PROTOCOL DRIVEN INTEGRATED-CARE PATHWAY TO TREATMENT**

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**Problem**

Fracture neck of femur is a leading cause of death in the elderly and delays to surgery reduce recovery. Management of this vulnerable group employs heavy resource use, with cost-estimates of £12,163 per patient-admission. The Dr Foster Unit at Imperial College examined the fractured-hip patient-records of 151 trusts, determining mortality increases after 48hrs waiting for surgery and on average 77% of patients are operated within 48hrs. Prior to the implementation of a multidisciplinary pathway our unit was below average.

**Design**

A prospective, observational-study trial was conducted comparing 2 groups of patients admitted over corresponding 6-month periods, before and after the development of a Fast Track Hip-fracture Unit, and the multidisciplinary integrated-care pathway.

**Setting**

The Trauma and Orthopaedic Unit

**Improvement Measures**

Time to surgery, hospital stay and mortality

**Change Strategies**

A 4-bedded "ring-fenced" unit on the Trauma and Orthopaedic Unit as the centre of a multidisciplinary pathway increased the perioperative optimisation, throughput and patient experience, involving anaesthetists, medicine-for-older-persons physicians, orthopaedic staff and pre and postoperative physiotherapists.

**Change Effects**

Average time to surgery decreased from 49.8 hrs to 29hrs. Patients receiving surgery <24hrs and <48hrs of admission increased to 56% and 86% respectively of 372. There was no increase in mortality rate above national average.

**Conclusion**

The implementation of a Fast Track Hip-fracture Bay at the centre of a multidisciplinary pathway, decreases delay to surgery without increased mortality rate.

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**NATIONAL CLINICAL AUDIT OF FALLS AND BONE HEALTH: (1) HOSPITAL ORTHOGERIATRIC CARE**

**F C Martin, R Grant, J Husk, J Potter, on behalf of the Steering Group for the National Audits of Falls and Bone Health Services**

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**Problem**

In the national organisational audit (2005), 74% acute trust/PCT sites self-reported having integrated falls and bone health services in line with the NSF-Older People. But the details and patient activity levels suggested otherwise. We present the first national patient-level clinical audit of these services.

**Design**

Web-based audit, questions derived from NSF standards, NICE guidance CG21 and TA87, SIGN 56 and the BOA/BGS "Blue Book" on fragility fractures. Questions were piloted and refined with detailed support information. Weighted domain scores for percentage compliance were calculated from individual audit items.

**Setting and Sample**

Three month survivors from people 65years+ presenting to A&E having fallen and fractured a hip (target 20/site).

**Results**

168 sites (91% eligible trusts) submitted hip fracture data from 3184 patients, mean age 83y, 80% women, 22% care home residents. There was marked inter-site variation. Domains scores-median (inter-quartile range) were: pre-operative care-70% (60 – 80); operative, post-operative and rehabilitation care-60% (45-70); information provision-0 (0 – 0). 23% remained in A&E after 4h. 54% had pre-operative pressure relieving equipment, 29% had cognitive assessment, 28% had pre-operative medical input (13% scheduled specialist, 15% duty team). 31% had surgery delayed beyond the 48h target. 59% returned to their usual residence.

**Conclusion**

A few are good but many services provide inadequate organisational, surgical and medical components of orthogeriatric care. Delivering orthogeriatric care as described in the "Blue Book" remains a challenge.

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### NATIONAL CLINICAL AUDIT OF FALLS AND BONE HEALTH: (2) SECONDARY PREVENTION FOLLOWING FRAGILITY FRACTURES

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#### Problem

In the national organisational audit (2005), 74% acute trust/PCT sites self-reported having integrated falls and bone health services in line with the NSF-Older People. But service details and activity levels suggested otherwise. We present the first national patient-level clinical audit of these services.

#### Design

Web-based audit, derived from NSF standards and NICE guidance CG21 and TA87, covering risk assessment for falls and osteoporosis and secondary prevention interventions. Audit questions were piloted and refined with detailed support information. Weighted domain scores for percentage compliance (within 16weeks) were calculated from individual audit items.

#### Setting

The sample was 3 month survivors from people 65years+ attending A&E who had fallen and sustained hip (target 20/site) or other fragility fractures (40).

#### Results

91% of eligible acute trusts and 146 PCTs participated, submitting data from 8826 patients, mean age 80years, 84% women. Domain scores-median (inter-quartile range) for secondary prevention: falls: Hips-50%(35 - 65), non-Hips-25%(10 - 40); bone health-Hips 60%(40 -100), non-Hips 40%(40 - 60).

Most non-hip patients returned home and received no falls or bone assessments or treatments. Higher scores were obtained for hip fracture patients, non-hip patients who were admitted, and Falls clinics attendees. Mean domain scores for hip and non-hips correlated within sites.

#### Conclusion

Many services remain inadequate. High scores from some sites indicate that evidence-based quality care is possible. Integrated falls-fracture liaison services may generate improvements.

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### AN AUDIT OF VISUAL ACUITY ASSESSMENT AND ONWARDS REFERRAL FROM A FALLS CLINIC

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#### Problem

Is visual acuity being checked and recorded correctly in a falls clinic and are all patients with visual impairment referred onwards to optometry, in accordance with a joint policy statement by the British Geriatrics Society and the College of Optometrists.

#### Design

An audit of visual acuity assessment in a falls clinic. Data collected included visual acuities, onwards referral to optometry, pre-existing eye disease and whether patients were known to optometry. Nursing staff knowledge of visual acuity assessment was recorded.

#### Setting

A falls clinic at the Victoria Infirmary, Glasgow.

#### Improvement Measures

Accuracy of visual acuity recording. Appropriate referral of patients with visual impairment to optometry. Increased nursing staff knowledge of visual acuity assessment.

#### Change Strategies

Visual acuity information was disseminated to clinic staff. Nurses received training from optometry. Paperwork recording visual acuity was improved. A pilot service for optometry referrals was introduced.

#### Change Effects

Prior to change strategies, 69 patients were assessed, and afterwards 46. Both before and after, 100% of patients had visual acuity checked and recorded. Most patients had visual impairment. About half of the patients had pre-existing eye disease and around 20% of these were already known to optometry. Optometry referral increased from 3% to 17% following changes. Nursing staff knowledge of visual assessment improved.

#### Conclusions

The improvement measures increased appropriate optometry referrals and nurse knowledge. Visual acuity measurement was maintained at 100%.

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**ATRIAL FIBRILLATION: CONFIDENCE IN MANAGEMENT AND PATTERNS OF REFERRAL IN PRIMARY CARE**

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**Introduction**

There is a growing epidemic of atrial fibrillation (AF) offering complex clinical challenges. The revised 2006/2007 General Medical Service (GMS) GP contract introduced AF as a new clinical indicator in the quality and outcomes framework (QOF). An AF register would be required in each practice. The GMS contract does not consider whether patients are on appropriate thromboprophylaxis. NICE (National Institute for Health and Clinical Excellence) AF guidelines contain a risk stratification model to help guide thromboprophylaxis choice.

**Method**

137 GPs (Leeds PCT) were sent a clinical effectiveness questionnaire designed to assess i) whether QOF indicators are being met, ii) GP confidence in AF management and iii) awareness of AF risk stratification models. Information on referral patterns was gained to assess the potential role of specialised secondary care clinics to aid patient choice.

**Results**

60% response rate. 97% had an AF register. 80% of respondents were unaware of specific decision support tools in AF management. 2/3 of participants would refer >60% of all new AF diagnoses.

**Conclusion**

In line with the revised GMS contract the majority of GP practices now keep an AF register. There is an apparent lack of awareness of the risk stratification model in the NICE AF guideline or alternative models that could assist individual patient choice of thromboprophylaxis. Dedicated AF clinics in secondary care may help primary care deliver improved patient centred clinical care.

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**TRANSLATIONAL EVALUATION OF THE OPAL ACUTE CARE MODEL**

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**Background**

The OPAL (Older Peoples Assessment and Liaison) acute care system is becoming popular to deliver NSF compliant "comprehensive geriatric assessment"; a consultant lead specialist multidisciplinary team assesses all acute elderly patients for complexity to avoid inappropriate admissions and to stream to appropriate wards.

**Innovation**

The OPAL system was implemented using PDSA cycles.

**Evaluation**

A multidisciplinary OPAL team was created from existing resources, along with a work system and documentation. Of 919 consecutive elderly patients presenting acutely, 866 were medical cases. 80% of these were assessed. 25% of complex elderly could be diverted from admission (see Table). 76% of complex elderly requiring admission went to Medicine for the Elderly.

%	Simple	Complex
Discharged home	51.8	24.9
Admitted		
Medicine for the elderly	10.1	51.8
Other medical specialty	37.4	16.1
Transferred to rehab/respice	0.5	1.6
Died	0.3	5.6

**Conclusion**

The OPAL model can be replicated through local service development. Assessment of the majority of patients is feasible and leads to disposal decisions based upon need, including discharge of complex elderly patients.

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**AN AUDIT TO ASSESS LOCAL INITIATIVES TO MEET THE NICE GUIDELINES FOR PARKINSON'S DISEASE**

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**Introduction**

The recent NICE Guideline for Parkinson's disease(PD) aims to improve patient care. The challenge of meeting the guideline requires the refining and development of services and good communication between primary and secondary care teams.

**Methods**

2 GP surveys were undertaken, comparing practice before and after the NICE guidelines. Interventions between the surveys included educational programmes, development of a PD stakeholders group and a shared care pathway between primary and secondary care teams.

**Results**

Question	2004 Questionnaire (68 respondents)	2007 Questionnaire (62 respondents)
*Do you refer all new patients to hospital prior to treatment?	44%	80%
*Do you have access to PD nurse?	56%	68%
*Do you have access to physiotherapist?	71%	75%
*Access to OT?	N/A	43%
*Access to SALT?	N/A	64%
*Access to palliative care services?	N/A	68%
*Referred to PD neurologist	12%	41%
*Referred to PD geriatrician	7%	25%
Referred to any physician	22%	2%
Referred to named PD specialist	6%	27%

\* denotes NICE guideline criterion

Particular areas of improvement include the early referral of patients for diagnosis and such referrals being made to appropriate specialists. However large numbers of GPs still lack access to therapists and PD nurses.

**Conclusion**

The results suggest that local interventions can be successful in terms of meeting the NICE guidelines for PD. However investments are still required to fulfil all the NICE criteria, especially in terms of therapy access.

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**ARE OUR PATIENTS IN DANGER OF MALNUTRITION?**

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**Introduction**

The elderly are at high risk of malnutrition which may adversely affect their well-being and recovery.

NICE guidance (2006) recommends screening all in-patients and starting those at risk of malnutrition on nutritional support. We audited the compliance of our department with NICE guidance.

**Methods**

Sixty patients in three geriatric wards were audited. Patients were excluded if in hospital < 48 hours, receiving palliative care or suffering with oedema.

Current and past medical problems, nutritional status, frequency of weights, use of the hospital's Nutritional Support Strategy and supplements were recorded.

**Results**

22% were weighed on admission, only 35% were weighed more than once, of which 71% lost weight (average weight loss 5%). 45% of patients with Body Mass Index <20 were on supplements and only 39% received appropriate nutritional support.

**Practice Change**

Our results were presented at meetings and doctors and nursing staff were educated about the problem, NICE guidance and the hospital's Nutritional Support Strategy in particular the range of foods and supplements which could be prescribed.

**Re-Audit Results**

On re-audit 4 months later 74% were weighed more than once, of which 26% had lost weight (average weight loss 3.5%). 79% with BMIs <20 were on supplements and 63% appropriately supported.

**Conclusions**

Many in-patients are at risk of malnutrition which seems to go unrecognised. However simple measures to educate staff about the problem can have a significant beneficial effect.

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**SYSTEMATIC REVIEW OF TREATMENT FOR OLDER SUBSTANCE MISUSERS**

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**Scope**

There is growing awareness of increasing mortality and morbidity among older substance misusers. Studies on which current treatment guidelines are based do not include older people. The benefits have not been systematically scrutinised.

**Search Methods**

Recognised databases were searched. 16 papers met inclusion criteria (subjects >50 years; licit and illicit substances, pharmacological and psychosocial treatments) were reviewed systematically for the efficacy of substance misuse treatments.

**Appraisal**

The searches produced 2500 papers, of these 50 appeared relevant and the full articles obtained and read. 16 studies were identified as relevant and are included in this review.

**Results**

All studies, 5 of which had a control group, were conducted since 1984. Only 2 studies were in the UK. Eleven were on alcohol/alcohol and drug misuse, 1 on methadone maintenance, 3 on smoking, 1 on prescription medication. Mean samples size was 704 (24-3,622) patients. Mean follow-up was 18 months (1 month- 5 years). Outcome was reliant on patient self-report for 11/16 studies; most did not verify results. Baseline and outcome measures varied as did psychological treatment interventions. Overall conclusions in all studies indicate that older people do respond to treatment, do not achieve worse outcomes than younger counterparts, and may do better.

**Conclusions**

This first systematic review provides positive preliminary findings for older substance misusers seeking treatment. Professional training to improve recognition and treatment outcomes and UK-based research is required.

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**SMOKING CESSATION SUPPORT POST STROKE: AN AGEIST REFERRAL POLICY?**

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**Introduction**

Smoking cessation is an important component of secondary prevention post stroke. Older patients can be engaged successfully in smoking cessation programmes. We assessed if age influences whether post stroke patients have access to, and utilise, smoking cessation services.

