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ASSOCIATION BETWEEN ALLOPURINOL USE AND HIP FRACTURE IN OLDER PATIENTS DISCHARGED FROM REHABILITATION

U Basu1, J Goodbrand1, M E T McMurdo1, P T Donnan2, M McGilchrist2, H Frost3, J George1, M D Witham1

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2. Population Health Sciences, University of Dundee
3. Scottish Collaboration for Public Health Research and Policy, University of Edinburgh

Background
Allopurinol reduces oxidative stress and interacts with purinergic signalling systems important in bone metabolism and muscle function. We assessed whether allopurinol use was associated with a reduced incidence of hip fracture in older people who had undergone rehabilitation.

Methods
Analysis of prospective, routinely-collected rehabilitation and hospitalisation data. Data on patients discharged from a single inpatient geriatric rehabilitation centre over a 12 year period were linked to community prescribing data and ICD-10 coded hospitalisation data. Exposure to allopurinol was derived from prescribing data, and hip fracture was derived from hospitalisation data. Time-dependent covariate analysis was used to model time to hip fracture, incorporating ever-use of allopurinol, cumulative exposure to allopurinol, and covariates (age, sex, Barthel Index, comorbid disease, concomitant medication and biochemistry indices).

Results
3517 patients were alive at discharge from rehabilitation without a previous diagnosis of hip fracture; mean age 84 years. 1474 (39%) were male, and 253 (7%) had at least one exposure to allopurinol. A total of 313 (9%) sustained a hip fracture, and 2628 (75%) died during a mean follow up of 3.1 years. In fully adjusted analyses, each year of allopurinol exposure showed a hazard ratio of 0.17 (95% CI 0.01 to 2.70) for hip fracture, 1.22 (0.87 to 1.70) for death, and 1.14 (0.81 to 1.61) for time to death or hip fracture. Ever-use of allopurinol was associated with a hazard ratio of 1.48 (0.75 to 2.91) for hip fracture, 1.48 (1.16 to 1.90) for death and 1.49 (1.16 to 1.91) for death or hip fracture.

Conclusion
Allopurinol use may be a marker of increased risk of death and hip fracture, but greater cumulative exposure to allopurinol may be associated with a reduced risk of hip fracture. Studies with more events are required to confirm or refute these initial non-significant findings.
GRIP STRENGTH ACROSS THE LIFE COURSE: NORMATIVE DATA FROM TWELVE BRITISH STUDIES

R Dodds 1,2, H Syddall 1, R Cooper 3, D Kuh 3, C Cooper 1, A Aihie Sayer 1,2 and the Normative Data for Grip Strength Study Group

1. MRC Lifecourse Epidemiology Unit, University of Southampton
2. Academic Geriatric Medicine, University of Southampton
3. MRC Unit for Lifelong Health and Ageing at UCL

Introduction
Epidemiological studies have shown that weaker grip strength in later life is associated with disability, morbidity and mortality. Grip strength is a key component of the sarcopenia and frailty phenotypes and yet it is unclear how individual measurements should be interpreted. Using data from general population studies in Great Britain, our objective was to produce cross-sectional centile values for grip strength across the life course.

Methods
We combined 60,803 observations from 49,964 participants (26,687 female) of 12 general population studies in Great Britain. We produced centile curves for ages 4 to 90 and investigated the prevalence of weak grip, defined as strength at least 2.5 SDs below the gender-specific peak mean. All studies had received relevant ethical approval.

Results
Our results suggested three overall periods: an increase to peak in early adult life, maintenance through to midlife and decline from midlife onwards. Males were on average 1.7 times stronger than females from age 25 onwards: males' peak median grip was 51kg between ages 29 and 39, compared to 31kg in females between ages 26 and 42. Sensitivity analyses suggested our findings were robust to differences in dynamometer type and measurement position. Weak grip strength increased sharply with age, reaching a prevalence of 23% in males and 27% in females by age 80.

Conclusions
This is the first study to provide normative data for grip strength across the life course. These centile values have the potential to inform the clinical assessment of grip strength which is recognised as an important part of the identification of people with sarcopenia and frailty.
DOES THE TIMED UP AND GO TEST PREDICT FUTURE FALLS AMONG BRITISH COMMUNITY-DWELLING OLDER PEOPLE?

G Kojima¹, T Masud², J Treml³, S Iliffe¹

1. Department of Primary Care & Population Health, University College London
2. Nottingham University Hospitals NHS Trust
3. University Hospitals Birmingham NHS Trust

Introduction
Falling is common among older people and is a leading cause of morbidity and mortality. The Timed-up-and-go test (TUG) is recommended as a screening tool for falls but its predictive value for falls has been challenged.

Methods
Secondary analysis was performed using data from community-dwelling older people aged 65 years or older in the usual care arm of an exercise intervention RCT, ProAct65+. Prospective diaries captured falls over and 259 participants who returned ≥4 of 6 diaries were included in this analysis. Baseline characteristics were compared between fallers and non-fallers. Logistic regression models examined future falls risk by TUG time. A Receiver Operating Characteristic curve was used to determine the sensitivity, specificity and predictive values of TUG times.

Results
Fifty nine participants (23%) fell during the 24 weeks. Fallers had more medications and more comorbidities, longer TUG, and a past history of ≥2 falls, compared to non-fallers. Univariate logistic regression models showed higher numbers of comorbidities and medications and past history of ≥2 falls were significantly associated with future falls. Each second increase in TUG time was associated with 10% increased future falls risk (OR=1.10, 95%CI=1.02-1.19, p=0.02), which remained significant after adjusted for age, gender, BMI, numbers of comorbidities and medications, and past history of ≥2 falls (OR=1.09, 95%CI=1.00-1.19, p=0.05). The area under the Receiver Operating Characteristic curve was 0.582 (95%CI=0.493-0.670, p=0.057), suggesting limited predictive value. The cut-off point (maximizing sum of sensitivity and specificity) was 12.6 seconds. The corresponding sensitivity, specificity, and positive and negative predictive values were 30.5%, 89.5%, 46.5%, and 81.4%. A TUG time >12.6 seconds was significantly independently associated with 3.9-fold increased future falls risk. (OR=3.94, 95%CI=1.69-9.21, p=<0.01)

Conclusions
TUG scores were significantly and independently associated with future falls. The best cut-off point was 12.6 seconds and specificity and negative predictive value were high.
OVERDIAGNOSIS OF HOSPITAL ACQUIRED PNEUMONIA IN OLDER PEOPLE RATES AND REASONS FROM A PROSPECTIVE SURVEY

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². Department of Microbiology, NHS Tayside
³. Population Health Sciences, University of Dundee

Background
Hospital-acquired pneumonia is common in older people, but little is known about the accuracy of diagnosis or the reasons for misdiagnosis. We analysed data from a prospective survey of hospital-acquired pneumonia to investigate reasons for misdiagnosis.

Methods
We conducted a prospective survey of hospital-acquired pneumonia in patients aged 65 years and over admitted to general medical, medicine for the elderly and orthopaedic wards across two hospital sites. Diagnostic criteria were defined according to the National Prevalence Survey of Health Associated Infection and Antimicrobial Prescribing.

Key analyses included the number of patients suspected of having hospital acquired pneumonia but failing to meet the diagnostic criteria, and analysis by reason: insufficient evidence of inflammatory response; lack of radiological evidence, and lack of respiratory symptoms.

Results
A total of 1307 patients were included in the prospective survey. Mean age was 82 years (SD 7.9) and 539 (41%) were male. 143 patients (10.9%) had at least one suspected episode of hospital acquired pneumonia, with 157 suspected episodes in total. 75/157 episodes (47%) did not meet the diagnostic criteria. 28/75 (37%) lacked sufficient x-ray evidence alone; for 3 of these episodes chest radiography was not performed. 10/75 (13%) lacked sufficient evidence of inflammation alone, and 2/75 (3%) lacked respiratory symptoms alone. 30/75 (40%) lacked two sets of diagnostic criteria, and 5/75 (7%) failed to meet all three diagnostic criteria.

Conclusion
Hospital acquired pneumonia is over-diagnosed in older people when compared to rigorous diagnostic criteria, with lack of radiographic evidence being the single most common reasons for misdiagnosis.
FALLS AND DYSPNEA-RELATED DISABILITY ARE PREDICTORS OF MORTALITY IN PATIENTS WITH COPD AND MAJOR DEPRESSION

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1. Department of Health Professions, Manchester Metropolitan University, Manchester, UK
2. Institute for Geriatric Psychiatry, Weill Cornell Medical College, New York, USA

Introduction
Chronic obstructive pulmonary disease (COPD) is a major cause of hospital admission. We examined mortality predictors in patients admitted with acute exacerbation of COPD (AECOPD) with major depression following discharge of inpatient rehabilitation in one year follow-up. We hypothesized that severity of depression would be a major predictor of mortality.

Methods
We obtained baseline and clinical data from 138 AECOPD patients with major depression [mean age (SD)=71 (8.1) years; 91 females]. All patients met criteria for major depression using the DSM-IV criteria. Depression severity was assessed using the 17 item Hamilton Rating Scale for Depression > 14. Patients did not have cognitive impairment (Mini Mental State Examination <24). Dyspnea-related disability was quantified using the Pulmonary Functional Status and Dyspnoea Questionnaire (PFSDQ) and co-morbidity was measured using the Charlson comorbidity index. Following discharge of inpatient rehabilitation all patients were prospectively followed and survival/mortality at 52 weeks was documented using hospital notes, family physicians and relatives. Data was analyzed using the multivariate Cox regression analysis.