**Methods**

The Stroke Audit in Lanarkshire (SAIL) database records details of inpatient stay and outpatient follow up. We retrospectively analysed clinical and demographic data, details on whether the patient had been offered smoking cessation treatment (SCT), if they had attended classes or received input from specialist nurses, and if they had stopped smoking over their period of follow up.

**Results**

Between January 2006 and August 2007, 620 patients were admitted with a diagnosis of stroke, of whom 174 (28%) were smokers. Sixteen of these smokers died. Of the remaining 158 patients (mean age 65 years), 69% of those aged under 65 were offered SCT compared to 43% of those aged 65 or over (p=0.004). For those offered SCT 66% of the younger group accepted, compared with 62% in the older group (p=0.4). When followed up in the community 22% of the younger group and 20% of the older group had given up smoking post event (p=0.9).

**Conclusions**

Our study shows a clear deficiency in access to smoking cessation services in older patients post stroke. However, the proportion of patients accepting smoking cessation and giving up smoking were comparable in both groups.

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**A SURVEY OF PEOPLE THAT PROVIDE UNPAID CARE FOR SURVIVORS OF STROKE**

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2. Gloucestershire Hospitals' NHS Trust 3. Carers Gloucestershire 4. University of Derby

**Introduction**

Stroke care and rehabilitation is increasingly being provided in the community. Little is known of the experiences of carers of stroke survivors.

**Method**

3,231 stroke patients in Gloucestershire were identified using 68% of available GP databases. They were sent a questionnaire to be completed by a carer, if they had one. 888 carers responded.

**Results**

Each patient's care need was evaluated using the Social Service Eligibility Criteria Assessment Framework. 73% fell above the threshold for service delivery. 77% said the patient had no care plan. 88% of carers had not had their needs assessed, their mean age was 65.5 years, and 79% lived with the stroke patient. 72% of carers spent 7 days a week for 3 or more hours/day caring, 90% reported that they had no regular visits from any health or social care services. 30% of carers had an opportunity for short, regular breaks, 25% did not know of anyone they could call on to look after the stroke patient if they needed a rest or were ill. 48% said they had not taken a break of 2 days or longer since they first started caring.

**Conclusion**

Care needs assessments, for patients and their carers, are perceived as sub-optimal and need to be improved if future community-based stroke care is to succeed.

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**THE ROLE OF A VIRTUAL CLINIC IN MEDICINE FOR THE ELDERLY**

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**Background**

PCTs requirements for reduced "Follow Up to New" ratios preclude traditional out patient (OP) follow up. We therefore developed a Virtual Clinic (VC) using PDSA methodology, to manage the results of investigations and communication with primary care

**Innovation**

Patients are booked into the VC at outpatients. The medical team reviews VC patients each week using online access to imaging, echocardiographs, ECGs, Holter monitors, electrophysiology and clinic correspondence. The senior clinician dictates a GP letter with results/ recommendations or recalls the patient. All information was stored online

**Evaluation**

The VC was developed over 5 months using 7PDSA cycles. Of a consecutive series of 261 OP clinic patients, 78 were reviewed in the VC on one or more occasions, avoiding 92 follow up OP appointments. All cases were tracked successfully through the VC system. The VC required 30-60 minutes per week. Communications to primary care included the results of 29 imaging investigations, 26 blood tests, 19 24-hour tapes, 15 echocardiograms, 7 endoscopies and 4 ECGs. 1 patient was recalled. The OP Follow-up to New ratio for these patients was 0.68:1.

**Conclusion**

Using new clinical information systems, the VC allows effective management of investigations through comprehensive team review as an alternative to OP follow up. Additional benefits include (1) avoidance of inconvenient hospital trips for patients, (2) elimination of the DNA problem and (3) valuable training for trainees.

**34** CAN TRAINING IMPROVE NURSING SKILLS REQUIRED TO CARE FOR OLDER PATIENTS?

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**Introduction**

The National Service Framework indicates hospitals should maintain nursing skills and have in place training. Initial nurse’s skill survey in 2002 in WUTH identified poor knowledge and skills in dementia care. WUTH was the first hospital to work in partnership with Alzheimer’s Society to run training. Nurse champions and other nurses underwent the training and good practice was shared.

**Methods**

A questionnaire was sent to 370 nurses on 38 adult wards (anonymously) asking them to rate their skills from very good to poor.

**Results**

One hundred and forty questionnaires (38%) were returned. The table depicts the difference after training.

Skill	Percentage Rating Very Good & Good (2002) n=208	Percentage Rating Very Good & Good (2007) n=136	P-values (<0.05)
Maintaining fluid balance	83	84	
Pressure sore management	82	86	
Infection control	80	90	0.017
End of life issues	75	75	
Falls and immobility	73	80	
Family and carers needs	70	83	0.007
Pain management	65	81	0.001
Social circumstances	65	70	
Rehabilitation potential	60	59	
Continence management	59	63	
Nutritional status	56	77	<0.0001
Acute confusion	51	57	
Cognitive impairment	41	60	0.0006
Depression	36	43	

**Conclusions**

More nurses indicated improved skills generally and in particular in infection control, pain management, nutritional status and cognitive impairment in 2007. Developing nurse champions who perform cascade training can improve nursing skills in caring for older patients.

**35** ESTIMATION OF HYPOVITAMINOSIS D IN A ‘HEALTHY’ POPULATION

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**Introduction**

An adequate vitamin D store is required for maintaining optimal muscle strength and bone density.

There is little data on vitamin D status in a healthy population. It is likely that health professionals working predominantly indoors and having poor exposure to sunlight may be deficient in vitamin D.

**Methods**

Volunteers from staff (doctors, nurses and allied health) employed in hospitals and the community in Canberra, Australia participated in the study. They completed questionnaires on their life style and exposure to sunlight, provided blood samples at the end of summer and winter to assess for seasonal variations in vitamin D levels.

Approval from the local ethics committee was obtained.

**Results**

119 volunteers participated in the study, 85% of them women. In summer, the mean vitamin D level was 55.16nmol/L. 75% had vitamin D levels below 66nmol/L. 10% had severe hypovitaminosis D with levels below 32nmol/L.

In winter, only 76 volunteers presented for review. The mean vitamin D level dropped to 43.29nmol/L. 75% had vitamin D levels below 55nmol/L. 25% had severe hypovitaminosis D with levels below 29nmol/L.

73 participants had presented both in summer and winter. Of the 73 paired samples, the mean level in summer was 57.43nmol/L. This dropped to 42.89nmol/L in winter (p=<0.0001)

**Conclusions**

Hypovitaminosis D is very common in “healthy” persons working predominantly indoors. A seasonal variation in vitamin D levels is observed with levels dropping in winter.

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**EVALUATING THE ASSOCIATION BETWEEN 25(OH) VITAMIN D LEVELS AND MEASURES OF MUSCLE AND BONE STRENGTH IN A COHORT OF CANADIAN LONG TERM CARE RESIDENTS**

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**Introduction**

Reduced Vitamin D levels are associated with decreased muscle strength in elderly. Residence in long term care (LTC)/nursing home has been shown to be a risk factor for Vitamin D deficiency. This study was done to evaluate the correlation between Vitamin D, muscle strength and calcaneal bone density in LTC residents.

**Methods**

Proxy consent was obtained for participants in LTC facilities in Edmonton, Canada. In each participant: calcaneal bone density was measured using Sahara calcaneal ultrasound; muscle strength assessed (grip, biceps, hip extension, balance); serum 25(OH)D and creatinine clearance evaluated.

**Results**

37 residents participated, 29 women. Average age 84yrs, average MMSE 15. All were assessed during winter. 25(OH)D ranged from 44-243nmol/l with an average of 108nmol/l. 65% were on oral Vitamin D supplementation. No correlation was found between 25(OH)D levels and calcaneal BMD ( $R=-0.11$ ;  $p=NS$ ), muscle strength ( $R=0.28$ ;  $p=NS$ ), balance ( $R=0.11$ ;  $p=NS$ ), grip strength ( $R=0.14$ ;  $p=NS$ ) and creatinine clearance ( $R=0.10$ ;  $p=NS$ ). The only significant correlation was between 25(OH)D levels and a history of clinical fracture ( $R=0.31$ ;  $p<0.05$ ).

**Conclusions**

Vitamin D levels were surprisingly good in this high risk group. Although the numbers are small, no significant correlation was found with factors affecting fall/fracture risk individually, yet overall there was a correlation between Vitamin D levels and previous clinical fracture. The role of Vitamin D in reducing fracture risk was not identified in this study.

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**PATIENTS WITH NEW COLLES' FRACTURES HAVE A HIGH LEVEL OF PREVIOUSLY UNDERDIAGNOSED AND UNDERTREATED FRACTURES**

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**Introduction**

Older community-dwelling subjects with previous Colles' fractures have a high prevalence of osteoporosis and are under-investigated and under-treated 1. This study aimed to assess the previous treatment of osteoporosis in patients presenting with Colles' fractures. This data gives insight into the bone quality and treatment practices for this population.

**Methods**

Each patient attending an outpatient trauma clinic with a Colles' fracture in the period 28/04/04 to 1/11/07 was invited to attend a nurse-led specialist clinic to assess the risk of osteoporosis and falls.

**Results**

Of the 196 subjects, 81 had a previous history of a fracture, 44 of these being Colles' fracture. Fifty-six (69%) of the patients with prior history of fractures, and 35 of the patients (80%) with prior Colles' fracture had osteoporosis. Despite the previous history of fracture only 11(14%) patients were on bone protectants. There were no significant differences ( $p$  value 0.12 to 0.55) found in terms of age, gender or mean T score between those with and without a previous fracture.

**Conclusions**

In this group with Colles' fracture, 41% had had a previous fracture; 69% of these had proven osteoporosis. However, only 14% were on bone protectants.

This highlights the lack of import and low level of intervention given to patients with initial Colles' fractures.

**References**

Masud T, Jordan D, Hosking DJ; Age Aging 2001

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**WHOLE BODY VIBRATION EXERCISE IN OLDER PEOPLE: WHAT IS THE OPTIMUM VIBRATION FREQUENCY?**

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**Introduction**

Whole body vibration (WBV) at 30Hz has been shown to acutely increase anabolic hormones in older people, and WBV exercise programmes can increase leg strength. However, data on optimum vibration frequency are lacking. This study aimed to establish the acceptability, tolerability and hormonal effects of other vibration frequencies.

**Methods**

20 healthy volunteers (50% male, mean age 73±4 years) underwent four sessions of WBV (3mm displacement) at 0Hz (sham), 20Hz, 40Hz and 50 Hz in random order, each one week apart. Each session consisted of 10 one-minute periods standing on a vibrating plate interspersed with one-minute rest periods. Acceptability was measured on a 10-point Likert scale. Tolerability was measured by percentage completing each session. Blood samples were taken immediately before and 15 minutes after each session.

**Results**

Tolerability was 100% for all frequencies.

	Median (Interquartile Range) after WBV				Friedman Chi-square, P
	0Hz	20Hz	40Hz	50Hz	
Acceptability	10 (9-10)	9 (8.3-10)	10 (8-10)	9 (7.3-10)	<.001
Growth Hormone	3.6 (1.8-10.7)	2.4 (1.3-6.3)	2.2 (1.1-9.1)	3.6 (0.6-11.7)	.11
IGF-1	14.0 (9.6-15.4)	13.6 (11.0-7.1)	13.4 (10.3-16.9)	12.9 (11.5-16.2)	.98
Testosterone (M)	19.7 (15.0-25.7)	18.5 (15.2-23.9)	19.2 (15.0-26.4)	17.8 (14.2-23.8)	.72
Testosterone (F)	1.6 (0.9-2.1)	1.6 (1.1-1.9)	1.6 (1.3-2.0)	1.4 (1.0-1.7)	.32

**Conclusions**

WBV was well tolerated. Acceptability declined at higher frequencies but remained high even at 50Hz. No significant differences in anabolic hormone levels were observed after WBV at any of the frequencies assessed.

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**CHARACTERISTICS OF CENTENARIANS ADMITTED TO A DGH OVER A 5-YEAR PERIOD**

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**Introduction**

Amidst rising admissions of very old individuals in acute hospitals, this study was undertaken to determine the profiles, characteristics and outcomes of the centenarians who required admission to a District General Hospital (DGH) over a 5-year period.

**Methods**

Case-note analyses of consecutive centenarians admitted to our DGH between 2002 and 2006 were undertaken and several parameters were studied.

**Results**

Of approximately 306,025 adult admissions over 5 years, 83 centenarians (median age 101 years, range 100-106 years) were admitted across all departments (64.3% under geriatricians, 15.7% in orthopaedics and rest in medicine, urology and general surgery), the commonest reasons being falls / syncope and respiratory conditions. The average length of stay was 8.9 days. Prior to the admission, 55.7% lived independently (of these 70% lived alone), 63.8% were independently mobile and continence was preserved in 64.3%. Two were active smokers, 4 ex-smokers and none had a history of significant alcohol consumption. The average number of hospital admissions within 10 years preceding the index admission was only 2. None had a readmission within a month post-discharge. Only 5% required care home placement. The in-hospital mortality rate was 14.3%.

**Conclusions**

Majority of the centenarians requiring acute hospital admission lived independently, maintained acceptable state of health and functional status, returned to their pre-admission residence on discharge, had infrequent hospital admission episodes and did not seem to pose a significant burden to the DGH.

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**CAN FEAR OF URINARY INCONTINENCE EXPLAIN THE PRESENCE OF ORTHOSTATIC HYPOTENSION IN OLDER PEOPLE? AN EXPLORATORY STUDY**

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**Introduction**

Orthostatic hypotension (OH) is frequent in older people. A non-neurogenic cause is reduced intravascular volume secondary to poor fluid intake. Urinary incontinence causes poor fluid intake (Hodgkinson, B. et al., 2001). In older people nocturnal urine loss increases by 30(±10 SD)g for each 100ml of evening fluid intake (Griffiths, D. et al., 1992). We hypothesized that voluntary reduction in oral fluid intake due to fear of incontinence may contribute to OH. Because measurement of oral fluid intake is difficult, plasma osmolality was used as a surrogate for intravascular depletion.

**Methods**

Subjects selected from consecutive participants attending TRIL Centre between October -December 2007. Inclusion criteria: informed consent, age ≥60, and OH (drop >20mmHg in systolic blood pressure on active stand using Finometer®). Exclusion criteria: MMSE <23, history of Parkinson's disease or diabetes, diuretic use. OH is defined as drop >20mmHg in systolic blood pressure on active stand using Finometer®. Severity of incontinence was measured by the International Consultation on Incontinence Questionnaire-Short Form (ICIQ-SF)

**Results**

31 subjects were recruited (74.2% females). An independent samples t-test for equality of osmolality means between subjects with (n=28) and without (n=3) OH was highly significant (p=0.013). However, mean ICIQ-SF scores between subjects with high (>295 mOsmol/Kg, n=14) and normal (n=17) osmolality were not significantly different.

**Conclusions**

OH appears associated with increased plasma osmolality but severity of urinary incontinence (measured by ICIQ-SF) did not mediate this relationship. Self-report bias may be implicated. Further research should have larger sample sizes, reliable data on fluid intake and more objective incontinence data.

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**ANTICOAGULATION OF ATRIAL FIBRILLATION SHOULD INCLUDE OLDER PEOPLE: A PROSPECTIVE STUDY**

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**Aim**

To investigate bleeding and thromboembolic events during anticoagulation of nonvalvular atrial fibrillation (NVAf) in older people (≥75 years) compared with younger people (<75 years).

**Methods**

All new patients with NVAf referred to anticoagulation clinic over 21 months period were studied. Patients were interviewed personally on their first visit then by telephone every 4-6 weeks for a mean (SD) of 19 (8.1) months. They were asked about bleeding or thromboembolic events. Patients were split by age into younger (<75 years) and older groups (≥75 years).

**Results**

Total of 402 patients were included {203 in younger group and 199 in older group}. Older group had more significant past medical history of cerebrovascular disease and thromboembolic disease compared to younger group {60 (30.2%) vs 38 (18.7%), p=0.008 and 12 (6%) vs 4 (2%), p=0.04 respectively}. However, number of patients who developed ischaemic stroke, major bleeding and minor bleeding were comparable {3 (1.5%) vs 5 (2.5%) p=0.9, 6 (3%) vs 5 (2.5%), p=0.9, and 47 (23.6%) vs 42 (20.7%), p=0.7 respectively}. Younger group had more DC cardioversion than older group {31 (15.3%) patients vs 7 (3.5%) patients, p=0.0003 respectively}. Quality of anticoagulation control was comparable in both groups.

**Conclusion**

Older people (>75 years) appeared to tolerate anticoagulation as well as younger people. Age alone should not be a major determinant of eligibility for anticoagulation in patients with atrial fibrillation.

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### ONE YEAR SURVIVAL IN OLDER PERSONS WITH CONGESTIVE HEART FAILURE

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#### Introduction

Prognosis from chronic heart failure (CHF) with left ventricular systolic dysfunction (LVSD) is variable. Previous studies estimate one year survival of 62% for incident and 89% for prevalent cases. Our aim was to estimate one year survival in patients with LVSD referred to our CHF clinic.

#### Methods

We studied consecutive community dwelling patients aged over 70 referred from July 2001 till July 2006. All had echocardiogram proven LVSD in the absence of significant valve abnormality. Electronic hospital records were searched on 1/8/07 and date of death determined.

#### Results

424 patients were included. Mean age 80 (range 70 to 100). The majority were seen following an inpatient episode. 212 died before 01/08/07. Median survival time was 51.1 months (95% CI 42.27% -57.0%). 12 month survival was 81.6% (95 % CI- 77.6% to 85.2%).

#### Conclusions

One year survival in our cohort was similar to previous prevalent studies, despite the greater proportion of older persons. Our results may be confounded by referral bias. More severe CHF cases may be kept at home by primary care services or admitted acutely prior to death. Our data shows that elderly community dwelling CHF patients who are stable enough to attend a new appointment have a relatively good one year survival.

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### CAUSES OF ELEVATED TROPONINS IN THE ELDERLY AND SUBSEQUENT ANTI-PLATELET THERAPY IN NON-ST ELEVATION MYOCARDIAL INFARCTION - A PROSPECTIVE OBSERVATIONAL STUDY

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#### Introduction

Acute coronary syndrome causes significant mortality and morbidity. Elevated troponins suggest myocardial damage, but in the elderly, data as to the relevance of elevated cardiac troponins in acute care setting is lacking. Our study aimed to determine reasons for elevated troponins in older people, and in those with non-ST elevation myocardial infarction (NSTEMI), evaluate use of anti-platelet therapy

#### Methods

925 consecutive in-patients aged 70 years and above, with elevated Troponin-T were screened with data collected prospectively, including symptoms and ECG's for causes for raised TnT. Numbers receiving anti-platelet therapy following NSTEMI were also calculated and analysed.

#### Results

Mean age was 81 years, (range 70-100). 309 had a NSTEMI, and 154 an ST elevation MI. 149 (16.1%) had sepsis, 68 (7.4%) had heart failure, and 62 (6.7%) had renal failure. Other diagnoses included AF/SVT, stroke, cancer, and pulmonary embolism.

Of those with NSTEMI, 136 (44.6%) received aspirin and clopidogrel, 103(33%) received aspirin only and 28 (9.1%) received Clopidogrel only. Anaemia (15.7%) was the main cause for not receiving dual therapy, followed by CRF (12.1%). Other causes included warfarin, intracranial haemorrhage, haematuria, dementia and ulcer disease. In 31(10%) patients no reason was documented for not receiving dual therapy.

#### Conclusion

In an acute hospital setting, 50% of elderly with elevated Tn-T have either STEMI or NSTEMI. Of those with NSTEMI, 44.6% receive dual anti-platelet therapy, with 10% having no documented contra-indication.

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### SYMPTOM RESPONSE TO CAROTID SINUS MASSAGE IN THE NEWCASTLE CAROTID SINUS HYPERSENSITIVITY COHORT

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#### Introduction

Carotid sinus hypersensitivity (CSH) is a common cause of syncope and unexplained falls in older patients, but also occurs in up to 35% of asymptomatic community dwelling elders [Kerr et al, Archives of Internal Medicine 2006]. A positive carotid sinus massage (CSM) should therefore be interpreted together with symptom response. Our objective was to determine the symptoms associated with positive CSM in patients with unexplained falls and/or syncope.

#### Methods

The electronically stored haemodynamic data of all consecutive patients investigated with CSM from 2004 to 2007 were analyzed to identify those with CSH, defined as asystole of 3 seconds or greater (cardioinhibitory) and/or a systolic blood pressure drop of at least 50mmHg (vasodepressor). The hospital records of the patients with CSH were reviewed for symptoms in response to CSM.

#### Results

74/302 (25%) patients had CSH. The hospital records of 73 patients with CSH were reviewed, 37 (51%) had cardioinhibitory and 36 (49%) had vasodepressor responses. 52/73 (71%) reported syncope, presyncope, dizziness and other symptoms following CSM. 41/73 (56%) had reproduction of presenting symptoms. Any symptom response and symptom reproduction were significantly more likely in patients with cardioinhibitory CSH than vasodepressor CSH (92% vs 50%,  $p < 0.001$ , and 82% vs 28%,  $p < 0.001$ , respectively).

#### Conclusion

CSM reproduced the presenting symptoms of 56% of patients with unexplained falls and/or syncope. Symptom reproduction was more likely in patients with cardioinhibitory CSH.

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### ORTHOSTATIC HYPOTENSION AND VASOVAGAL SYNCOPE IN THE NEWCASTLE CAROTID SINUS HYPERSENSITIVITY COHORT: DO NEURALLY MEDIATED DISORDERS REALLY OVERLAP?

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#### Introduction

Previous observational studies have suggested an overlap between carotid sinus hypersensitivity (CSH), vasovagal syncope (VVS) and orthostatic hypotension (OH) [McIntosh et al 1993; Alboni et al 2004]. We investigated this relationship in patients investigated with carotid sinus massage (CSM) in a specialist falls and syncope unit.

#### Methods

Electronically stored haemodynamic monitoring data (Task ForceTM, CN Systems) of all patients investigated with CSM at our facility from 2004 to 2007 were analysed. CSH was defined as asystole  $\geq 3$  seconds and a systolic blood pressure drop of 50mmHg during CSM. OH was defined as a blood pressure drop of  $\geq 20$ mmHg systolic or 10mmHg diastolic with active standing. Head-up tilt (HUT), the diagnostic test for VVS, was considered positive if symptom reproduction occurred in the presence of blood pressure and/or heart rate reduction.

#### Results

Postural blood pressure measurements were available for 281 (93%) of the 302 patients investigated with CSM. 39/68 (57%) of subjects with CSH also had OH, compared to 118/213 (55%) of subjects without CSH ( $p = 0.778$ ). 179/302 (59%) also had a HUT. 12/27 (44%) of subjects with CSH had a positive HUT test, compared to 65/152 (43%) of subjects without CSH ( $p = 0.576$ ).

#### Conclusion

There was no significant increase in OH or positive HUT in patients with CSH compared to patients with normal CSM in our patient population. The relationship between CSH, OH and VVS therefore warrants further investigation.

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**PREVALENCE OF AMBULATORY HYPOTENSION IN THE ELDERLY WITH CHRONIC KIDNEY DISEASE**

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**Introduction**

Chronic kidney disease (CKD) is common in the elderly and guidelines recommend aggressive treatment of clinic systolic blood pressure (SBP) to slow its progression. There is concern that drug treatment in this group results in hypotension and adverse outcomes. We present the first study to prospectively examine the relationship between BP measured in clinic and during 24hour ambulatory blood pressure (24hABPM) in the elderly with CKD.

**Methods**

Subjects were 62 stable outpatients over 65 years of age with estimated glomerular filtration rate (MDRD eGFR) 15-60ml/min/1.73m<sup>2</sup>. Visit BP was recorded (Omron 705 CP) and 24-hr ABPM was obtained (Diasys Integra®).

**Results**

	Population Characteristics (mean±SD)
Age	74.4±6.1
eGFR	31.5±11.4
Diabetic	17.7%
Male	79%
Clinic SBP	154.7±20.7
Clinic DBP	80.4±11.0
%SBP<100mmHg on 24hABPM	19.4±18.1% (range 0-75.8%)
%DBP<60mmHg on 24hABPM	18.7±18.6% (range 0-73.9%)

Age correlated with clinic SBP R=0.27, p=0.03\*, with the difference between clinic SBP and 24h mean daytime SBP (a marker of 'white-coat' hypertension) R= 0.43, p<0.01\* and with the difference between clinic SBP and lowest recorded SBP over 24h (a marker of swings in SBP) R= 0.29, p=0.02\*.

**Conclusion**

There is a high frequency of systolic and diastolic hypotension during 24h ABPM in the elderly with CKD despite clinic hypertension. Age is correlated with variability of SBP. Current guidelines advising aggressive treatment of SBP based on clinic values may need to be applied with caution in the elderly.

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**CLINICAL CHARACTERISTICS OF NON-DIABETIC COMMUNITY-DWELLING ELDERLY WITH DIFFERENT BLOOD PRESSURE STATUS**

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**Introduction**

Hypertension is an important risk factor in cardiovascular diseases, so is in the elderly. The aim of this study is to explore the clinical characteristics among people with different blood pressure status (normotensive (NT), newly diagnosed hypertension (NDH), and hypertension under treatment (HUT)).

**Methods**

In 2002, community-dwelling elderly people in Taipei City participating in the annual health examinations were invited for study after consented. Demographic data including age, sex, and past medical history were recorded. Serial anthropometric measurements ( body height, body weight, blood pressure) were done. Blood sampled after 10-hour overnight fast. Serial comparisons performed by Chi-square test, Student t-test, and one-way ANOVA.

**Results**

3244 subjects were enrolled (mean age: 73.4±5.4 years, 56.2% males). 52.9% were hypertensive (HUT: 36.1%, NDH: 16.8%). The prevalence of chronic kidney disease (CKD) and left ventricular hypertrophy (LVH) was 20.9% and 6.2%, respectively. Compared with NT group, NDH subjects were significantly older, having higher body mass index (BMI), fasting glucose, total cholesterol, triglyceride, higher prevalence of proteinuria, CKD and LVH.

HUT subjects had significantly higher BMI, fasting glucose, creatinine, uric acid, lower cholesterol; and higher prevalence of CKD than NDH.

**Conclusions**

The prevalence of CKD, proteinuria, and LVH were similar among NDH and HUT subjects, which implied end-organ damage happens early. Aggressive hypertension screening in asymptomatic elderly is needed. Early intervention maybe benefit from this study.