Results
One-year mortality was 31(23%). Nineteen (14%) of the patients had history of falls in the previous 6-month prior to the index hospitalization. History of fall(s) in the six-months preceding the index hospitalization was the strongest predictor of mortality (OR=3.26, 95% CI=1.48-7.04, p<0.003). The sub-domains of PFSDQ dyspnea (OR=1.04, 95%CI=1.01-1.07), PFSDQ tiredness (OR=0.93, 95% CI=0.88-0.97) and PFSDQ involvement (OR=0.95, 95% CI=0.90-0.99) were all weakly but significantly associated one year mortality each at p<.001 level. Severity of major depression, lung function tests, medical burden, and cognition were not predictors of mortality.

Conclusion
Over one fifth of COPD patients with major depression died one year after an acute exacerbation COPD. A history of falls (an index of frailty) and dyspnea related disability were predictors of mortality.
CLINICAL EFFECTIVENESS

ACCEPTABILITY OF USE OF VOLUNTEERS FOR FUNDAMENTAL CARE OF OLDER INPATIENTS

A M Baczynska¹,³,⁴, H Blogg¹, M Haskins¹, A Aihie Sayer¹,²,³,⁴,⁵, H C Roberts¹,²,³,⁴,⁵

Background
Older inpatients often have high fundamental care requirements. The Royal College of Nursing reports that important aspects of care can be compromised due to competing time pressures experienced by ward staff. We explored the views of older people on the involvement of volunteers and family in the delivery of fundamental care in hospital.

Sampling methods
We surveyed the views of 92 older people over a two month period. This convenience sample comprised 32 clients and 10 volunteers at two lunch club meetings, 11 nursing home residents, and 38 in-patients and 1 relative on acute medical wards in a university hospital.

Results
68 (74%) of the respondents were female and 49 (53%) were aged 80-99 years. 41 (45%) of the respondents had experience of hospital volunteers and all spoke highly of their input. Most participants thought volunteers could be trained to help with meals and walking. Other tasks identified for volunteers included: companionship and talking (19 responses), help tidying the bedside (16 responses), and personal care (12 responses) including washing, escorting to the toilet and cutting nails. Concerns related to potential clashes with paid staff and overcrowding of the wards.

Many (56%) respondents would choose to regularly help staff in caring for a hospitalised relative. Similarly, 52% thought a relative would be keen to contribute to their care. Specific aspects of care that could be addressed by a family member included mealtimes (76%), walking assistance (78%) and personal care (67%).

Conclusion
The concept of volunteers and family members contributing to fundamental care in hospital was acceptable to this sample of older people. Their main reservations were appropriate training and interaction with paid staff members. Routine involvement of trained volunteer and family members may enhance the care of older inpatients.
OLDER PEOPLE ASSESSMENT AND LIAISON SERVICE (OPAL) IMPACT IN PATIENTS ADMITTED TO MEDICAL ASSESSMENT UNIT (MAU) AT ASHFORD and ST. PETER’S NHS TRUST

A Smith, K Yeong, R Lisk
Ashford and St Peter’s NHS Foundation Trust

Background
Elderly patients are frequent users of our emergency care pathway. These patients do not have a comprehensive geriatric assessment (CGA) and have high re-admission rates and length of stay (LOS).

The Trust’s vision was to ensure that every “older person” gets the highest quality of care and treatment to meet their needs. This will be delivered through the implementation of a model of care based on the “Silver Book”.

Innovation
The OPAL team was set up in Oct 2013 and is based in MAU 8am-6pm. It involves early CGA (2hrs during the day and 14hrs at night) by a geriatrician, nurse, therapist, dietician and pharmacist. All patients >85 and patients >75 with 3 or more frailty triggers are seen.

Evaluation
During the first 6 months, 1148 patients (over 85s) were seen with average age 88 yrs. Conversion from MAU to ward was 81.2% compared to 90% (Oct 12-March 13). LOS has reduced from 10.1 to 9.1 days. This is significant as each bed costs the Trust £260, potential saving of £300,000. We have also reduced readmissions from 20.7% to 15.3%. This equates to 62 patients with potential saving of £150,000.

Two separate snapshot audits pre OPAL (Aug 2013) of 18 patients and post OPAL (May 2014) of 23 patients has shown the following:

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<tr>
<td>Assessed by geriatrician</td>
<td>17%</td>
<td>100%</td>
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<tr>
<td>Timely CGA</td>
<td>12.5%</td>
<td>84%</td>
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<tr>
<td>Falls risk assessment in 24hrs</td>
<td>29%</td>
<td>75%</td>
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<tr>
<td>Lying/Standing BP</td>
<td>0%</td>
<td>63%</td>
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<tr>
<td>Medication Review</td>
<td>43%</td>
<td>87%</td>
</tr>
<tr>
<td>Physiotherapy within 24hrs</td>
<td>14%</td>
<td>100%</td>
</tr>
<tr>
<td>Occupational Therapist within 24hrs</td>
<td>0%</td>
<td>62.5%</td>
</tr>
<tr>
<td>AMTS documented</td>
<td>50%</td>
<td>89%</td>
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<tr>
<td>Collateral history obtained</td>
<td>35%</td>
<td>100%</td>
</tr>
<tr>
<td>Incontinent management plan</td>
<td>17%</td>
<td>100%</td>
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Conclusion
Early CGA in MAU is cost effective and helps to reduce conversions from MAU to ward. It also reduces LOS and readmissions.

1. Non-elective in-patient stays (long stays) £2465 - PSSRU data
UNDERSTANDING FRAILTY AND ITS ASSESSMENT BY LOCAL DOCTORS – A SURVEY

A K Miriyala, A Joughin, S H Naqvi

Elderly Care Department, Sandwell General Hospital

Background
With an ageing population, recognition of frailty is evidently important. This allows for structured care and subsequently improves outcomes in this group of vulnerable individuals. We conducted a survey to assess the understanding of frailty of doctors in a district general hospital.

Sampling Method
A paper questionnaire was distributed by hand to doctors from different grades and specialties. Questions included their understanding of frailty in 5 words, knowledge of assessment tools, factors affecting outcomes in frailty and if frailty can be written on DNAR forms or a death certificate.

Results
Responses from 17 consultants, 30 SpRs, 49 junior doctors (CMT, ACCS, GPVTS, foundation year) were analysed:

<table>
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<tr>
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<tr>
<td>Consultants (%)</td>
<td>70</td>
<td>90</td>
<td>70</td>
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<tr>
<td>SpRs (%)</td>
<td>80</td>
<td>50</td>
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<td>Junior doctors (Jd) (%)</td>
<td>51</td>
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The most commonly used words were 'poor physiological reserve', 'elderly', 'weak/fragile', 'multiple comorbidities', 'self care dependency', 'poor mobility' and 'cachectic'.

Table 2 – Factors affecting outcomes

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<th>Nutrition</th>
<th>Exercise</th>
<th>Environmental / Well being</th>
<th>Medications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultants (%)</td>
<td>65</td>
<td>100</td>
<td>47</td>
<td>41</td>
</tr>
<tr>
<td>SpRs (%)</td>
<td>83</td>
<td>90</td>
<td>93</td>
<td>40</td>
</tr>
<tr>
<td>JD (%)</td>
<td>97</td>
<td>79</td>
<td>87</td>
<td>55</td>
</tr>
</tbody>
</table>

Consultants estimated that 64 % of their patients were frail where as SpRs and junior doctors estimated 54 % and 44 % respectively.

A comparison was made between 31 senior (Consultant and SpRs) geriatricians and 16 non-geriatricians:

<table>
<thead>
<tr>
<th></th>
<th>Fraility in 4-5 words</th>
<th>Fraility assessment tools</th>
<th>Fraility on DNAR / death certificate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geriatricians %</td>
<td>74</td>
<td>87</td>
<td>83</td>
</tr>
<tr>
<td>Non Geriatricians %</td>
<td>81</td>
<td>31</td>
<td>50</td>
</tr>
</tbody>
</table>

Conclusion
The results clearly demonstrate varied levels of knowledge of frailty and its assessment across physicians. Reassuringly, there is a good understanding of frailty in senior doctors, but clearly indicates more education is necessary at undergraduate level in order to facilitate learning and aid recognition of frailty at junior doctor level.
CLINICAL EFFECTIVENESS

QUALITY OF PRESCRIPTIONS IN ACUTE GERIATRIC / STROKE WARDS WAS IMPROVED BY REGULAR DRUG CHART REVIEWS IN ADDITION TO SERIAL AUDIT FEEDBACK FOR PREScribers

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Evidence Base
The rates of inpatient prescribing errors remain high, typically 5-10% for doctors of all grades (Dornan T. et al, EQUIP study, GMC. 2009) and work has shown the benefits of both personalised feedback and serial auditing to help improve this. A serial audit with regular feedback to staff into the quality of inpatient prescriptions in geriatric wards was conducted.

Change Strategies
Across a unit of 104 beds, 20 inpatient charts (5 per ward) were audited every fortnight over 5 months for the quality of prescriptions (using the NHS Lothian Golden Rules for Prescription Writing as the desired standard). This included items such as legibility, patient identifiers, allergies, administration route, clarity of as-required medications, and quality antibiotic prescribing. A "perfect" prescription had to fulfil all standards for all criteria. Fortnightly departmental meetings were used to feedback findings to staff, followed up by an email summarising key points. This included the top three areas for improvement and recent progress. Over the final 2 months, one ward received an additional twice-weekly review of drug charts by medical staff, focussing solely on the quality of prescriptions (outside the normal ward rounds).

Change Effects
In total 1471 prescriptions were audited. Over the 5 months, the proportion of perfect prescriptions increased from 15% to a maximum of 63% with regular feedback alone. In the ward that received additional drug chart reviews, this proportion improved from 24% to 100%.

Conclusion
Regular and encouraging feedback on areas for improving prescribing helped increase the quality of departmental drug charts. Feedback alone resulted in modest improvement, with far greater gains seen when this was used in conjunction with regular reviews of drug charts.
Routine Screening Tools for Cognitive Impairment and Depression in Older Patients at a Parkinson’s Disease (PD) Clinic

A B Pearson, N R Colledge

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Evidence-base

Idiopathic PD is increasingly prevalent with age and ultimately associated with high rates of cognitive impairment (24-31%) and depressive symptoms (35%). Such non-motor features are easily overlooked by clinicians and recent guidance supports screening tools for depression (SIGN 113, 2010).

Change Strategies

The Mini-Mental State Examination (MMSE) and Geriatric Depression Score (GDS) were introduced to screen all patients attending a PD clinic from February 2013. The effects of this were retrospectively compared between those attending in the 17 weeks prior and 14 weeks after this change.

Change Effects

73 patients were included, 34 who attended before February 2013 and 39 patients after. The average age was 82 years (SD 6.0), and 59% were male. Following introduction, completion rates for the MMSE increased from 21-92% (p<0.001) and the GDS from 0-82% (p<0.001). MMSE scores were <24 in 28% of patients, and GDS scores were >5 in 22% of patients.

<table>
<thead>
<tr>
<th>Action Following Assessment</th>
<th>Pre- Intervention</th>
<th>Post-Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment not done or ignored</td>
<td>23 (68%)</td>
<td>3 (8%)*</td>
</tr>
<tr>
<td>Assessment discussed, no action</td>
<td>5 (15%)</td>
<td>22 (56%)*</td>
</tr>
<tr>
<td>Adjusted PD Prescription</td>
<td>2 (6%)</td>
<td>2 (5%)</td>
</tr>
<tr>
<td>Monitoring Symptoms</td>
<td>2 (6%)</td>
<td>3 (8%)</td>
</tr>
<tr>
<td>Antidepressant Recommended</td>
<td>0 (0%)</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Advice to GP</td>
<td>0 (0%)</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Psychiatry Referral</td>
<td>2 (6%)</td>
<td>7 (18%)*</td>
</tr>
</tbody>
</table>

* p<0.05

Conclusions

The introduction of MMSE and GDS screening to a PD clinic increased the recognition of cognitive and mood problems and helped inform management. The assessments could be considered for use in clinics elsewhere, and the longer term benefits on patient care explored.
RIGHT CATHETER, RIGHT PATIENT, RIGHT TIME: A QUALITY AND IMPROVEMENT PROJECT TO REDUCE URINARY CATHETER INDWELL TIME ON AN ELDERLY WARD, INCLUDING USING INTERMITTENT CATHETERISATION

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Department of Medicine for the Elderly, Hull and East Yorkshire Hospitals NHS Trust

Evidence-Base
It is well established that urinary catheters are associated with infections\(^1\). However new trust acute kidney injury guidelines promote their use. Protocols have been shown to reduce catheterisation and encourage early removal\(^2\). For urinary retention intermittent catheters can reduce indwell time.

Change Strategies
Baseline data including indication, number inserted and length of insertion was collected for one month (November 2013) on a female elderly ward. The following month (cycle 1) a local guideline on insertion and removal of catheters was promoted at daily multidisciplinary handover meetings. For the next 2 months (cycles 2 and 3) intermittent catheters for non-painful urinary retention with no change in renal function were introduced.

Change effects
Mean catheterisation time reduced by 73% and extra catheters days to zero. As awareness of urinary retention increased so did its identification. For cycles 2 and 3 this was most often managed with intermittent catheters, regular toileting and bowel care. 6 out of 10 patients regained continence, 3 required a long-term catheter, 1 chose not to have a catheter on discharge. Mean number of intermittent catheters used per patient who regained continence was 1.6 (range 1-4).

There were 2 catheter associated UTIs (1 each in cycle 2 and 3)

<table>
<thead>
<tr>
<th></th>
<th>Number of new catheters</th>
<th>Patients with urinary retention</th>
<th>Mean indwell time (days)</th>
<th>Total extra catheter days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline data</td>
<td>12</td>
<td>3</td>
<td>7.8</td>
<td>13</td>
</tr>
<tr>
<td>Cycle 1</td>
<td>16</td>
<td>8</td>
<td>3.7</td>
<td>0</td>
</tr>
<tr>
<td>Cycle 2</td>
<td>20 (10 intermittent catheters)</td>
<td>12</td>
<td>1.5</td>
<td>1</td>
</tr>
<tr>
<td>Cycle 3</td>
<td>17 (7 intermittent catheters)</td>
<td>8</td>
<td>2.1</td>
<td>0</td>
</tr>
</tbody>
</table>

Conclusions
Protocols on reducing catheterisation promoted through multidisciplinary handover meetings and posters can be effective.

Raising awareness led to higher detection levels of urinary retention and was successfully managed in hospital with intermittent catheterisation.

References
\(^1\)Warren JW et al. Journal of Infectious diseases 1982; 146:719-23
\(^2\)Meddings et al. BMJ Quality and Safety 2014; 23:277-289
JOINT GP AND GERIATRICIAN CARE HOME RESIDENT REVIEWS: AN INTEGRATED MODEL

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2. Care of the Elderly Department, York Teaching Hospital Foundation Trust
3. Market Weighton Practice, West Wolds Locality Group, East Riding of Yorkshire

Background
The British Geriatrics Society Quest for Quality 2011 report suggests the service provided to care home residents is a 'Cinderella' one. Often GPs provide a reactive service with little advance care planning. East Riding has 148 care homes and, as is the case nationally, the residents are increasingly frail with multiple long term conditions.

Innovation
A joint GP and geriatrician model was devised aiming to yield a more consistent approach to patient reviews. The integrated approach included individualising care plans, reducing unnecessary secondary care interventions, advance care planning and rationalising medications. All those over 65 years old in care homes were reviewed at least once in an eight month period during a joint visit by their GP and a consultant geriatrician.

Evaluation
Approximately 450 residents were reviewed during 39 joint visits to 16 care homes. All had a medication review with 440 medications stopped, and 88 started, with cost savings of approximately £7800 in 8 months.

A DNACPR form or advance care plan was suggested in over 50% of residents with 30% felt to be in their last year of life.

Non-elective admissions for those from care homes included in the scheme reduced by 8% compared with the previous year. This compares favourably with those care homes in the same locality not included in the scheme which had a 24% increase in non-elective admissions, again providing a significant cost saving.

By the end of the 8 months, 83% of participating GPs felt more confident in reviewing care home residents.

Conclusions
This joint and proactive approach improved patient care and was cost effective. The training aspects also improved GP and care home staff confidence in managing these complex and frail people which should benefit future residents and the wider population. Expanding the scheme across the region is the next challenge.
WHAT DO PATIENTS WEAR ON THEIR FEET? A SERVICE EVALUATION OF FOOTWEAR IN ELDERLY PATIENTS (STEP)

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². Health Care of the Older Person, Nottingham University Hospitals NHS Trust

Background
Assessment of footwear is recommended as an important component of falls prevention programmes, and recommendations have been made, such as low heeled shoes to reduce falls. However there are no UK or international standardised guidelines to advise nurses about appropriate footwear for older people. Scant data exists to show what older inpatients typically wear in hospital during acute admissions, which may hinder development of future interventions in this high risk falls group. To address this omission, we conducted a service evaluation to observe what older inpatients were wearing on their feet, and patient and staff perceptions about footwear.

Sampling methods
Patients who had been admitted to six health care of the older person wards in an Acute NHS Trust in England participated in a survey of footwear. Patients and nurses were interviewed about choices and current practices. Footwear was assessed using the Footwear Assessment Tool.

Results
730 pairs of footwear, from 675 patients, were assessed. 273 (40%) patients were barefoot at observation. The most common footwear worn were slippers (46%) and gripper socks (37%). Much of the footwear had a good fit, but over 50% lacked adequate structure, stability and support. More than 60% had no cushioning and 60% had no fixation. Footwear was commonly more than 12 months old (60%) with signs of moderate to excess wear. Features such as grip, structure, and support were identified as important qualities. Patients valued comfort and the familiarity of their own footwear.

Conclusions
This service evaluation provides information on current footwear worn by older inpatients during an acute hospital admission in the UK, which has not been previously reported. Many inpatients are wearing footwear with insufficient structure to promote optimal stability or gait. There are discrepancies between perceptions and practice. Providing safe footwear suitable for use in hospital is potentially a low technology resource-efficient way to promote patient safety in older inpatients.
AN EVALUATION OF DELIRIUM MANAGEMENT IN THE ERA OF THE DaD TEAM

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Evidence-base
NICE identifies delirium as a major cause of morbidity and mortality amongst hospital patients, particularly when it is not diagnosed early and managed appropriately (Inouye et al., AJM 1999. 106(5) 563–573). A previous audit demonstrated that educational interventions improved trainee doctors’ knowledge and recognition of delirium, but did not alter clinical practice when delirium had been identified (Chen et al., 2011).

Change Strategies
Several new activities have been started since the last audit cycle. All patients over 75 are now screened for cognitive impairment on admission. The Dementia and Delirium (DaD) team was set up to provide practical support to clinical teams; it consists of 2 geriatricians, a psychogeriatrician, 2 specialist dementia nurses and administrative support. The Delirium Bundle was developed to assist doctors and nurses with acute management of delirium. A series of educational videos (“Barbara’s Story”) was produced and distributed widely to Trust staff.