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### MEDICAL STUDENTS' ATTITUDES TOWARDS OLDER PEOPLE AND A CAREER IN GERIATRIC MEDICINE – THE SINGAPORE EXPERIENCE

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#### Introduction

Singapore's elderly population is projected to treble in the next 20 years. This study measured Singaporean medical students' attitudes towards older people using Reuben's 14-item UCLA scale, and their willingness to consider a career in Geriatric Medicine (GRM). A similar study of first year medical students of the University of Aberdeen found positive attitudes towards elderly people was the main factor independently associated with willingness to consider a career in GRM.

#### Methods

All first-year medical students (N=244) were asked to complete the UCLA questionnaire prior to any formal clinical exposure. Their willingness to consider GRM as a potential career choice was measured on a 5-point Likert scale.

#### Results

The mean attitudes score was 3.58 ( $\pm 0.41$ ) suggesting a generally positive attitude. 81 (33.2%) were willing to consider a career in GRM. There was a strong association between attitude scores and willingness to consider GRM as a career ( $R=.48$ ,  $p<.001$ ). Female students were more likely to consider GRM as a potential career choice ( $p=.015$ ), but there was no association between career scores and student age, ethnicity or previous experience caring for older people.

#### Conclusion

First year Singaporean medical students have a generally positive attitude to older people although only a third were willing to consider a career in GRM. Higher attitude scores and female gender were the main predictors of willingness to consider a career in GRM.

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### EFFECT ON ATTITUDES AND SPECIALTY POPULARITY OF UNDERGRADUATE GERIATRIC MEDICINE PROGRAMMES IN SCOTLAND AND NORTHERN IRELAND

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#### Introduction

Demand for geriatricians is likely to increase in view of the ageing population. Recent changes to medical training are forcing trainees to decide on careers early, but geriatric medicine (GM) is unpopular among new graduates. This study evaluated the effect of all clinical GM training programmes in Scotland and Northern Ireland on attitudes to older people and willingness to consider a career in GM (WCCGM).

#### Methods

Fourth-year medical students in Aberdeen (N=155), Belfast (N=170), Dundee (N=89) and Edinburgh (N=67) undertaking their main clinical GM attachment completed a 14-item questionnaire (UCLA Attitudes Scale) before and after their attachment. WCCGM was measured on a Likert scale from 1 (strongly disagree) to 5 (strongly agree).

#### Results

Matched data were available for 380/481 (80%) students. There were significant differences between centres in baseline student age, attitude scores, WCCGM and previous experience working with older people. Mean attitude scores improved from 3.69 to 3.75 ( $p=.002$ ) overall. WCCGM improved in all centres (mean scores pre- and post-attachments 2.59 and 3.02,  $p<.001$ ) with Edinburgh students having the highest scores. Following regression modelling, statistically significant centre-related differences remained for student WCCGM, but not for attitude scores.

#### Conclusions

Different undergraduate GM training programmes had similar effects on attitudes to older people but a varyingly positive effect on student willingness to consider a career in geriatric medicine.

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### MEDICAL STUDENTS' VIEWS OF A CAREER IN GERIATRIC MEDICINE: MULTI-CENTRE QUALITATIVE ANALYSIS

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#### Background

Medical students frequently have negative preconceptions of a career in Geriatric Medicine (GM). We ascertained what these negative preconceptions were before starting a clinical attachment in GM, and whether perceptions were altered by their attachment.

#### Methods

Undergraduate medical students in Aberdeen (N=155), Dundee (N=89), Edinburgh (N=67) and Belfast (N=170) completed a questionnaire before and after their clinical GM attachment. They were asked to provide a free text response to the question: "What do you think of a career in geriatric medicine?". Two researchers independently analysed 789 responses using framework thematic analysis.

#### Results

Prior to the attachment, negative preconceptions were more prevalent, including perceptions that GM was depressing, slow-moving and futile. Following the attachment, more positive views predominated, with GM seen as generalist, challenging and rewarding. Many students specifically mentioned enjoying the attachment, and that the attachment had changed their perceptions of the specialty. After the attachment, increased numbers of students expressed a desire to either gain further experience or pursue a career in GM. Of the students who had no desire to pursue a career in GM, there was increased recognition of its value and importance as a specialty.

#### Conclusions

Clinical Geriatric Medicine attachments effectively challenged negative student preconceptions, and more positive statements about potential future careers in Geriatric Medicine emerged after the clinical attachment. Students not planning a career in Geriatric Medicine valued the experience.

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### DOES A STRUCTURED INTER-DISCIPLINARY FIRM IN REHABILITATION PROVIDE MEDICAL STUDENTS WITH APPROPRIATE ATTITUDES TOWARDS OLDER PEOPLE?

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#### Introduction

The GMC in 'Tomorrow's Doctors' has set out appropriate attitudes expected of newly qualified graduates: evidence suggests that doctors with more knowledge about older people have more positive attitudes towards them. As time allocated to elderly medicine teaching declines appropriate attitudes are being learnt in firms specialising in medicine, surgery and general practice. This study explores whether a specialised rehabilitation module changes attitudes to older people more than the regular firm does.

#### Method

67 3rd year students (29 study, 38 control) filled out 2 attitude questionnaires (Ageing Semantic Differential (ASD) and a modified Facts of Ageing Questionnaire). These were administered at the beginning of their attachment. 50 students (23 study, 27 control) filled out the questionnaires at the end of the attachments (6 weeks apart). Data was compared using T-test.

#### Results

The study groups' average age was 21.6 and control group 20.6. Study group was 56% male and control group 58% male. Attitudes did not change  $p=0.5$ , pre and post the clinical attachment for either group. However, at baseline the study group had a significantly more positive attitude on the ASD than the control group 3.94 (3.76 – 4.14) v 4.18 (3.99 – 4.37),  $P < 0.001$ .

#### Conclusions

This study appeared to show no change in attitude despite increased exposure to older people; but older students had a more positive attitude to older people. Reasons for this will be discussed.

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WITHDRAWN

WITHDRAWN

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PREVALENCE OF RENAL  
DYSFUNCTION IN AN ELDERLY  
SCOTTISH POPULATION

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*Monklands Hospital, Airdrie, Scotland***Introduction**

The MDRD formula calculates the estimated Glomerular Filtration Rate (eGFR), which is now being used to screen patients for renal dysfunction. We investigated the prevalence of renal dysfunction in an elderly Scottish population.

**Methods**

We analysed eGFR values in 1,295 patients from a population of primary care attenders (age > 64 years). The anonymised eGFR results were part of routine blood tests analysed by the hospital biochemistry laboratory over a 2-month period. Normal renal function was defined as eGFR > 60 ml/min/1.73m<sup>2</sup>.

**Results**

We investigated 534 male and 761 female patients (median age = 75 years). The mean eGFR for each age group was 65 – 74 years, eGFR = 68.1 +/- 19.8; 75 - 84 years, eGFR = 60.2 +/- 20.7 and > 84 years, eGFR = 53 +/- 20.4. There were 553 patients (42.7%) with an eGFR < 60 ml/min/1.73m<sup>2</sup>. Multivariate analysis showed a significant association between 10-year age increments and eGFR < 60 ml/min/1.73m<sup>2</sup> (OR: 2.3; 95% CI: 1.94 - 2.72).

**Conclusion**

Over 40% of elderly patients had eGFR < 60 ml/min/1.73m<sup>2</sup> and this was significantly associated with increasing age. The introduction of eGFR reporting has led to a rising number of elderly patients being referred to the renal service for further investigation. More clinical guidelines for appropriate management of this patient age group are required.

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**PRESENTATION AND OUTCOMES OF ANTIRETROVIRAL THERAPY IN OLDER, HIV POSITIVE ADULTS IN MALAWI, AFRICA**

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**Introduction**

In developed countries HIV infection in people aged over 50 is characterized by more advanced disease at presentation, rapid clinical progression, less immune reconstitution on antiretroviral therapy (ART), higher rates of clinical ART failure and more treatment side effects compared with younger adults. ART outcome in the elderly has received little attention in resource limited settings, age stratified data from sub-Saharan Africa have not been published.

**Method**

Outcomes from the National HIV Unit database were analyzed, according to age, for all subjects ever started on ART at Queen Elizabeth Central Hospital, Blantyre. ART was provided free, according to the Malawi National ART scale-up.

**Results**

14% of clinic population (876 people, 388 female), were aged  $\geq 50$  years. Mean age  $< 50$  years  $35.3 \pm 7.4$ ,  $\geq 50$  years  $56.1 \pm 5.5$ . Compared with younger adults, older adults were less likely to have an AIDS defining illness at presentation 15.1% vs. 18.9% ( $p < 0.01$ ). Older adults were heavier at presentation ( $55.8 \pm 11.3$  vs.  $52.5 \pm 10.9$  Kg,  $p < 0.0001$ ) but gained less weight during follow up ( $3.1 \pm 6.6$  vs.  $4.0 \pm 6.5$  Kg,  $p < 0.001$ ). Older adults reported more symptoms of peripheral neuropathy (commonly caused by stavudine toxicity), 6.4% vs 2.9%, ( $p < 0.0001$ ). Mortality was the same in each group.

**Conclusion**

The clinical picture at presentation and ART outcome, in people over 50, differs from younger adults in Malawi, as well as compared with descriptions of older HIV positive adults from Europe and America.

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**IS MAYER WAVE ACTIVITY ALTERED IN VASODEPRESSOR CAROTID SINUS SYNDROME?**

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**Introduction**

Mayer Waves are low frequency (circa 0.04 – 0.15Hz) blood pressure waves, whose modulation involves central/peripheral baroreflex pathways. These areas are implicated in Vasodepressor Carotid Sinus Syndrome (VDCSS) genesis. We hypothesise that in VDCSS, dysfunctional baroreflexes increase Mayer wave amplitude and alter oscillation frequency.

**Methods**

Elderly patients ( $n=36$ ; 17 male; age range 48-92), 15 of whom were diagnosed with VDCSS were recruited. Ten minute ECG and continuous beat-to-beat blood pressure (TNO Finapres<sup>®</sup>) was recorded with subjects lying supine. Following stabilization, Physiocal<sup>®</sup> was switched off and data was recorded for 5 minutes. Following artifact rejection BP was Fourier transformed. BP variance, spectral power (0.04-0.15 Hz) and Centre of Frequency (COF) was examined.

**Results**

Diastolic BP variability was significantly higher in VDCSS ( $2.74$  ( $1.78 - 6.96$ ) mmHg vs.  $3.67$  ( $2.27 - 6.37$ ) mmHg;  $p = 0.038$ ). LF activity was greater in CSH ( $1.3 \pm 0.21$  mmHg<sup>2</sup> v CSH  $2.2 \pm 0.52$  mmHg<sup>2</sup>  $p < 0.05$ ). A correlation ( $r = 0.474$ ,  $p = 0.006$ ) between LF band power and BP drop following CSM was detected. No COF differences were found.

**Conclusions**

Mayer waves were found to be higher in VDCSS and demonstrated a correlation with CSM response, possibly arising from increased baroreflex gain. Future work will investigate this approach as a basis for diagnosis of VDCSS, with implications for syncope and falls management.

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### IS CLINICAL JUDGMENT BETTER THAN FALLS RISK ASSESSMENT TOOLS IN IDENTIFYING FALLS RISK?

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#### Introduction

Reports have suggested that an intuitive assessment of falls risk by nursing staff can be as effective as using falls risk assessment tools. The objective of this study was to compare the use of two falls risk identification tools (Downton and STRATIFY) with clinical judgment (based upon the defined observation of wandering) in predicting falls.

#### Methods

In a prospective observational study, with blinded end-point evaluation, 200 patients admitted to a geriatric rehabilitation hospital had a STRATIFY and Downton Falls Risk assessment and were observed for wandering behaviour.

#### Results

Wandering had a predictive accuracy of 78%. 157/200 were identified correctly compared to 100/200 using the Downton score ( $p < 0.0001$  95% CI 0.18-0.42) or 93/200 using STRATIFY ( $p < 0.0001$ ; 95% CI 0.15-0.37). The Downton and STRATIFY tools demonstrated predictive accuracies of 50% and 46.5% respectively with no statistical significance between the two ( $p = 0.55$ ; 95% CI 0.77-1.71). Sensitivity for predicting falls using wandering was 43.1% (22/51). This was significantly lower than Downton 92.2% (47/51:  $p < 0.001$ ) and STRATIFY 82.3% (42/51:  $p < 0.001$ ).

#### Conclusions

This study showed that clinical observation had a higher accuracy than two used falls risk assessment tools. However it was significantly less sensitive implying that fewer patients who fell were correctly identified as being at risk. One cannot recommend the replacement of formal falls risk assessment with clinical observation alone.

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### POSTTRAUMATIC STRESS DISORDER IN OLDER PEOPLE AFTER A FALL

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#### Introduction

Posttraumatic Stress Disorder (PTSD) is a debilitating psychological condition, never studied in relation to falls in older people. This study determines the prevalence and correlates of PTSD in older people post-fall.

#### Method

A prospective survey study, with baseline data collected by interview in hospital post-fall and by postal self-completion at 12 and 24 weeks post-baseline. A convenience sample of 196 people ( $\geq 65$  years) were serially recruited, 87.9% of those eligible. Information collected at baseline included falls-related data, activity problems, fear of falling, PTSD symptoms, anxiety and depression, and at follow-up PTSD symptoms, anxiety and depression, the receipt of rehabilitation and further falls.