Change Effects
A notes-review of all the DaD delirium referrals received in one month (69 in total) showed the majority were appropriate - recognising established delirium or patients at high risk of developing delirium. Two-thirds of cases were managed optimally, according to Trust guidelines. This compares favourably with findings from the previous audit cycle, in which only 2 of the 8 common precipitating factors were considered in 100% of the patients.

Conclusion
Awareness and appreciation of delirium has improved in the last few years, likely due to a combination of factors. Communication was relatively neglected, with a minority of patients’ relatives and GPs informed of the delirium episode; this is a focus for future work.
A SIMPLE SCORE TO IDENTIFY FRAIL OLDER PATIENTS

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Background
Many scales are used to identify frail patients based on strength, exercise capacity or recent weight loss or on multiple indices. With our Commissioners we are attempting to perform Comprehensive Geriatric Assessments on a higher proportion of Frail Patients admitted to hospital. We needed a scale that could rapidly be calculated from routinely collected data on admission. The Rockwood Scale (Rockwood K et al CMAJ 2005;173:489) is commonly used and is a subjective seven-level scale ranging from very fit to severely frail scored by the examining clinician based on the patient’s assessment of exercise capacity and Activities of Daily Living. Different centres use other approaches: e.g. Leicester have found that “falls, cognitive impairment and admitted from a care home” identify 80-90% of frail patients.

Innovation
One of us (CN) obtained the Rockwood Score on 63 consecutive over 75 year old patients admitted as an emergency and simultaneously calculated the “Leicester Frailty Index” scoring 1 each if there was a history of falls, if there was cognitive impairment (Abbreviated Four item Mental Test Score <4) or admission from a care home. All these data are routinely recorded in our admission clerking. The maximum score was 3 and a score greater than 0 indicated frailty. The Rockwood Score was compared to the Leicester Frailty Index by calculating the kappa statistic using Statistical Package for Social Sciences (SPSS.)

Evaluation
44/63 patients were classed as Frail by the Rockwood Score. Of these 42 were classified as Frail by the “Leicester Frailty Index” .(kappa = 0.809 (P<0.001).Conversely 3 patients were classed as Frail by the “Leicester Frailty Index” but not by the Rockwood Score.

Conclusions
The “Leicester Frailty Index” can be recorded in seconds retrospectively from the admission clerking. It appears to predict a robust, established and validated frailty score in our sample.
Evidence Base
Frailty in older surgical patients is associated with adverse post-operative outcomes including increased complications, length of stay, mortality and loss of independence (Partridge, Age Ageing 2012;41;142-7). Pre-operative frailty screening in older patients is now recommended by international guidelines (Chow, J Am Coll Surg 2012;215;453-66). Identifying frailty allows comprehensive risk-assessment and informed consent; medical optimisation and proactive discharge planning. The Future Hospitals Commission emphasizes that geriatricians have a duty of care to these patients. Geriatric surgical liaison services are proven to improve outcomes for frail older surgical patients (Harari, Age Ageing 2007;36:190-6). However, the number of older patients undergoing surgery is increasing and older patients display great heterogeneity in health status. It is not feasible for geriatric surgical liaison services to select patients solely on the basis of age. Frailty screening may allow targeted intervention in vulnerable patients.

Change Strategies
1. Initiation of frailty screening through incorporation of the Reported Edmonton Frail Scale to the surgical admission bundle for all patients aged ≥70.
2. Surgical departmental frailty education.
3. Seminar training on frailty screening for surgical ward staff.
4. Establishment of geriatrician-led multi-disciplinary board rounds to discuss the medical management and plan discharge of frail patients.

Change effects
Pre-intervention, 61 patients aged ≥70 were included (Urology n=42; Breast n= 6; General Surgery n=13). No patients underwent frailty screening within 48 hours of admission. For 6 weeks following the intervention, 134 patients aged ≥70 were admitted (Urology n=84; Breast n=24; General Surgery n=26). 91% (n=122) were screened for frailty within 48 hours of admission ($\chi^2 = 148.35; P=<0.001$).

Conclusion
Frail surgical patients are vulnerable and benefit from geriatric liaison services. This audit demonstrates that frailty screening was not previously practiced in our hospital. Establishing frailty as the selection criterion for geriatric surgical liaison significantly improves compliance with frailty screening guidelines.
IMPROVING ADVANCE CARE PLANNING IN NURSING HOME RESIDENTS ADMITTED TO HOSPITAL

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York Teaching Hospitals NHS Foundation Trust

Background
Anectodally there were high numbers of nursing home residents dying early in their admission to York’s acute medical unit and that our advance care planning was not as effective as it could be. A recent large scale study on provision of care for nursing home residents showed 56% were dying within 1 year of admission.1

We retrospectively reviewed 50 case notes of patients admitted to York AMU from nursing homes from October to December 2012. There was a high mortality rate during admission and the subsequent 6 months. 54% had DNACPR decisions made, however often not communicated in discharge letters.

Little advance care planning was being done.

Innovation
We designed a trigger sticker trialled on those admitted from a nursing home to AMU from August 2013 to February 2014 asking:

Is the Gold Standards Framework suitable?

32 patients’ notes which had a sticker were retrospectively reviewed.

Evaluation
Of those with a sticker 24 (75%) were felt to be appropriate for advance care planning and 21 (66%) were felt appropriate for the Gold Standards Framework.

78% were discharged with a DNACPR form, increased from 54% in the initial review.

In the first review there were 18 deaths in the 6 months following admission: 5 were not discharged with a DNACPR form. This was reduced in the second cycle to 1 of 9 deaths.

Communication on the initial discharge letters of the DNACPR forms was still lower than hoped but it did increase from 24% to 44%. However supplementary letters detailing advance care planning increased from 6% to 22%.

Conclusions
The use of the sticker encouraged more advance care planning, DNACPR decisions and better communication with primary care.
SURVEY ON THE ATTITUDES OF HOSPITAL DOCTORS TOWARDS THE TERMS ‘ACOPIA’ AND ‘SOCIAL ADMISSION’ IN CLINICAL PRACTICE

D Curran, I Chattopadhyay

Care of the Elderly Department, Glan Clwyd Hospital, Rhyl

Background
Generally geriatricians view the use of terms such as acopia’ and ‘social admission’ on older patients as unacceptable. These labels are common in clinical practice. This survey was undertaken to analyse the views of hospital doctors towards the use of these terms in their workplace.

Sampling method
547 junior doctors and 223 consultants working in a large Health Board in North Wales were invited to participate in a web-based survey between November 2013 and January 2014.

Results
Of the 146 respondents (16% of junior doctors; 26.5% of consultants) the specialties included medicine (48.6%), surgical specialties and orthopaedics (20.5%), psychiatry (11%), emergency medicine (7.5%) oncology and palliative care (5.5%) and others(6.8%). 43.5% of respondents (48.8% juniors vs 35.7% consultants; statistically non-significant), found the terms ‘acopia’/’social admission’ to be useful. A significantly higher proportion of doctors from surgical specialties (55.6%) and psychiatry (60%) found the terms useful compared to medicine (32.4%; p < 0.05). Overall, 30.9% of respondents considered ‘acopia’/’social admission’ to be acceptable diagnostic terms with no significant differences between the doctor’s grades and specialties.

79% of respondents underestimated the quoted mortality figure of 22% (Kee Y-YK, Rippingale C. Age and Ageing 2009; 38: 103-105) for these patient groups. Such patients were deemed to be a burden on their time by 44.8% and a burden on NHS resources by 62.7%.

Conclusion
43.5% of hospital doctors, considered ‘acopia’ and ‘social admission’ to be useful terms. A higher proportion of doctors from surgical specialties and psychiatry felt that the terms were useful compared to medical specialties. A slightly lesser proportion (30.9%) considered these terms to be acceptable as diagnoses, with no significant differences between grades and specialties. Thus, there is a widespread acceptance of ‘acopia’/’social admission’ as useful terms and as diagnoses amongst junior and senior doctors across different hospital specialties.
AUDIT ON DRUG ERRORS IN A CARE OF THE ELDERLY WARD

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Wrightington, Wigan and Leigh NHS Foundation Trust

Evidence-Base
CQC visit to WWL NHS trust identified issues around drug prescribing and dispensing. We decided to audit and specifically look at drug errors on a Elderly care ward.

Our aim was to ensure patients are getting right treatment at the right time.

Clear communication in case of any missed doses and to ensure clear documentation.

Multiple reasons for drug errors were identified. For example - patient refusal either because of confusion or voluntary refusal, swallowing difficulty and non-availability.

In 77% cases the medical doctor had not been informed although the reason was mentioned in the drug board. 23% of missed doses were neither mentioned in the drug board nor communicated.

In 40% of the discharged patients, medication alteration was not communicated to the GP.

Change Strategies
Nurses were advised to carry a Form on their drug round. This form included – patient details, any missed dose, reason for omission, action taken by doctors and Job list for doctors.

This Form is given to the doctors at the end of the nurse’s round for action by the ward doctor.

Discharge summaries were reviewed and accurate communication to GPs reinforced to the junior doctors.

Change Effects
Audit cycle completed.

All the missed doses were documented in the patient’s drug board and the nurse’s drug round Form. In 88% of the cases a reason was clearly mentioned for a missed dose. Action was taken by the doctors in 75% cases.

In 30% of the patients discharged alterations in medication were not communicated to the GP.

Conclusion
Significant improvement from previous audits was noted, minimizing drug errors.

Drug communication Form is clearly an effective tool.

Subsequent audits will aim towards further improvement.
ININVOLVING SERVICE USERS IN THE DEVELOPMENT OF EDUCATIONAL MATERIAL FOR PEOPLE WITH PARKINSON’S

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2. NIHR CLAHRC Wessex
3. University of Southampton Academic Geriatric Medicine Faculty of Medicine
4. University Hospital Southampton NHS Foundation Trust
5. NIHR Southampton Biomedical Research Centre

Background
Falling is common among people with Parkinson’s (PwP): clinicians understand many of the risk factors, and effective interventions are developing. However, communicating research findings and relevant advice to PwP and their carers (to inform their self-management) is an under-utilised aspect of falls-prevention. We worked with three groups of people living with Parkinson’s to develop evidence-based educational materials addressing the circumstances and avoidance of falling.

Innovation
We reviewed the literature and existing approaches to dissemination to identify messages about falling that would be informative to people living with Parkinson’s (e.g. tripping, multi-tasking, standing up after falling, informing clinicians). Five PwP and five carers discussed their awareness and use of current literature/resources, and their preferences for information delivery. We designed prototype materials (cards, leaflets, posters and stickers) based on their preferences and the key messages, which four PwP and four carers then discussed. We refined the materials following their feedback and a further five PwP and six carers commented on the revised versions.

Evaluation
People living with Parkinson’s considered disease severity, presentation and individuality important when developing educational materials. There was a preference for paper-based over electronic materials; people felt messages would be most effective if reinforced by strategic reminders around the home and they would be more likely to use a resource after a healthcare professional discussed it with them.

Conclusions
Involving service users helped shape educational messages and materials in a way likely to optimise uptake and benefit. Service users considered written information desirable and effective but highlighted the need to emphasise its relevance, e.g. a clinician outlining the risks to an individual who had not yet fallen, and practicality, e.g. posters could be distracting, cards carried in wallets were not readily accessible.
SYNCOPE – CAN THE USE OF A RISK-STRATIFICATION SCORE REDUCE ADMISSIONS AND IMPROVE CARE QUALITY?

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1. Department of Geriatric Medicine, University Hospital of South Manchester
2. Medical School, University of Manchester

Background
Syncope is a common cause of admission amongst the elderly with 37% of the over 60’s having been affected (Ganzeboom KS, Colman N, Reitsma JB, Cardiol, 2003, 91, p1006). In 2006 syncope management cost estimates exceeded £70m (Chen LY, Shen WK, Mahoney DW, Am J Med 2006, 119, p1088) but care remains fragmented and variable in quality (Brignole,M, J Am Coll Cardiol. 2012 ,59, p1583). This project aimed to assess whether implementation of a syncope risk-stratification score during assessment could potentially reduce admission rate, save money and improve care.

Innovation
Validated risk-stratification models of the San Francisco syncope rule (SFSR) and Osservatorio Epidemiologico sulla Sincope nel Lazio (OESIL) were applied retrospectively to Emergency Department (ED) presentations given a diagnosis of syncope over a one week period. The scores were used to assess which high-risk patients should have been admitted for investigation and which low-risk patients could have been discharged for community assessment, avoiding admission.

Evaluation
22 patients presented with an ED diagnosis of syncope. Clinical assessment resulted in 12 admission and 10 discharges. However, according to both scoring systems 25% of patients admitted were ‘low-risk’ and would have been appropriate for discharge and community management. Of those discharged 40% were deemed ‘high-risk’ on both scores, recommending admission.

This equates to an increase in overall recommended admissions by 1 (SFSR) or 3 (OESIL) patients per week when scores were applied.

Conclusion
These results suggest that application of either score to syncope presenting to the ED could contribute to improved quality of care. Conversely, use of a risk score could increase the admission rate. Average length of stay for syncope is 4 days, thus 3 additional admissions weekly equates to approximate cost increases of up to £156'000 annually, excluding any additional community management costs, currently 60% ED attendances discharged without follow up.
CARERS’ SATISFACTION WITH INPATIENT HOSPITAL CARE: FINDINGS OF A DEMENTIA CARERS’ SURVEY

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1. RICE: The Research Institute for the Care of Older People, Bath
2. Royal United Hospital (RUH), Bath

Background
Too often the care for people with dementia in acute hospital settings is both poor quality and expensive. The RUH received NHS South of England Dementia challenge funding to develop an innovative care pathway including: seven days a week dementia coordinators and seven days a week mental health liaison services, improved time frames for assessment and intervention, support for timely discharge, a staff training programme and putting carers at the heart of the service. This survey reports the views and feedback of carers of people with dementia.

Sampling Methods
An eleven-item online survey was administered by independent RICE staff using iPads on a sample of five wards across the hospital to monitor carer satisfaction and views immediately prior to the implementation of the new pathway in May 2013 and at three further points across a nine month period. Questions used a seven-point Likert scale, with space for optional written comments.

Results
Overall 181 carers completed the anonymous survey which showed a positive shift in respondents’ satisfaction ratings to: information given about treatment (59% increased to 69%), involvement in care (59% to 83%), and staff acting and listening to individual needs (55% to 81%). Ratings relating to respect and dignity were very highly rated from the start and remained so (~91%). Additional verbatim comments highlighted positive aspects (caring attitudes of staff, general care and the dementia coordinators) together with areas for further development (enhancing both communication and staff knowledge about dementia).

Conclusions
The carers’ survey indicated a marked improvement in the care provided to people with dementia, with particular support for the role of dementia coordinators. This highlights the potential benefits of a systematic approach to quality improvement for people with dementia in the acute hospital setting.
THE IMPACT OF A SPECIALIST INTERDISCIPLINARY TEAM AND ASSESSMENT LOUNGE ON THE QUALITY OF CARE OF OLDER PEOPLE PRESENTING TO THE EMERGENCY DEPARTMENT

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  1. University Hospital, Southampton
  2. Academic Geriatric Medicine
  3. MRC Lifecourse Epidemiology Unit
  4. University of Southampton
  5. NIHR CLAHRC Wessex

Background
Providing quality care for older people in the Emergency Department (ED) is challenged by the pressure of meeting time targets. ED is a key area where decisions on admission of older people take place and where alternative approaches might be considered.

Innovation
A team of specialist nurses, therapists, and social workers established within the ED in a university hospital, specialises in multi-faceted assessment, safe discharge and liaison with community care teams. Patients are referred by ED clinicians and community nurses. A specialist 4 chair assessment lounge in a purpose built unit adjacent to the ED has been developed to support older people by enabling robust assessment without the ED time pressures.

Evaluation
Data was collected on patients aged > 65 years attending ED between February-April 2014, to compare re-presentation rates of patients seen by the team with those who were not referred. A satisfaction questionnaire was completed by 20 patients seen consecutively in one week by the team. Those with cognitive impairment were excluded from the questionnaire.

826 patients were assessed by the team in this time period; their readmission rate was 0.2% compared to 7% for the 4340 receiving routine care. The number of admissions avoided was 162. Patients aged over 80 years spent on average 4.48 hours in Majors and 3.36 hours in Minors; 95% of patients were satisfied with the care they received. The Assessment Lounge offers an incentive to move older people out of the department, without compromising their assessment and liaison with community teams.

Conclusions
The specialist team achieved lower readmissions despite their focus on frailer patients with multiple co-morbidities. Patients were highly satisfied with the service which identified problems, addressed them directly and linked to existing primary and intermediate care teams for additional input. Quality care for older people in ED is enhanced by the introduction of the Assessment Lounge.
REDUCING GERIATRIC RE-ADMISSIONS AND LENGTH OF STAY THROUGH TRIAGE RAPID ELDERLY ASSESSMENT TEAM (TREAT) AND POST ACUTE CARE ENABLEMENT (PACE). A RETROSPECTIVE BEFORE AND AFTER COHORT STUDY

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Background

A comparison of length of stay (LoS) and readmission rate (RR) of elderly patients before and after the implementation of TREAT and PACE.

Wright et al. 2013 previously demonstrated a reduction in LoS in this group. Expanding on this work, this study examines the effect on both LoS over a longer period, adding RR analysis in this novel care model.

Innovation

TREAT is a multidisciplinary team providing comprehensive geriatric assessment and admission avoidance measures for patients aged 80 and above attending A&E in the Royal Free Hospital. The PACE (Post Acute Care Enablement) team provide subsequent domiciliary care.

Evaluation

12,276 electronic records dated 01/08/2008 – 31/08/2013 were grouped into ‘admissions’ and ‘readmissions in a 30 day period’ in subsets pre- and post- TREAT. Of those readmitted, discharge notifications were sub-grouped into those admitted with the same diagnosis as the primary admission and those admitted with a different diagnosis.

Statistically significant reductions in both LoS and ‘same diagnosis’ readmissions was observed, despite an overall increased rate of admission. Total readmission: admission ratio increased by 0.43% (pre-TREAT = 4.57%, post-TREAT = 5.00%) and readmission rate fell by 3.26 readmissions/30 days, albeit not significantly (p=0.171).

Median LoS reduced by 2.0 days (pre-TREAT = 8, post-TREAT = 6, p=0.0000001). Total readmissions (same or new diagnosis) as a proportion of total admissions did not differ significantly between the pre-TREAT (0.43%) and post-TREAT (5.00%) periods (p=0.447). Same-diagnosis readmissions were significantly reduced in the post-TREAT period (pre-TREAT = 122; post-TREAT = 57, p=0.0000001).