#### Results

In hospital, of 40 participants whose fall had occurred over a month previously 35% had full acute PTSD and 17.5% had partial acute PTSD. At follow up full or partial chronic PTSD was found in 26.1% of participants at first follow-up, and in 27.4% of participants at second follow-up. Older age, pre-fall activity problems, fear of falling, and anxiety assessed at baseline were associated ( $p < .05$ ) with follow-up PTSD diagnosis, as were anxiety and depression assessed concurrently.

#### Conclusion

PTSD occurs in a substantial minority of older people post-fall. No pattern emerged of factors predictive of PTSD, although the association between fear of falling and PTSD suggests some patients thought to have fear of falling may be manifesting PTSD, and require identification to enable therapeutic intervention.

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**CLOSTRIDIUM DIFFICILE PROGNOSTIC CRITERIA**

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**Introduction**

Studies showed high death rates among hospitalized patients with Clostridium difficile diarrhoea. In this analysis we studied the haematological and biochemical markers of fatal disease with the aim of identifying poor prognostic factors.

**Method**

Retrospective analysis of patients with Clostridium difficile diarrhoea in a UK teaching hospital. 126 patients were randomly selected. Haematological and biochemical tests done on the third day of diarrhoea (+/- one day) were reviewed. Statistics were made using non-parametric techniques.

**Results**

The mean age was 81 years. Mortality from Clostridium difficile was 45%. Patients who died were on average 2 years older, had higher median CRP (120 vs 46, p < 0.01), white cell counts (16.5 vs 11.0 p < 0.01), urea (11.6 vs 6.5 p < 0.01) and creatinine (97 vs 83.5 p < 0.05), and lower albumin (24 vs 27 p < 0.05).

Category	Mortality	Adjusted relative risk
CRP < 30	17.6%	1.0 (ref)
CRP 30 to 90	36.8%	2.1
CRP 90 to 140	52.6%	2.98
CRP >140	73.3%	4.12
WBC < 20	33%	1.0 (ref)
WBC > 20	88%	2.6
Creatinine < 145	37.6%	1.0 (ref)
Creatinine > 145	75%	2.0

**Conclusion**

- Clostridium difficile patients who died had higher CRP, white cell counts, urea and creatinine, and lower albumin
- High CRP appears the single most sensitive predictor of mortality, but a white cell count > 20 and a creatinine > 145 double the predicted mortality.
- The clinical significance of prognostic factors is to identify patients who need to be considered for early aggressive therapy.
- The values obtained for relative risk should ideally be validated on a different sample of patients to confirm their reliability.

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**PATIENTS' PREFERENCES FOLLOWING A BAD HIP FRACTURE: A CONJOINT ANALYSIS STUDY**

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**Introduction**

An Australian study of older, community dwelling women found that 80% would rather be dead than experience loss of independence and nursing home admission after a bad hip fracture (Salkeld, BMJ 2000). We reexamined this issue using a conjoint analysis approach.

**Methods**

We asked older hospital patients with a history of falls, fracture or osteoporosis to imagine they had a hip fracture resulting in significant residual disability. Subjects were asked to rank in order of preference an orthogonal array of 9 out of 36 potential outcome scenarios reporting risk of falls (3 levels), life expectancy (3 levels), discharge location (home with support or nursing home) and family opinion (agree or disagree with discharge location).

**Results**

Of 209 patients satisfying inclusion criteria, 114 (median age 82, 57% female, 86% community dwelling) completed the study. Utilities and relative importance scores for the factors studied are shown in the Table.

Factors	Levels	Utilities	Importance Scores
Length of life	1yr	1.005	39.3%
	2yrs	2.011	
	4yrs	3.016	
Discharge location	Home	1.221	29.6%
	Nursing home	-1.221	
Falls risk	1/month	0.050	16.3%
	3/year	0.099	
	1/year	1.49	
Relatives views	Agree	0.18	14.8%
	Disagree	-0.18	

**Conclusions**

In this study, older people at high risk for fracture judged that after a bad hip fracture their main priorities would be to prolong their life and to remain at home.

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### AN INVESTIGATION OF THE KNOWLEDGE AND ATTITUDES ABOUT PARTICIPATION IN PHYSICAL ACTIVITY OF OLDER POST-ACUTE HOSPITAL INPATIENTS

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#### Introduction

The habitual physical activity levels of most older people are sub-optimal. Post-acute rehabilitation provides an opportunity to promote physical activity. The illness experience may trigger a change in health behaviours. Readiness to participate is also affected by knowledge, attitudes, intentions and deterrents.

#### Methods

We investigated these factors using a semi-structured questionnaire (developed from previously validated questions) in older patients pre-discharge from an urban hospital. Frailty was defined according to published norms for grip strength. Responses to open questions were thematically analysed. Relationships between quantitative data were analysed using non-parametric tests.

#### Results

From 256 patients screened, 66 patients were approached for inclusion and 44 (71% female) completed the interview. Age-median (range) was 83y (67-91), Barthel Index 18/20 (9-20). Hospital stay (mean, SD) was 13.7d (9.7). Frailty was present in 72% (31/43). Despite hospitalization, only 23% reported "poor" general health. Knowledge of specific health benefits of physical activity was mixed and for hypertension ( $p < .001$ ) and osteoporosis ( $p < .001$ ) was less than reported for community samples. Most wrongly believed their habitual activity levels were adequate. Intentions towards future physical activity were unrelated to frailty. Deterrents to increase activity were predominantly related to "breathing" and "leg" problems.

#### Conclusions

These patients, potential benefactors from increased physical activity, have lower knowledge and poorer attitudes toward physical activity than in well community samples. These data provide insight about how best to deliver exercise related health messages and interventions.

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### PATIENTS AND CARERS VIEWS ABOUT HOSPITAL READMISSION

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#### Aim

To explore patients, carers, and clinician views about hospital readmission.

#### Methods

Cross sectional retrospective study of patients readmitted to hospital within 28 days of discharge. Medical records were reviewed and patients and their carers were interviewed regarding their views about discharge-readmission episode.

#### Results

Seventy-seven patients out of 1289 patients were readmitted within 28 days of discharge, giving a true 6% readmission rate. Mean (SD) age was 71.3 (14.6) years. Forty patients (51.9%) aged  $\geq 75$  and 39 (50.6%) were males. Mean (SD) number of comorbidities was 3.68 (1.82). Mean (SD) number of medications was 7.79 (4.14). Most common reasons for readmission were exacerbation of chronic obstructive pulmonary disease and acute coronary syndrome. Mean (SD) time to readmission was 11.6 (8.2) days. Fifty (64.9%) patients were readmitted within 14 days of discharge. Forty eight (62.3%) patients were readmitted with recurrent medical condition. Fifty (64.9%) patients and 45 (66.2%) carers felt that discharge was appropriate. Forty five (58.0%) patients and 44 (57.0%) carers thought that readmission was unavoidable. Clinicians considered 56 (72.7%) discharges appropriate and 55 (71.5%) readmissions unavoidable. A trend towards higher readmission rate among patients  $\geq 75$  years was noted (7.2% vs 5.1%,  $p=0.1$ ).

#### Conclusion

Majority of discharges are appropriate and readmissions are mostly unavoidable. Age alone does not seem to be a risk factor for readmission. Patients and carers should be consulted for readiness of discharge before leaving hospital.

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### DEVELOPING A RISK ASSESSMENT TOOL PREDICTING POSSIBLE INSTITUTIONAL DISCHARGE AFTER REHABILITATION: IDENTIFYING RISK FACTORS

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#### Introduction

Discharge planning has become an important component of managing a patient's admission. Identifying high risk of placement might help by giving information on likely rehabilitation requirements, deciding on slow stream or fast track rehabilitation and prompt planning for complex care packages. We aimed to develop a simple risk assessment tool predicting possible institutional discharge after rehabilitation.

#### Methods

In phase 1, we identified characteristics of patients requiring placement (residential/nursing home). We followed 200 consecutive patients, mean age 80.9(SD7.1), 123 female, admitted for rehabilitation in a community hospital in North Nottinghamshire. Patient characteristics were recorded within 3 days of admission. Differences were evaluated after discharge comparing patients discharged to placement with those not.

#### Results

Patients discharged to placements had a higher mean length of stay 32.7(SD17.6) vs. 18.8(SD12.1) days;  $p=0.000$ . Confusion ( $p=0.036$  95%CI 0.21-0.95), tranquilisers ( $p=0.000$  95%CI 0.09-0.43), unsafe gait ( $p=0.007$  95%CI 0.16-0.75), visual impairment ( $p=0.05$  95%CI 0.21-1.00) were independent risk factors associated with placement. A tool with these characteristics was compiled and sensitivities and specificities at various scores were evaluated (score/sensitivity/specificity 1/98.1/5.4, 2/81.5/37.6, 3/42.6/82.2).

#### Conclusion

Patient characteristics independently associated with a placement risk have been identified. A tool was compiled and called GEMS (Gait, Eyesight, Mental state, Sedation). The utility of GEMS as a tool to identify those at risk of placement prior to rehabilitation needs to be determined prospectively, locally and remotely.

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### PROSPECTIVE EVALUATION OF A RISK ASSESSMENT TOOL PREDICTING POSSIBLE INSTITUTIONAL DISCHARGE AFTER REHABILITATION

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#### Introduction

Unsafe gait, visual impairment, confusion, tranquilisers were independent risk factors associated with placement. These characteristics were collectively used as a tool (GEMS: Gait, Eyesight, Mental state, Sedation) and prospectively evaluated to determine whether patients at risk of placement can be identified at the start of rehabilitation.

#### Methods

We ran a local validation in the ward where the tool was developed (phase 2a) and in two other wards (phase 2b) at the same rehabilitation hospital. In phase 3, we validated it in another rehabilitation hospital. Patients had the tool completed on admission, independently of the discharge planning process. A score of 2 or more was the threshold for high risk.

#### Results

In phase 2a, we followed 250 patients, 118 male, mean age 81.6 (SD7.2). High-risk patients were significantly more likely to be discharged to placement: 35/57=60.1%vs22/57=39.9%,  $p=0.003$ . In phase 2b, we followed 550 patients, 175 male, mean age 82.0 (SD7.5). Similarly high-risk patients were more likely to be institutionalised: 73/115=63.5%vs42/115=36.5%,  $p=0.002$ . In phase 3, we followed 149 patients, 82 male, mean age 85.1 (SD6.8). High risk patients were again more likely to be institutionalised: 33/42=78%vs9/42=22%,  $p=0.03$ .

#### Conclusion

Across all settings, a GEMS score of  $\geq 2$ , was significantly more likely to be associated with discharge to a nursing/residential home. The score is not intended to deny patients rehabilitation, but may be useful in planning a patient's rehabilitation and post-discharge requirements.

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### HOSPITAL READMISSIONS IN OVER 75 YEAR OLDS – WHO ARE THEY?

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#### Introduction

Multiple unplanned admissions to hospital are increasing especially in the very old, and may be viewed as an indicator of poor quality care. There is a move in health policy to manage patients increasingly in the community. We wished to determine what medical or social conditions precipitated admission; whether hospital care was necessary; and therefore, could certain admissions have been preventable in an older population.

#### Methods

A descriptive case note analysis of a randomly selected age sex stratified sample of >75year olds admitted >3 occasions to hospital in a calendar year.

#### Results

610 admissions (172 participants) with median age 81.8 years. Commonest diagnoses were cardiovascular disorders (19.8%), falls /collapse (17.1%) and respiratory disorders (10.7%). Factors requiring admission included: intravenous fluids /drugs 24.8%, laboratory investigations 23%, changed functional level 9.9%, radiology investigations 7.7%, surgery /specialist unit 5.6%, specialist nursing 1.1%, other, urgent 0.7%. No requirement for hospitalisation was found in 21.1% admissions, mainly related to falls, constipation or blocked urinary catheters. 57.8% were referred to another speciality during their inpatient stay. Approximately 1/3rd of the frailest admissions did not receive a comprehensive multi-disciplinary assessment pre-discharge.

#### Conclusions

In a population of older unplanned admissions, 78.9% seemed to require hospitalisation largely for urgent invasive investigations /treatments. There may be opportunities to reduce readmissions by increasing levels of comprehensive geriatric assessment before hospital discharge and improving selected community services.

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### PREFERRED PRIORITIES OF CARE PLANS IN RESIDENTIAL HOMES PREVENT HOSPITAL ADMISSIONS FOR TERMINAL ILLNESS

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#### Introduction

The Department of Health End of Life Care Programme ([www.endoflifecare.nhs.uk/eolc](http://www.endoflifecare.nhs.uk/eolc)) encouraged reducing hospital admissions for terminally ill patients from residential care homes and introducing Preferred Priorities of Care (PPC) plans which register patient choice in place of death.

#### Methods

In June 2006 a consultant geriatrician was appointed to prevent inappropriate hospital admissions from Clacton's care homes. A Community Matron and district nursing team provided support. We examined the use of PPC plans in preventing hospital admissions to die from care homes in Clacton.

#### Results

Between July 2006 to 2007, 71 PPC plans were created. At the end of July 2007, 43 patients with a PPC had died and the median duration on a PPC before death was 13 days (range 1 to 137 days). In 40 patients (93%) death occurred in their chosen care home and the main causes were: dementia (29%), old age (20%), cancer (8%), chronic obstructive pulmonary disease (7%), stroke (7%), and heart failure (5%). Three remaining patients (7%) were admitted as their care home could not provide good terminal care: 2 died in an acute hospital with fractured femur and pneumonia; and one died with bowel obstruction in a community hospital.

#### Conclusions

Preferred Priorities of Care plans allowed 93% of these elderly patients to die in their chosen care home and prevented inappropriate hospital admissions for terminal illness.

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**THE EFFECT OF CHOLINESTERASE  
INHIBITORS (CHEIS) ON  
NEUROMUSCULAR FUNCTION IN  
SUBJECTS WITH ALZHEIMER'S  
DISEASE (AD)**

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**Introduction**

ChEIs are used for their central, cognitive effects in treatment of AD; we have examined whether they may act peripherally at the neuromuscular junction, and alter muscle function during treatment.

**Methods**

5 (4 female) Galantamine-treated and 5 (3 female) Donepezil-treated subjects (ages 72-90, right handed) completed the study. Testing was done immediately before and 11 weeks after initiation of ChEI. EMG and force records were made from the left adductor pollicis during maximal and submaximal voluntary contractions. Visual and cutaneous tactile (both ipsilateral and contralateral stimuli) reaction times were measured from stimulus to the onset of EMG activity, and to the onset of force development, and also as the emg-force onset delay.

**Results**

An increase in EMG mean amplitude (mV) for a given % of maximum force was seen in 4/5 subjects after treatment with Donepezil ( $P < 0.05$ ), and in 3/5 subjects treated with Galantamine. However, neither % force v. EMG Freq (Hz) nor absolute force (N) v EMG amplitude showed consistent change with treatment. No significant difference between pre- and on-treatment reaction times, nor in the EMG activity to force onset delay, was observed. The very similar ipsi- v. contralateral tactile reaction times (where central crossover is the only pathway difference) were unchanged by treatment.

**Conclusion**

The increase in EMG activity during ChEI use could represent an effect on NMJ transmission. Other tests of neuromuscular function were unaltered.

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**LOWERED ESTIMATED GLOMERULAR  
FILTRATION RATE IN ALZHEIMER'S  
DISEASE**

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**Introduction**

The role of impaired renal function in Alzheimer's Disease (AD) remains a relatively unexplored area. Renal disease is increasingly regarded as an independent risk factor for vascular disease. This process, perhaps in conjunction with alterations in amyloid homeostasis via reduced renal clearance of peripheral beta-amyloid, may indicate a potential role for alterations in renal function in influencing risk of AD.

**Methods**

Characterised patients were randomly recruited from the Memory Clinic of the Belfast City Hospital (n=83). Genomic DNA was extracted from peripheral leucocytes and was genotyped for Apolipoprotein E using standard methods. Using creatinine values, age and gender, eGFRs were calculated using the IDMS traceable MDRD equation (using the UKNEQAS correction factor). IDMS eGFR values were then compared between AD and control groups.

**Results**

Significant baseline differences in age, diastolic blood pressure, education level attained and APOE e4 carriage were noted between cases and controls. The AD group had a significantly lower eGFR versus controls (69 vs 77 ml/min,  $p = 0.002$ ). Using regression analysis and after adjustment for possible confounders, a significant relationship persisted ( $p = 0.045$ ).

**Conclusions**

This case-control analysis suggests that using a relatively accurate estimate of renal function, patients with AD have greater renal impairment than cognitively normal controls. This may reflect impaired renal clearance of peripheral beta-amyloid or a marker of overall vascular activity.

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**IS THERE ANY ASSOCIATION BETWEEN LOW B12 LEVELS AND OTHER HAEMATOLOGICAL MARKERS IN ELDERLY PATIENTS? - AN OBSERVATIONAL STUDY**

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**Introduction**

More than 20% of elderly population above 65 years of age in UK are prone to develop Vitamin B12 deficiency. They also show other abnormal haematological markers due to associated nutritional deficiencies.

We compared if there is any association between these variables.

**Methods**

55 Patients above 65 years of age presenting with B12 levels <160 pg are studied for association with markers like haemoglobin (Hb), MCV, folate, ferritin, albumin, thyroid function tests and antibodies from the laboratory records.

**Results**

7.2 % were severely anaemic with Hb<10g/l and 38.2% had a Hb level of 10.1-12 g/l. The rest were not anaemic.

7.2% had macro cytosis and 14.5% had micro cytosis,

14.5% had folate deficiency,

12.7% had low ferritin levels,

5.5 % had hypoalbuminemia,

7.2% had hypothyroidism and 9% had hyperthyroidism,

One patient had positive intrinsic factor antibody and

25.5% had gastric parietal cell antibody (p<0.05).

**Conclusions**

B12 deficiency in the elderly population can present with macro, micro and normocytic anaemias due to associated deficiencies of folate, iron and other nutrients respectively.

Gastric parietal cell antibody seen in chronic gastric atrophy is also a common feature of elderly. Even though there is no significant association with the above haematological markers and low B12, those deficiencies are also common in elderly population and should specifically be looked for.

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**NUTRITIONAL STATUS AND eGFR IN AN ELDERLY POPULATION**

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**Introduction**

The MDRD formula is currently being used to screen patients for renal dysfunction. This formula calculates the estimated Glomerular Filtration Rate (eGFR) based on the patient's age, sex and creatinine level. We investigated the relationship between nutritional status and eGFR in an elderly inpatient population.

**Methods**

We analysed 111 patients from the elderly care wards as part of an audit project. Patients who were acutely unwell were excluded from the study. The eGFR was calculated as part of the routine biochemistry blood tests. Normal renal function was defined as eGFR > 60 ml/min/1.73m<sup>2</sup>. A bedside assessment of patient nutritional status was performed, categorising patients into poor or normal nutritional state.

**Results**

There were 54 male and 57 female patients (mean age = 82.3 +/- 8.4 years). There were 38 patients (34.2%) identified with eGFR < 60 ml/min/1.73m<sup>2</sup>. Comparing the normal and impaired renal function patients, there was no significant difference in the incidence of hypertension (P=0.28) and diabetes (P=0.82) or in haemoglobin levels (P=0.38). There were 40 patients (36%) categorised with poor nutritional status. Poor nutritional state was significantly associated with an eGFR > 60 ml/min/1.73m<sup>2</sup> (P=0.02).

**Conclusion**

Our results confirm that poor nutritional status is associated with higher 'normal' eGFR values. This suggests that the MDRD formula may be underestimating renal dysfunction in elderly patients and a weight correction factor is necessary.

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"DON'T MENTION THE WAR"

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**Introduction**

The ongoing validity of the WW1 question in the AMTS has generated discussion on its validity both in the literature and on the ward round. We wanted to research whether there is any evidence to support substituting the WW1 question with a better alternative.

**Methods**

We asked a group of professionals (n=68) if they knew the dates of fourteen "important events" in the last century. Data was compared using the McNemar's Test.

**Results**

Median age 32yrs, (range 22-60yrs), 65% female. Using all the data (n=68) and a conventional p<0.05 significance cut-off, only the "World Cup" and "9/11" questions showed a non-significant difference from the "WW1" question. This means there is no evidence of a difference in the number of people getting these questions correct compared to the "WW1" question

Question	Correct		p-values
	n	%	
WW1	54	79.41%	
Cup	48	70.59%	0.238
9//11	44	64.71%	0.076
WW2	42	61.76%	0.012
Iraq	31	45.59%	<0.001
Moon	27	39.71%	<0.001
Diana	27	39.71%	<0.001
Gulf	21	30.88%	<0.001
JFK	15	22.06%	<0.001
Falk's	14	20.59%	<0.001
NHS	13	19.12%	<0.001
Korea	7	10.29%	<0.001
Wall St	7	10.29%	<0.001
Nam	6	8.82%	<0.001

**Conclusions**

Based on our data, The "World Cup" and "9/11" questions are comparable with the "Gold Standard" "WW1" question. However, given that the AMTS is often aimed at the elderly population a further study in a "well elderly" population should be proposed.

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REVIEW OF DELIRIUM AND NEUROIMAGING

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**Introduction**

Delirium affects up to 30% of all elderly medical patients. Patients with delirium have higher mortality, institutionalisation and complication rates than non-delirious patients do. Delirium often goes unrecognised by clinicians. The pathophysiology of delirium has yet to be fully described. The aim of the review was to determine whether neuroimaging studies on delirium shed light on its pathophysiology.

**Methods**

Literature search using Medline, Embase and Psycinfo databases. MESH terms included 'delirium' and 'neuroimaging'. Case reports were excluded. The following data were compiled for each study: number of patients scanned, underlying diagnosis, imaging modality used, abnormalities detected on imaging.

**Results**

13 studies were identified. Number of patients ranged from 5 to 47. X-ray computed tomography was used in four studies, magnetic resonance imaging in four, xenon inhalation method in three and single photon emission computed tomography in two. Structural lesions associated with delirium were cerebral atrophy and basal ganglia lesions, though how they may induce delirium remains unexplained. Delirium was usually associated with a reduction in global cerebral blood flow. However, one study reported an increase. Changes in regional cerebral blood flow changes were not consistent across studies or across participants within the same study.

**Conclusion**

Neuroimaging studies of the delirious patient have so far resulted in a limited understanding of the pathophysiology of delirium.

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### CHANGES IN QUALITY OF LIFE IN PEOPLE WITH PARKINSON'S DISEASE LEFT UNTREATED AT DIAGNOSIS

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#### Introduction

The issue of whether to adopt a "wait and watch" strategy or to initiate drug therapy soon after diagnosis in Parkinson's disease (PD) has been the subject of some debate. A recent observational study supported early treatment by demonstrating deterioration in self reported health status in those left untreated, but not those who received therapy. We aimed to replicate this observation.

#### Methods

People with PD from a prospective incidence study underwent follow-up with yearly clinical assessment of parkinsonian impairment (UPDRS) and self reported health status (PDQ-39). Two year outcomes were compared in those who started treatment within one year of diagnosis and those left untreated.

#### Results

42 patients with PD were followed up for two years, of whom 26 started treatment during the first year and 16 remained untreated. Those receiving treatment had significantly higher UPDRS and PDQ-39 scores at baseline. There was no significant deterioration in PDQ-39 score in either group (median change untreated 0.8 vs treated 4.0,  $p=0.47$ ), despite a significant difference in the change of motor UPDRS scores (untreated 6.0 vs treated -6.0,  $p=0.03$ ).

#### Conclusions

Given the lack of significant deterioration in the PDQ-39 in untreated patients, we believe a "wait and watch" strategy for the treatment of newly diagnosed PD remains a credible approach unless randomised trials prove otherwise.

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### KNOWLEDGE AND ATTITUDES OF ELDERLY PATIENTS TO THEIR MEDICATIONS

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#### Introduction

'Concordance' is a key term reflecting the process of prescribing medicines. One of the main aspects being "patients having sufficient knowledge to participate as partners". There is good evidence that the poorer the knowledge of the patient, the less likely they are to adhere to treatment. There is limited data on the drug knowledge of inpatients with respect to their cognition.

#### Methods

Patients over 75 years admitted to an acute hospital had cognitive assessment using the Mini Mental State Examination (MMSE). Those with a score of 18 or greater were recruited. A separate assessor undertook a questionnaire relating to the patients medication use.

#### Results

Seventy-five patients with a mean age of 81, median MMSE score of 26 and taking a mean of 7.7 medications were recruited. The percentage recall of medications was 52%. Regression analysis showed a significant relationship between this and an MMSE of 20 or over ( $r = 0.57$ ,  $p < 0.001$ ). Seventy-three percent had no knowledge of potential side effects, and 32% preferred not to be informed. Sixty-two patients had read the information pamphlets and of these, twenty-six found them too complicated or disconcerting. Thirty percent of patients felt they needed further education on their medications.

#### Conclusion

Patient medication knowledge is significantly affected by cognition. Clear explanation and information leaflets may be important in this issue, and should be targeted to this specific population.

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### PREVALENCE OF DEPRESSION IN OLDER PEOPLE WITH RECURRENT FALLS

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#### Aim

To examine the rate and correlate of depressive symptoms in older people with recurrent falls.

#### Methods

Cross sectional study involving a convenient sample of older people ( $\geq 65$  years) attending day hospital in a District General Hospital. Those who had  $\geq 2$  falls formed the study group; other patients were control ( $\leq 1$  fall). We excluded patients who already had a diagnosis of depression. Depressive symptoms were assessed by Geriatric Depression Scale (GDS, 30 points version).

#### Results

Total of 160 patients were recruited. Of whom a total of 26 were excluded (9 patients with depression, 6 withdrawn, 4 declined participation, and 7 had poor cognitive function). The remaining 134 were included (67 in each group). There was no significant difference in base line characteristics between both groups. Mean (SD) GDS and diagnosis of depression were significantly higher in the recurrent fallers (10.9 (6.2) and 30 (44.8%) patients vs 8.3 (5.4) and 18 (26.9%) patients,  $p=0.01$  and  $0.03$  respectively than in the non fallers. There was significant correlation between number of falls and GDS in the study group {Spearman correlation coefficient ( $r_s$ ) = 0.77,  $p<0.0001$ }. In multivariate logistic regression analysis, each fall increased the odds of developing depression by 1.4 (95% CI 1.2 to 1.7,  $p<0.001$ ).

#### Conclusion

Depressive symptoms are more common in recurrent fallers and positively correlate with the number of falls.