Conclusions

This model represents a service that reduces preventable hospital visits and bed days, allowing management of complex patients by a specialised team focussing on front-line and community treatment. This study demonstrates the success of a transferable system that promotes patient independence and reduces financial penalties for hospitals.

Wright PN, et. al.. Age & Ageing 2013;0:1-6.
THE INTRODUCTION OF GENERAL PRACTITIONERS (GP), CARE HOME SUPPORT TEAM (CHST) AND ANTICIPATORY MANAGEMENT PLANS (AMP) IN AN ATTEMPT TO REDUCE HOSPITAL ATTENDANCES AND ADMISSIONS FROM CARE HOMES

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Background
Our hospital admits patients from care homes in Greenwich. Concern was raised that admission may not always be appropriate, governed by lack of knowledge or information rather than patient need. We implemented more support to local care homes to enable staff education, GP support, and make clear care plans for all residents.

Innovation
In early 2013 designated GPs were introduced to care homes; the care home support team (nurse, pharmacist and mental health nurse) were recruited to provide staff education. A consultant was employed to develop AMPs and ensure clear management plans for residents. Data regarding hospital attendances, medical admissions, length of stay and place of death were collected for 3 equivalent months in 2012 and 2013.

Evaluation
Admissions were reduced from 38 to 18 from nursing home (NH) and 12 to 11 from residential homes (RH). Average length of stay (calculated one month post the end of data collection) showed a change from 9.6 to 11.3 days, median 3 to 6. Total inpatient bed days reduced from 479 to 329. Number of deaths in homes increased from 50-58 and hospital deaths reduced from 15 to 9. Frequency of ED attendances 1 month before and 1 month after admission reduced from 16 to 8 and 14 to 3 respectively. 106 AMPs have been developed.

Conclusions
Results suggest the implementation of these initiatives have had an impact on the parameters we set out to measure. These improvements did not reach statistical significance, but enough was demonstrated to engender optimism in the commissioners, who support the initiative continuing. Considering our increase in average length of stay; we have implemented a number of educative measures, which may prevent short admissions, representing short stays being reduced in the second cohort and the resulting admissions possibly being more appropriate. Which intervention has impacted is uncertain.
DO CONSULTANT LED PHARMACIST MEDICATION REVIEWS LEAD TO IMPROVED PRESCRIBING?

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². Dept of Elderly Medicine, Antrim Area Hospital
³. Western health and Social Care trust

Background
A two year project which focussed on comprehensive medication review for nursing home residents was carried out. One of the objectives of this project was to demonstrate the benefit of holding outreach clinics in nursing homes with a consultant pharmacist (working alone or with a geriatrician) and to show improved prescribing.

Method
Patients were reviewed at outreach clinics which were conducted by either, the consultant pharmacist working alone or together with a consultant geriatrician. Clinics were followed up by a meeting with nursing home staff six weeks later to assess acceptance of recommendations.

Results
Table below summarises both the individual and total MAI (Medication Appropriateness Index) scores (as scored by the consultant pharmacist) for all 100 patients analysed in more depth. Total MAIs prior to and after the outreach clinics held by the consultant pharmacist and geriatrician together were significantly higher than those calculated when the pharmacist was working alone (Mann Whitney U, p<0.05).

<table>
<thead>
<tr>
<th></th>
<th>Individual drug MAI</th>
<th>Total medication regime MAI</th>
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<tbody>
<tr>
<td></td>
<td>Prior to clinic</td>
<td>After outreach clinic</td>
</tr>
<tr>
<td></td>
<td>Mean ±SD (Range)</td>
<td>Mean ±SD (Range)</td>
</tr>
<tr>
<td>Clinic held by both</td>
<td>1.4±2.4 (0-9)</td>
<td>0.3 +0.7 (0-7)</td>
</tr>
<tr>
<td>consultant geriatrician and consultant pharmacist</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinic held by consultant pharmacist only</td>
<td>0.8+1.5 (0-9)</td>
<td>0.13+0.473 (0-5)</td>
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</tbody>
</table>

Conclusions
For all clinics, individual and total scores dropped by a highly significant amount (Wilcoxon Signed Rank test p<0.001) after clinic review, indicative of more appropriate prescribing.
MANAGING HOSPITALISED PATIENTS WITH PARKINSON’S DISEASE: ARE WE GETTING IT RIGHT?

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Background
Hospital admission for patients with Parkinson’s disease (PD) can be problematic. Parkinson’s UK ‘Get it on Time’ campaign highlights the importance of correct PD medications. However a lack of evidence-based guidelines for optimum inpatient management persists. The spectrum of issues older patients may encounter is also sparsely characterised. Our objective was to survey management of older patients with PD within our trust, to help develop clinical guidelines.

Sampling Methods
We conducted a retrospective survey of case notes and drug charts of patients aged 65 and over with idiopathic PD, admitted more than 48 hours to Guy’s and St Thomas’ hospitals between August-October 2013.

Results
We retrieved notes for 24 patients. Mean age 79 yrs (15 male, 9 female), mean length of stay 15 days. 21/24 (88%) patients were emergency admissions, predominantly to medical wards, most frequently with falls (7/24, 29%) attributed to PD motor-related problems or respiratory infection. Cognitive impairment was common; 29% (7/24) had known dementia, delirium present on admission in 17% (4/24). Most required assistance for activities of daily living (16/24, 67%). 18/24 (75%) took PD medications; 94% (17/19) of admission documentation was inaccurate (missed/incorrect doses or timings), incorrect timings were the most frequent drug chart error (4/8, 50%). Four patients received contraindicated drugs (haloperidol or metoclopramide). 72% (13/18) experienced a delay in receiving medication at least once, mostly due to ‘drug unavailable’ (12/13, 92%). Inpatient complications were frequent, including; new onset delirium 10/17 (59%), constipation 6/17 (35%), impaired swallow 5/17 (29%), pneumonia 4/17 (24%), new urinary incontinence 4/17 (24%).

Of those patients with inpatient complications, 71% (12/17) were reviewed by a PD specialist.

Conclusions
Inaccurate documentation and inappropriate medication omissions were common. Most patients surveyed were frail, cognitively impaired and experienced inpatient complications. These findings reinforce the need for robust multidisciplinary guidelines for managing older patients with PD, which are accessible to the non-specialist and encourage early PD team involvement.
SCRENNING FOR DEMENTIA; AN AUDIT OF IMPROVING COMPLIANCE WITH THE DEMENTIA CQUIN

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Evidence-base
Dementia places considerable demands on care, with financial costs estimated to amount to £23 billion annually. Earlier diagnosis is thought to lead to improved quality of life through earlier treatment, reducing admissions and prolonging independent community living. A CQUIN was introduced in 2012 proving an incentive for earlier recognition of dementia. One indicator measures whether hospitals screen patients for possible dementia if they are aged over 75 admitted to hospital in an emergency. This completed audit cycle measured the change screening rates following FY1 proposals to improve compliance.

Change Strategies
Results of the initial audit were presented at the department meeting, with suggestions including amending the position of the screening tool, informing doctors of the outcomes of those who had been screened and an increase in the number of posters promoting and raising awareness of the dementia screening tool.

Change Effects
Of the 67 case notes initially reviewed (all eligible patients across 3 wards), 8 (12%) met requirements of the CQUIN. 6 (9%) patients were identified as having possible undiagnosed early onset dementia, though only 1 (1%) were investigated and referred accordingly. Following the change in proforma position and raising awareness of the CQUIN amongst colleagues, 70 case notes were examined, with 22 (33%) found to meet the CQUIN requirements. 14 (20%) were identified as having possible undiagnosed early onset dementia with 11 (16%) of patients investigated and referred for memory difficulties.

Conclusion
A number of eligible patients had not been screened for dementia on admission, potentially denying access to early investigation and support. Raising awareness through posters and demonstrating the outcomes of those who had been screened appears to have resulted in a moderate increase in uptake of the screening tool. Culture change to include dementia assessment as part of routine elderly patient clerking and examination appears to have begun, though further improvements in the usage of the screening tool are required.
PATIENTS ADMITTED TO CARE OF THE ELDERLY WARDS FREQUENTLY REQUIRE UNAVOIDABLE READMISSION AND HAVE HIGH MORTALITY

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Background
Readmission rates are often seen as a marker of quality of hospital care. We wanted to establish how many patients, admitted to our Care of the Elderly wards, were readmitted within 28 days and if these were avoidable.

Furthermore, particularly in light of recent data (Clark D et al. Palliative Medicine: 2014, 28: 474-479) showing 29% of adult hospital inpatients were dead by 1 year, we wanted to establish the proportion of our patients in their last year of life to establish if the unit should be more actively encouraging anticipatory care planning.

Sampling Methods
100 consecutive admissions, in June/July 2011, to Acute Elderly Care wards at Wishaw General Hospital were reviewed using the TRAKcare patient management system. Data was gathered on length of stay, readmissions and death. Casenotes, for readmissions within 28 days, were independently reviewed by an StR and a Consultant, to establish if readmission was avoidable. Any discrepancy was discussed and consensus reached.

Results
38% were men and the mean age was 84.8 years. Average stay on the acute site was 14 days.

Mortality: 16% died during the primary admission and a further 23% had died within a year of discharge. By 2 years 58% were dead.

Readmissions: n=84 (16 who died during initial admission excluded)

<table>
<thead>
<tr>
<th>Readmissions</th>
<th>Number</th>
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<tbody>
<tr>
<td>Within 28 days</td>
<td>22 (26%)</td>
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<tr>
<td>Within 2 years</td>
<td>68 (81%)</td>
</tr>
</tbody>
</table>

Mean number of readmissions per person, over 2 years, was 1.9, (median 1, range 0-11). Casenote review revealed only 2/22 readmissions within 28 days were avoidable.