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### INFORMATION FROM THE SENTENCE WRITING COMPONENT OF THE MINI MENTAL STATE EXAMINATION (MMSE): A RETROSPECTIVE ANALYSIS OF THE LOTHIAN BIRTH COHORT 1921 (LBC1921)

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#### Introduction

The Mini Mental State Examination (MMSE) includes the request "write a sentence". Problems with language and writing are recognised in dementia and are associated with increased mortality. We investigated the relationship between the MMSE sentence and cognitive function, disability and survival.

#### Methods

We photocopied MMSE sentences by 193 community dwelling individuals (without dementia) from the LBC1921 study, who had cognitive ability tests and Townsend disability scores. Ten raters scored each sentence for (1) objective criteria: word number and frequency, first person usage, time orientation, letter case; (2) subjective criteria: legibility, tone, estimated age, health and intelligence. National Health Service Central Register provided survival status.

#### Results

43.5% of subjects were male, mean age 78.6, SD 0.43 years. There was no significant association between the objective sentence criteria and cognitive ability, or physical disability. However, estimated intelligence correlated with current cognitive ability ( $r=0.30$ ,  $P<0.001$ ). There was a trend towards estimated poor health being associated with more disability ( $\rho=-0.13$ ,  $P=0.08$ ). 60 (31.1%) participants had died. There was a trend towards shorter sentences being associated with increased mortality: (Cox's proportional hazards model: hazard ratio of death was .92 [95% CI .84 to 1.00]).

#### Conclusion

In this relatively healthy cohort, despite no association between objectively rated features of the MMSE sentence and intelligence or disability, raters were able to estimate subjects' intelligence. Shorter sentences may predict increased mortality.

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### VALIDITY OF THE 4-ITEM ABBREVIATED MENTAL TEST IN ACCIDENT & EMERGENCY

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#### Introduction

Cognitive screening is an essential component of routine assessment of older patients. National audits however, have revealed practice deficits. The 10-point Abbreviated Mental Test (AMT) is recommended for acutely ill older adults; however it is often not completed. We aimed to determine the sensitivity and specificity of a shortened 4-point version (AMT4) for detecting cognitive impairment in older patients attending Accident and Emergency (A&E).

#### Methods

A semi-consecutive sample of patients aged  $\geq 65$  attending A&E. Patients completed the AMT followed by the Mini-Mental State Examination (MMSE). Cognitive impairment was defined as a score of  $\leq 23/30$  on the MMSE.

#### Results

We studied 601 patients, mean age 77 (range 65-101) years; 81 patients were unable to complete the MMSE giving 520 who completed the study assessments. 226 patients (43.5%) scored  $\leq 23$  on the MMSE. The sensitivity of the AMT4 for cognitive impairment was 80% (95%CI = 0.75-0.85) and specificity 88% (95%CI = 0.84-0.91); the 10-point AMT had a sensitivity of 76% (95%CI = 0.69-0.81) and specificity 93% (95%CI = 0.90-0.96).

#### Conclusions

The AMT4 performs similarly to the 10-point AMT in detecting cognitive impairment in older people attending A&E. However the AMT4 is shorter and simpler and therefore may be preferable as a screening tool.

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### FATIGUE IS ASSOCIATED WITH LOW DAYTIME BLOOD PRESSURE IN STROKE AND TIA

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#### Introduction

Fatigue affects up to 72% of patients following stroke. There is a reported association between idiopathic forms of chronic fatigue and hypotension. We hypothesised that, in patients with stroke or TIA, an association may exist between fatigue and measures of hypotension detected on ambulatory blood pressure (BP) monitoring.

#### Method

Subjects with a history of TIA or Stroke underwent 24 hour ambulatory blood pressure monitoring and completed a Fatigue Severity Scale (FSS).

#### Results/Conclusions

54 subjects were included (59% female, mean age 69 years). Mean FSS was 3.9 and 26 (48%) has a FSS $>4$  indicative of significant fatigue. Mean 24-hour BP for all subjects was 137/73 (SD 34/22). There was no significant difference in mean systolic (SBP) or diastolic pressure (DBP) between patients with and without significant fatigue. Stroke patients suffered worse fatigue than TIA patients (mean FSS 4.3 vs 3.2  $p=0.014$ ). Subjects with FSS $>4$  suffered episodes of more profound daytime hypotension (Mean daytime minimum SBP 103.7 vs 119.5mmHg  $p=0.007$  daytime minimum MAP 71.1 vs 82.7mmHg,  $p=0.003$ ). FSS correlated with the pressure difference between 24-hour mean and daytime minimum SBP ( $r=-0.408$ ,  $p=0.002$ ). On regression analysis presence of stroke ( $p=0.002$ ) and MAP pressure difference ( $p<0.001$ ) were independently associated with fatigue severity ( $R^2=0.345$ ). In subjects who have suffered a Stroke or TIA, fatigue is associated with measures of hypotension on ambulatory monitoring. Patients with stroke suffered more fatigue than those with TIA.

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### DERIVING MODIFIED RANKIN SCORES FROM MEDICAL RECORDS

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#### Introduction

Modified Rankin score (mRs) is the preferred outcome measure for stroke trials. Grading is based on patient interview. Certain stroke scales (NIHSS, CNS, SSS) can be derived from review of patient's case-sheet. Previous studies have abstracted mRs from case-sheets, but the clinimetric properties of this approach have not been described. We hypothesised that mRs could be accurately derived from narrative within patient case-sheets.

#### Methods

Sequential stroke unit outpatients were included. A team comprising 4 physicians and 3 research nurses defined a "correct" mRs for each patient. Two independent clinicians, blinded to assigned mRs, assessed case sheets to derive mRs. They scored the "certainty" of their grading on a five point Likert scale. Agreement between derived and assigned mRs was calculated using attribute agreement analysis.

#### Results

Fifty patient were included, median age 78 (range:30-92), comprising a variety of stroke subtypes (23 anterior cortical; 4 posterior; 17 lacunar; 6 unclassified). Case note appraisers were poor at deriving mRs ( $k=0.34$  against standard). Agreement with correct mRs was greatest for mRs 0 ( $k=0.53$ ). Derived mRs grades showed poor agreement between observers ( $k=0.33$ ). There was no relationship between certainty of derived mRs and proportion of correct grades ( $p=0.727$ ).

#### Conclusion

Accurate mRs cannot be derived from standard hospital records. Even amongst cases where the appraiser was "certain", proportion of correct grades was no better than chance.

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### PLUS ÇA CHANGE....TEMPORAL CHANGES IN A UNIVERSITY HOSPITAL ACUTE STROKE UNIT

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#### Introduction

The last decade has seen significant progress in stroke, with an increasing evidence base to inform acute-care and prevention. These advances have occurred against a background of political and demographic change in the UK. We hypothesised that the characteristics of stroke unit admissions will have altered as a result.

#### Method

We examined admission data from a University Hospital Acute Stroke Unit (ASU), by 12 month increment (July 1st to June 30th), July 1998 to June 2006 inclusive. The ASU is typical of UK urban stroke services, admitting all suspected stroke with no functional or age related exclusions. Chi-square testing was used to examine for temporal trends.

#### Results

During the study period, 5336 patients were admitted. Annual admissions (mean:667; SD20.5); and age (mean:69.6 years; SD0.5) were similar each year. Admission rates for stroke subtypes were similar except for TIA (increased  $P<0.001$ ) and POCS (decreased  $P<0.001$ ). Prevalence of cerebrovascular risk-factors (hypertension; dyslipidaemia; diabetes;  $P<0.001$ ) increased, while rates of smoking decreased ( $P<0.001$ ) and rates of previous events were unchanged ( $P=0.095$ ). There was no difference in discharge destination (home; long-term care or death;  $P=0.822$ ).

#### Conclusions

Demographic changes in ASU population were evident. Increased prevalence of vascular risk-factors with no corresponding change in admission rates likely represents better primary prevention. However, despite scientific advances, discharge outcomes and number of previous events remained constant.

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**ALBUMIN:CREATININE RATIO AND FUNCTIONAL OUTCOMES AFTER STROKE**

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**Background**

Microalbuminuria, as a proxy for systemic microvascular damage, predicts future stroke. Post MI, elevated microalbuminuria is a poor prognostic indicator. We aimed to explore the association between microalbuminuria and functional recovery after stroke.

**Methods**

57 consecutive stroke unit admissions in a busy district general hospital had demographic information and blood pressure at presentation, day 3, 5 and 7 recorded. Microalbuminuria was estimated by single sample albumin:creatinine ratio (ACR). Barthel Index was measured at days 0, 7 & 30.

**Results**

ACR could not be obtained for 17 patients and a further 4 patients subsequently had non-stroke diagnoses. Mean age was 66 years (± SD 17). Age was inversely associated with admission, day 7 and day 30 Barthel indices ( p=0.007, 0.01 & 0.003 respectively). ACR was inversely associated with age-adjusted Barthel indices such that higher ACRs had poorer outcomes (β regression co-efficient -1.65±0.61, p=0.01; β -2.0±0.8 p=0.02; β -2.1±0.8, p=0.02 for day 0, 7 & 30 respectively). There was no association between blood pressure at any time and Barthel outcome. In multivariate analysis, ACR displaced all other conventional risk factors remaining the only significant predictor of outcome.

**Conclusions**

Presentation ACR, as a proxy of prior microvascular function, predicts functional recovery after stroke. Further work should be performed to determine if early intervention with drugs that are known to improve microvascular function and reduce microalbuminuria could improve rehabilitation outcomes.

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**RECRUITMENT OF PATIENTS WITH SEVERE STROKE WITH DYSPHAGIA INTO A RANDOMISED CONTROLLED TRIAL**

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**Introduction**

Research in frail elderly people and those with stroke is limited by difficulty gaining informed consent from participants due to loss of mental capacity, discouraging research within this group. We describe our experience of recruitment to a trial of an alternative method of nasogastric tube feeding in acute stroke.

**Methods**

Participants with capacity were recruited using usual informed consent, and ethical committee approval was granted for those lacking mental capacity (as assessed by clinical team and the researcher) to be recruited using family informed assent. This was supported by information sheets, practical demonstrations and pictures of the interventions. Delivering information about the study took between 30 minutes to 2 hours, communicating to family members both locally and abroad.

**Results**

The table reports the eligible patients who were approached, according to whether they did or did not have capacity to consent. (Chi-square: p=0.27)

	Consent/assent given	Consent/assent declined	Totals
Capacity present	16 (84%)	3 (16%)	19
Capacity absent	81 (72%)	31 (28%)	112
Total	97 (74%)	34 (26%)	131

Reasons cited for declining assent were predominantly to prevent further distress in a very sick parent/partner. Participants predominantly had TACS (70%).

**Conclusions**

Involving stroke patients without capacity in research is challenging, but with due attention to the process of obtaining assent from family members, recruitment rates similar to those seen in people with capacity can be achieved.

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**THE PROGNOSTIC SIGNIFICANCE OF VASCULAR COMPLIANCE IN RELATION TO STROKE**

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**Introduction**

Vascular compliance is emerging as a novel cardiovascular risk factor. Currently, there are no data relating vascular compliance to stroke outcome. The aim of this prospective study was to assess the prognostic significance of vascular compliance in relation to initial stroke severity.

**Methods**

Forty nine patients with an acute ischaemic stroke admitted to the Royal Sussex County Hospital between December 2006 and November 2007 were recruited. Stroke severity on admission was assessed using the Scandinavian stroke scale (SSS). Twenty four hour ambulatory monitoring (Novacor, France) was used to measure blood pressure (BP) and QKD (a measure of vascular compliance). SPSS version 14.0 was used for analysis.

**Results**

The study population was 43% male with a mean age of 74.45yrs ± 13.4. Mean QKD (M-QKD) was corrected for a heart rate of 60bpm and a blood pressure of 100mmHg and was labelled observed QKD (O-QKD). O-QKD significantly correlated with SSS at baseline. Multivariate analysis comparing baseline SSS with age, diabetes, hypercholesterolaemia, smoking, hypertension and QKD found QKD to be the strongest predictor of stroke severity.

QKD		Baseline SSS	R value
Mean (range)		Mean (range)	
M-QKD	184 (144-243)	41 (16-58)	0.347*
O-QKD	195 (146-286)		0.341*
24hr SBP	133 (95-198)		-0.266

\*p<0.02

**Conclusion**

Vascular compliance is a significant predictor of the initial stroke severity which may carry more significance than the conventional risk factors.

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**EFFECT OF A PHARMACY CARE PLAN ON PATIENT UNDERSTANDING OF SECONDARY PREVENTION MEDICATIONS FOR CEREBROVASCULAR DISEASE**

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**Introduction**

Patient understanding of their secondary prevention therapy following stroke has been found to be limited. We performed a study of the effect of a pharmacy care plan in increasing patients understanding of secondary prevention therapy.

**Methods**

Patients were recruited from rehabilitation wards, neurovascular clinics and day hospital. They underwent a brief (10-20 minute) one-to-one education session with a hospital pharmacist and were given specifically developed information leaflet for patients with stroke and TIA briefly describing the characteristics of typical secondary prevention medications in simple language. Level of understanding of therapy was determined before and 2 months after the intervention.