Conclusions
A high percentage were readmitted within 28 days, however the majority of these were unavoidable. 39% were dead within a year which is comparable to national data. We now plan to be more active in advance care planning, including rationalising medications and introducing advance care planning information for patients and families.
Background
Care of elderly patients can be complex due to their wide number of co-morbidities. In patients presenting with acute surgical emergencies, early identification and subsequent medical optimisation may reduce complications and improve outcomes post-surgery. It is therefore recommended that these surgical patients receive early supervision and input from a geriatric physician once admitted to hospital.

Innovation
All patients admitted under surgical specialties and aged 78 or above were identified and reviewed proactively by a geriatric consultant as part of surgical liaison service. This medical input was evaluated using an audit pro forma similar to the one designed by the National Confidential Enquiry into Patient Outcome and Death. Following the results of the initial audit, a new ward-round pro forma was devised to include geriatric compressive assessments. A re-audit was undertaken after 5 months.

Evaluation
47 patients were identified for the re-audit. All patients had comprehensive geriatric assessment carried out. The average length of stay was found to be reduced from 11 to 6 days, by a significant margin of 54%. 9% of the patients went on to have surgery, and there was no mortality post-surgery.

Conclusions
Upon evaluating our service of providing medical input to all elderly surgical patients, it can be demonstrated that input from a medical geriatric consultant is of considerable importance to this subset of patients. Increasing surgical liaison services across the UK is therefore likely to yield significant clinical benefits for this population.
**IMPROVING DELIRIUM CARE IN THE MEDICAL ASSESSMENT UNIT**

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**Evidence Base**
Delirium affects 20 – 30% of medical patients with 2/3 of cases missed (National Institute for Health and Clinical Excellence).

**Change Strategies**
To improve delirium management we implemented the Health Improvement Scotland “Think Delirium” initiative. They suggest using the 4AT to identify delirium. The bundle uses tick boxes to prompt the assessment and documentation of delirium, and engagement with patients and relatives.

We trained our medical assessment nurses to use the 4AT, as part of their triage, on our GP admissions, over the age of 75. If positive it prompts the use of the bundle. We adapted the bundle to personalise it to our site. A one day pilot assessed its usability. After an education session the bundle was rolled out.

**Change Effects**
After introduction (October) to most recent audit (March), 100% compliance with the usage of 4AT, compared with no tool previously being used.

A spot audit of GP and A&E admissions assessed the implementation of the bundle elements pre and post implementation (8 and 10 patients respectively). This showed improvement in recording of the AMT-4 score from 87% to 90%, medication review from 67% to 90%, assessment of alcohol misuse, pain and constipation from 62% to 90%, 37% to 80% and 37% to 60% respectively. Documentation of delirium in notes, assessment of capacity and discussion with families declined from 75% to 60%, 12% to 10% and 12% to 0% respectively. There was no evidence of the use of the Getting to Know Me Document.

**Conclusion**
This work has improved the formal assessment of delirium using a validated tool as well as assessment of some precipitating factors. Rolling this out to A&E should improve implementation of the bundle elements. Further education sessions and the use of elderly care assessment nurses to engage with families should further improve practise.
## COMPARISON OF A&E ATTENDANCES AND ADMISSIONS FOR A NURSING HOME BEFORE AND AFTER THE INTRODUCTION OF ENHANCED PRIMARY CARE MEDICAL SERVICES

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2. North Staffordshire CCG Clinical Associate  
3. University Health Centre, University Of Keele

### Background

The British Geriatrics Society publications *Quest for Quality* and *Failing the Frail* have identified unacceptable variations in access to primary and secondary healthcare expertise and resources, resulting in poor care and inappropriate hospital admissions. There is, however, no accepted model for how to fund and provide the improved and co-ordinated healthcare services which are needed.

### Innovation

The following initiatives were utilised for a nursing home in the North Staffordshire region:

- Pro-active medical assessments and advanced care planning
- Medications reviews in partnership with a pharmacist
- Provision of care for sub-acute medical problems
- Fortnightly multi-disciplinary meetings to discuss complex cases involving a GP, pharmacist, physiotherapist, community psychiatric nurse and nursing home matron. Geriatrician input was provided via a tele link.

Four control group nursing homes were selected to serve as comparators for hospital admissions and A&E attendance rates at University Hospital North Staffordshire.

### Evaluation

There was a statistically significant decrease in both A&E attendances (0.97 to 0.75 per bed year – 23%) and admissions (0.53 to 0.37 per bed year – 29%) in 2012 in comparison to 2011 (p<0.05). In contrast, the control groups experienced either no statistical difference in attendance and admission rates (p>0.05) or a statistically significant increase (p<0.05). Based on projected costs of the additional services versus secondary care savings, the scheme was cost effective, saving £5,700 for the 6 month period.

### Conclusions

Significant reductions were seen in A&E attendances (23%) and hospital admissions (29%) following the introduction of enhanced primary care services at this nursing home. The model is cost-effective, achievable and sustainable. Further work is needed in expanding and replicating such services.
# FACTORS PREDICTIVE OF NURSING HOME ADMISSION DIRECTLY FROM HOSPITAL: A SYSTEMATIC REVIEW

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2. Geriatric Medicine Unit. The University of Edinburgh

## Scope

Many older people live in Nursing Homes (NH) and a large proportion (up to 70%) are admitted directly from hospital. Previous studies have focussed on NH admission from the community, and identified significant risk factors as: age, polypharmacy, functional and cognitive impairment. This review aims to determine the risk factors which predict NH admission directly from hospital.

## Search Methods

We systematically searched MEDLINE, EMBASE and CINAHL databases to identify observational studies of people aged >65 who were newly discharged to a NH from a general medical or geriatric unit. Two researchers performed the search and assessed each paper independently.

## Results

22 studies (16 prospective, 6 retrospective) from 11 countries (n = 3,456,979 (94 – 2,334,130)) met inclusion criteria. Functional and cognitive impairment were the most significant predictors of NH admission, independently predictive in 9 (e.g. OR 0.5 – 6.04, in 7 studies) and 11 studies (OR 0.93 – 8.63, in 8 studies) respectively. Immobility and incontinence were also significant but only considered in a few studies (4 and 2 respectively). When the admission diagnosis was assessed (10 studies), falls, dementia and neurological disorders were most significant. Age, gender and polypharmacy were not found to be independent factors. Studies were of variable quality. The included studies were heterogeneous and data presented in a range of ways therefore, meta-analysis was not possible.

## Conclusion

In a heterogeneous group of international studies, reflecting a range of health care systems, factors predicting NH admission directly from hospital differed from those admitted from community. Functional and cognitive impairment are common to both. Geriatric syndromes (mobility, incontinence, falls and dementia) predict admission from hospital, whereas age and polypharmacy may be more important from community. Understanding factors that predict NH admission enable early identification of patients who require support either to prevent or to arrange NH admission.
# THE IMPACT OF HEAD INJURIES IN THE ELDERLY: A RETROSPECTIVE SURVEY OF ELDERLY PATIENTS ADMITTED TO SOUTHAMPTON GENERAL HOSPITAL

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## Background
The impact of head injury in elderly patients is poorly recognised and the prevalence is rising. There is little data into the care these patients receive and their subsequent mortality and morbidity. We performed a retrospective analysis of patients over the age of 80 who were admitted to Southampton General Hospital with a head injury in 2012.

## Sampling Methods
Patients were identified via the Emergency Department records system and the head injury database. Patients were admitted to trauma and orthopaedics, medicine or neurosurgery. Records were analysed for head injury severity, injury severity score, Charlson co-morbidity index, documented falls assessment, length of stay, mortality, hip fracture and readmission rate.

## Results
53 patients were identified; average age being 87.9 years with 83% admitted with minor head injuries. 30 day mortality was 11% and 1 year mortality was 26%. Average length of stay was 16 days (1-129 days). 30 day readmission rate (any cause) was 13.2% and at 6 months was 32% with just under half of those because of a further fall. 5 patients (9%) had a fractured neck of femur within 6 months. All medical patients got a falls assessment compared to 50% of non-medical patients but with little impact on mortality, discharge destination or risk of further falls and fractures.

## Conclusion
Head injury in the elderly, even minor ones, can be associated with severe morbidity and a high mortality. Although a small sample, there is a signal that these patients are at risk of further falls and hip fracture. This provides an opportunity to intervene with a comprehensive falls and bone health assessment to reduce this risk. There is a need for better integrated care between trauma teams and geriatricians to reduce morbidity and mortality in this high risk group.
USING A STICKER TO IMPROVE THE DOCUMENTATION AND APPROPRIATENESS OF UREThRAL CATHETER INSERTION

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Evidence-base
Urinary tract infection (UTI) accounts for 19.7% of hospital acquired infections with 60% related to urinary catheter insertion (Healthcare Infection Society, 2006, www.his.org). In catheterised patients, 20-30% develop asymptomatic bacteruria and inappropriate antibiotics promote multi-drug resistant organism development. Around 2-6% develop symptomatic UTI and mortality with bacteraemia from Catheter Associated UTI (CA-UTI) is 13-30% (Pratt RJ et al, J Hosp Infect. 2007; 65:S1-S64). Hospital-acquired UTI increases length of stay by 5-6 days, costing approximately £1327 to treat (NHS Quality Improvement Scotland, 2004).