**Results/Conclusion**

62 patients were recruited to the study (Median age 72.5, 40 (65%) female). Prior to the intervention 10 patients (16.9%) could identify all their secondary prevention therapies and 23 (39%) could identify none. On reassessment, 44 (74.6%) could identify all their therapies and only 3 (5.1%) could identify none. Prior to the intervention 33 (56%) subjects agreed that they knew what each medicine did, this increased to 54 patients (92%) 2 months after the intervention. Pre-intervention 40 (68%) did not feel they knew the principal side effects of the medications this fell to 15 (24%) post intervention. 50 patients (81%) reported finding the information provided useful.

Implementation of the pharmacy care plan was associated with improvement in patients' knowledge of the purposes and side effects of their secondary prevention therapy

Friday, 25 April 2008

### Platform Presentations

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**EARLY LIFE INFLUENCES ON CEREBROVASCULAR DISEASE AGED 75-80: A NEUROIMAGING STUDY**

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**Introduction**

Lower birth weight is associated with increased risk of stroke, but there is a need for more sensitive outcome variables. Vascular risk factors should be considered. We investigated the relationship between early life parameters and cerebrovascular disease (CVD) using neuroimaging and non-invasive measures of atheromatous load.

**Methods**

110 community-dwelling subjects (70.0% female, mean age 78.2 (SD 1.4) years) born in Edinburgh hospitals between 1921 & 1926 had birth parameters - weight (BW), length (BL), placental weight (PW)- extracted from archives. Atheromatous load was measured by carotid intima media thickness (CIMT) and ankle brachial pressure index (ABPI). Neuroimaging included white matter lesions (WML) and diffusion tensor imaging (DTI) parameters: increased mean diffusivity and decreased fractional anisotropy (FA) indicate less WM tract integrity i.e. more disease.

**Results**

There was a trend towards a negative association between WML load and BW ( $\rho = -.17$ ,  $P = .09$ ), and a significant negative association with PW ( $\rho = -.29$ ,  $P = .008$ ). DTI parameters had a similar pattern (BW: frontal  $r = -.08$ ,  $P = .044$ ; FA  $r = .20$ ,  $P = .04$ ; PW:  $r = -.25$ ,  $P = .03$ , FA  $r = .36$ ,  $P = .001$ ). There was no association between birth parameters and CIMT or ABPI ( $r = -.08$  to  $.05$ ,  $P > .4$ ).

**Conclusions**

Lower placental weight, and possibly lower birth weight, were associated with sensitive measures of WM tract damage (increased WML load, increased, decreased FA). This was not due to atheromatous load.

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**CORRELATION BETWEEN WHITE MATTER LESION BURDEN AND ENDOTHELIAL DYSFUNCTION MEASURED BY PULSE WAVE ANALYSIS IN PATIENTS WITH A RECENT STROKE**

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**Introduction**

White matter lesions (WML) are more common in frail individuals. Their cause is unclear, but may be related to vascular disease. Endothelial dysfunction can be measured using pulse wave analysis by the degree of attenuation in the fall in augmentation index (Alx) after inhaling salbutamol (an endothelium-dependent vasodilator), relative to sublingual glyceryl trinitrate (GTN, which is endothelium-independent). We hypothesised that WML burden is associated with endothelial dysfunction.

**Methods**

Two radiologists independently scored WML burden on CT brain scans of volunteers in a study of endothelial dysfunction in acute stroke. Pulse wave analysis was performed before and after administration of 400mcg inhaled salbutamol via spacer, followed one hour later by 400mcg sublingual GTN.

**Results**

Twenty-five scans were reviewed (16(64%) males, median age 70yrs). Inter-observer agreement for WML burden was low ( $\kappa < .5$ ) except for parieto-occipital WML burden ( $\kappa(\text{SE}) = .57(.12)$ ). Higher mean parieto-occipital WML burden was associated with an attenuated drop in augmentation index after inhaled salbutamol (Spearman's  $\rho = -.41$ ,  $p = .04$ ), consistent with endothelial dysfunction. However, the correlation with the ratio of the change in Alx after salbutamol relative to GTN was non-significant ( $\rho = -.11$ ,  $p = .60$ ).

**Conclusions**

Parieto-occipital WML burden was associated with an attenuated fall in Alx after inhaled salbutamol, but was not statistically significantly associated with the ratio of the fall in Alx after salbutamol/GTN. A larger study (with improved inter-observer agreement) is required to prove any association between endothelial dysfunction and WML.

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**THE RELATIONSHIP BETWEEN BLOOD PRESSURE VARIABILITY AND FUNCTIONAL OUTCOME IN ACUTE STROKE**

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**Introduction**

Blood pressure (BP) in healthy individuals exhibits a diurnal variation with a night dip of 10-20%. A persistently high night BP is associated with increased cardiovascular morbidity. It is unclear what effects BP diurnal variations have on outcome in acute stroke. We hypothesised that persistently raised BP results in poor outcome.

**Methods**

Patients with an acute ischaemic stroke within 48 hours from onset underwent 24hour ambulatory BP monitoring. The percentage change between mean day and night BP classified patients into dippers (>10% change), non-dippers (0-10% change), or reverse-dippers (<0% change). The Scandinavian Stroke Scale (SSS) and the National Institute of Health Stroke Scale (NIHSS) were assessed on admission, week 1 and week 3. The relation of BP to outcome was analysed using Kruskal-Wallis test.

**Results**

		Dippers n=6	Non-dippers n=11	Reverse dippers n=12	p
Functional scores presentation	SSS	52 (16-58)	39 (12-58)	29 (10-56)	0.049
	NIHSS	3(0-20)	6 (0-22)	11 (2-24)	0.054
Functional scores week 1	SSS	55(12-58)	50 (10-56)	33 (10-54)	0.018
	NIHSS	2 (0-22)	4 (2-20)	8 (2-24)	0.029
Functional scores week 3	SSS	55 (12-58)	52 (10-56)	34 (10-52)	0.025
	NIHSS	1 (0-22)	2 (2-24)	7 (4-24)	0.107

Twenty nine patients were recruited with an acute stroke (41% males, mean age= 76 +- 12 years).

**Conclusions**

Reverse-dipping and non-dipping profiles in diastolic blood pressure are associated with less functional recovery at week 1 and 3.

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**DOES LIGHT-MODERATE ALCOHOL INTAKE PROTECT AGAINST COGNITIVE DECLINE IN OLDER PEOPLE?**

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**Introduction**

Excessive alcohol consumption is associated with increased risk of dementia. However it has been suggested that modest drinking is protective. We aimed to determine whether light-moderate alcohol intake is protective against cognitive decline in older people.

**Methods**

We used the PROSPER (Prospective Study of Pravastatin in the Elderly at Risk) study database of 5,804 people (3,000 women) aged 70-82 years, randomised to either pravastatin or placebo. Usual alcohol consumption was determined at study baseline. Serial measures of cognitive function over 3.2 years mean follow-up included the Mini-Mental-State-Examination (MMSE), speed of information processing (Stroop and Letter-Digit Coding tests) and immediate and delayed memory (Picture-Word Learning test).

**Results**

42% of women and 71% of men were drinkers (median intake in female and male drinkers 3 and 7 units / week respectively). Baseline cognitive performance was better for drinkers than non-drinkers for all cognitive domains. Most of these differences remained statistically significant after correction for multiple potential confounders in multivariate analyses. The differences in cognitive function persisted throughout follow-up (mixed linear model); rate of decline was similar for drinkers versus non-drinkers for all cognitive domains, except for MMSE, which declined significantly less in female drinkers than non-drinkers (p=0.0044).

**Conclusions**

In older people light-moderate alcohol consumption is associated with better cognitive performance compared to not drinking. These data are consistent with modest alcohol intake delaying age-associated cognitive decline.

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**EFFECT OF PARENTAL AGE ON LONGEVITY AND FRAILITY IN OLDER ADULTS**

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**Introduction**

Parental age at conception may affect life expectancy. Adult daughters of older fathers seem to live shorter lives and, in one study, being born to a mother aged < 25 was an important predictor of exceptional longevity. The effect of parental age on fitness/frailty in late life is unknown.

We aimed to investigate the relationships between parental age and frailty and longevity in older adults.

**Methods**

In the Canadian Study of Health and Aging (CSHA), data were collected on individuals aged ≥65 using a self-administered risk factor questionnaire and screening interview. In this secondary analysis, 5112 participants had complete data for parental age, frailty status and 10-year survival. Parental age was divided into three groups, with cut-offs at 25 and 45 for fathers and at 25 and 40 for mothers. Frailty was defined by an index of deficits. Survival was analysed using Kaplan-Meier curves and Cox regression with analyses adjusted for subject's age, sex and age of the other parent.

**Results**

Mean maternal age at subject's birth was 29.2y (SD 6.8) and mean paternal age 33.3y (SD 7.8). There was no effect of maternal or paternal age on survival for either sons or daughters. Similarly, there was no association between parental age and subject frailty in old age.

**Conclusion**

We did not identify an association between parental age and frailty or longevity in older adult participants in the CSHA.

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**SERUM CALCIUM PREDICTS LONG-TERM BUT NOT SHORT-TERM MORTALITY AFTER STROKE**

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**Background**

Higher serum calcium concentration has been associated with decreased infarct volume in stroke, but increased long term mortality in otherwise healthy people. The effects of serum calcium concentration on stroke outcomes are thus unclear.

**Methods**

Patients admitted to a teaching hospital with a diagnosis of stroke were studied prospectively. Admission neurological (Orgogozo) score, laboratory data including serum calcium adjusted for serum albumin, comorbidities and smoking status were recorded. Date of death was determined from Scottish Registrars office records. Cox regression analysis was performed, using quartiles of admission adjusted calcium (<2.27, 2.27-2.33, 2.34-2.39, >2.39 mmol/L), plus other baseline variables as covariates.

**Results**

1661 of 2042 (81.3%) of patients had adjusted calcium concentrations recorded. Mean age was 73.2 years (SD 10.8); 47.7% were male. 836/1661 (50.3%) were dead at a mean follow up of 3.1 years. Higher admission calcium concentration correlated weakly with lower (better) Orgogozo score ( $r=-0.061$ ,  $P=0.014$ ) but was not an independent predictor after adjustment for other baseline variables. 30-day mortality was similar in the lowest (72/385, 18.7%) and highest quartiles (75/409, 18.3%;  $P=0.89$ ). Total mortality was higher in the highest compared to the lowest quartile (hazard ratio 1.47; 95% CI: 1.20-1.79) and remained significant after adjustment for confounding factors (1.33; 95% CI: 1.05-1.68)

**Conclusions**

Higher adjusted calcium does not independently correlate with neurological score or 30-day mortality, but is an independent predictor of total mortality in this cohort.

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**A FUTURE MODEL OF HEALTH CARE DELIVERY FOR OLDER ADULTS – SYNERGY BETWEEN ENGINEERING AND CLINICAL SERVICES PROVIDES NEW WAYS TO IMPROVE BALANCE ASSESSMENT IN OLDER ADULTS**

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**Introduction**

Diagnosis and treatment of fallers require solutions to assess balance parameters. Clinical tests can be prone to observer error. Quantitative alternatives require expensive, sophisticated equipment. Emerging technology may offer an alternative measurement tool for centre of body mass (COM) control. Our aim was to determine if the output from a wearable, tri axial accelerometer correlates with clinical measures of balance (Berg Balance Scale (BBS) and Timed Up and Go (TUG)).

**Method**

Older patients (n=21, 8 male, 13 female) mean ages 78 (SD ± 7.6) were recruited for this study. Accelerations at the level of the third lumbar vertebra using a tri-axial accelerometer were recorded for 30 seconds with subjects standing both unsupported and on a mat with both eyes open (EO/MAT EO) and eyes closed (EC/ MAT EC).

Spearman’s rank correlation was performed to investigate the relationship between acceleration data and the BBS while Pearson’s correlation was used with TUG scores.

**Results**

Acceleration data for MAT EO was significantly and inversely correlated with BBS (r= -0.871) and positively correlated with TUG (r = 0.621) showing strong relationships in the expected directions.

**Conclusions**

Acceleration measures correlate highly with BBS and TUG and could be a good quantitative alternative in the measurement of balance in older people in the clinical setting. Furthermore this study highlights the positive impact of integrating Engineering and Clinical services on care of older adults.

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**ATTENTION AND EXECUTIVE CONTROL FUNCTION IN ALZHEIMER’S DISEASE AND VASCULAR DEMENTIA**

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**Introduction**

Recent literature has identified executive dysfunction as a key component in Alzheimer’s Disease (AD) and Vascular Dementia (VaD). Studies have found impairment at different stages in the disease processes. Changes in attention have also been documented in AD and VaD but a direct comparison has not been carried out. We aimed to determine if differences in executive control function (ECF) and attention exist between AD and VaD and at what stage of the disease process.

**Methods**

Patients with mild to moderate AD and VaD were recruited from a memory clinic. Controls were also recruited. Patients and controls carried out a battery of neuropsychological tests.

**Results**

171 subjects were recruited; 90 with AD (mean age 77 years, mean MMSE 23.1); 53 with VaD (mean age 76 years, mean MMSE 22.7); and 28 controls (mean age 70 years, mean MMSE 29.4). There was a significant difference in all memory tests between controls and the disease group (p<0.01). The AD group performed significantly better than the VaD group in measures of selective and sustained attention (p=0.04, p=0.02 respectively). There was no significant difference between the AD & VaD group in measures of executive control function.

**Conclusions**

Attention deficits and executive control dysfunction occur early in AD & VaD. There is evidence of greater impairment in some aspects of attention in VaD compared to AD but executive dysfunction is prevalent in both.

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