Often it is unclear why new urinary catheters are inserted. The aim was to determine whether using urinary catheter indication stickers improves documentation and appropriateness of insertion.

Change strategies
A baseline audit was performed at Woodend Hospital, Aberdeen. Patient case notes were reviewed for documentation regarding new urethral catheter insertions. Exclusions were catheters inserted out-with Woodend Hospital, long-term catheter changes and suprapubic catheters. Results were presented at a multi-disciplinary educational session and the wards were provided educational material and posters for staff. Re-audit occurred 6 weeks after sticker implementation. Catheter sticker indications included acute or chronic urinary retention, haemodynamic instability requiring urine output monitoring, pressure sores resulting from urinary incontinence, neurogenic bladder dysfunction, palliative care or “other”.

Change effects
- Pre-sticker audit cycle: 22/181 (12.2%) patients with a new catheter inserted.
- Post-sticker audit cycle: 15/177 (8.5%) patients with a new catheter inserted. Using catheter stickers improved documented reasons for catheter insertion from baseline 45.5% to 100%, and for these indications, appropriateness increased from baseline 36% to 70%. The sticker also demonstrated that nurses had discussed catheter insertion with doctors in 90% of cases.

Conclusions
A urinary catheter indication sticker helps appropriately select patients, improves documentation and reduces unnecessary urethral catheter insertions. Potential financial savings could occur with using fewer catheters, avoiding the costs of CA-UTI and minimising inappropriate antibiotic use.
DOES THE PEACE TOOL ENABLE DEATH AT HOME FOR FRAIL ELDERLY PATIENTS AT THE END OF THEIR LIVES?

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². Department of Palliative Medicine, Conquest Hospital, East Sussex Healthcare NHS Trust

Background
PEACE (Proactive Elderly Advisory CarE), from London teaching hospitals, is a tool that facilitates the End of Life Care (EoLC) discussions and planning for frail elderly individuals. It promotes better quality EoLC and aims to prevent potentially harmful hospital admissions, consistent with EoLC Strategy (2008) and NICE EoLC guidelines (2012). This was introduced to the Geriatric Medicine Department in a District General Hospital in 2012.

Innovation
A retrospective review of patients’ notes discharged on PEACE to nursing homes (NH) over one-year period: 2012-2013. Number of ward re-admissions and A&E attendances were noted in the 12 months following individual’s original discharge on PEACE, as well as their life expectancies. Data was collected from the hospital information system and NHs.

Evaluation
76 were discharged on PEACE. Four were lost to follow-up. 59 (82%) died within 12 months of discharge. Mean life expectancy was 73 days (median 46, range 1-280). 49 (83%) died within the first six months of discharge. 58 (98%) died at their usual place of residence, one patient died in intermediate care facility, and none died in hospital. During the 12 months post-discharge, seven were re-admitted to wards. Eight attended A&E but were discharged without ward admission. Total in-patient days were 49 (mean 7, median 6, range 0-19).

Conclusions
PEACE allows frail elderly people, who are approaching the end of their life, to die at their usual place of residence. It also reduces potentially harmful hospital re-admissions.
THE IMPACT OF AN ORTHOPAEDIC SUPPORTIVE DISCHARGE (OSD) TEAM IN OUR HIP FRACTURE SERVICE

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Background
There is evidence to suggest that OSD achieve outcomes that are at least as good as or better\(^1\) and more cost effective than those achieved in an inpatient setting.

NICE clinical guidelines (hip fractures)- “Consider early supported discharge as part of the Hip Fracture Programme, provided the Programme multidisciplinary team remains involved and, the patient is medically stable and, has the mental ability to participate in continued rehabilitation and, is able to transfer and mobilise short distances and, has not yet achieved their full rehabilitation potential.

Innovation
The OSD team is made up of physiotherapist, occupational therapist, nurse and 2 therapy assistants. The team started reviewing patients on 1\(^{st}\) March 2014 and have completed 3 months. They take up to 8 patients, 68% of which are hip fractures. The OSD team work within the hip fracture unit with regular virtual board round.

Evaluation
Over the 3 months period, the team has taken 32 out of a total of 114 hip fracture patients (7 days post-surgery). This has reduced our LOS for hip fracture patients from 18.01 days (March-May 2013) to 12.25 days (March –May 2014). Patients sent to the rehabilitation hospital (part of the Trust) have reduced from 55% to 27%. Hence, the total Trust LOS for all hip patients has also reduced from 25.3 to 19.4 days. 30days readmission has also reduced from 9.6% to 4.1%.

Conclusion
OSD should be part of all hip fracture services as it reduces LOS and readmissions which leads to significant savings.

DEMENTIA CQUIN COMPLIANCE IN THE ACUTE MEDICAL UNIT: COMPLETED AUDIT CYCLE IN A LONDON TEACHING HOSPITAL

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Evidence Base
Dementia's significance as a global health challenge was emphasised by 2013’s G8 Summit. With 25% acute beds occupied by patients with dementia, the Department of Health acknowledged its impact on hospital care in 2012. Despite benefits to quality of life, carer wellbeing and crisis prevention, just 42% have a formal diagnosis, prompting the 2013-14 Commissioning for Quality and Innovation (CQUIN) target, incentivising identification. Over 10 days in August 2013, the notes of 138 Acute Medical Unit (AMU) patients aged 75 and over were reviewed for documented dementia, delirium and Abbreviated Mental Test Scores (AMTS). These were performed for 23%, 1.5% and 54% patients respectively.

Change Strategies
The admission clerking proforma was modified to incorporate the dementia assessment question, ‘Have you been more forgetful in the past 12 months?’ and Confusion Assessment Method; AMTS was already included. One hour’s mandatory teaching for doctors and nurses was delivered to three cohorts by a junior doctor, registrar and nurse specialist acting as dementia champions. Teaching presented information on dementia and delirium, explained the CQUIN, launched the new proforma and showed a short film about hospital experiences of patients with dementia.

Change Effects
Over 10 days in March 2014, 127 AMU patients’ notes were reviewed. Encouragingly, the proportion assessed for delirium increased from 1.5 to 49% and AMTS from 54 to 84%. Formal dementia assessment only rose from 23 to 28%. Proposed reasons include the dementia question’s positioning on the proforma, where it could be missed and on-going AMU staff turnover. In response, teaching sessions are now repeated regularly, before further re-audit.

Conclusion
Clinicians’ awareness and assessment of delirium and cognitive impairment can be significantly improved through simple proforma changes and brief educational interventions. However, lower levels of dementia assessment demonstrate on-going need for initiatives emphasising its importance in the acute setting.
EVALUATION OF AN IN-REACH SINGLE COMPREHENSIVE GERIATRIC ENCOUNTER IN FRAIL OLDER PEOPLE ADMITTED TO AN ACUTE ADMISSIONS UNIT

R Dutta, U Ghani, K Westacott, K Gopinathan

Worcestershire Royal Hospital

Background
Frail hospitalised patients benefit from Comprehensive Geriatric Assessment (CGA) provided on a dedicated ward, as this improves quality of life, function and reduces institutionalisation.

Innovation
In an acute hospital, with neither acute geriatric wards nor geriatric teams, a pilot winter pressure frailty service in-reached into the acute medical unit for 3 months. Patients were identified using the Bournemouth criteria and frailty measured with the Edmonton Frailty Scale (EFS). Pre-set documentation contained a trigger for palliative care planning and discharge advice. A copy of each completed document was immediately despatched to the patient’s GP. Patient events were tracked for 3 months after discharge on the county’s electronic notes portal.

Evaluation
Of 95 patients (mean age of 89 (SD 6.5); 63.2% female) 26.3% were from care homes. Mean EFS was 10.6(SD 3.7) i.e. advanced frailty. Each patient had a median of 5 co-morbidities and a median Charleson Co-morbidity index of 2. Dementia (30.9%) and falls (52.6%) were well represented and delirium newly diagnosed in 62.1%. A median of 5 drugs were reduced per patient as part of multi-factorial intervention (median 5 interventions per patient). Palliative advice was given in 47.4%. After a median LOS of 9 days, 27.9% returned to their usual residence and 7.4% newly placed in care homes. 3 months after discharge 41.1% of the patients had died including the 18.9% who had died in hospital. Of the 39 deaths only 26 had been anticipated by us during our assessments. Of the 15 patients that we had assessed as being palliative who were alive at 3 months, 10 remained in their usual residence and 5 were admitted to care homes.

Conclusions
A single CGA encounter via an in-reach service in this cohort of very frail patients helped identify delirium on admission and demonstrated a need for early palliative care measures and plans.
OLDER PATIENTS' EXPERIENCE WITH TEACHING MEDICAL STUDENTS: IS THERE A SCOPE FOR IMPROVEMENT?

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Background
Older people make up an increasing proportion of hospital admissions, of whom many are frail, with multiple comorbidities, and who are inevitably becoming more frequent participants in medical students’ education.

There is little evidence with such experience in teaching hospitals and about their attitude towards participation in educating medical students.

Sampling methods
After obtaining verbal consent, we questioned 52 randomly selected patients aged ≥65 with AMTS ≥8 on their discharge day from medical and surgical wards at the John Radcliffe Hospital, Oxford, about their interaction with medical students and future willingness to participate in teaching medical students.

Results
The mean age of participants was 79 years (65-96), 54% were males, and mean number of comorbidities per patient was 3.3. Of all participants 56% reported contact with medical students in the form of interviews, examinations and doctor-led teaching. Of them, 100% would be interviewed, 96% examined and 96% would participate in further doctor-led teaching again. Other participants without this experience reported their willingness to do so in future in 100%, 94%, and 88% respectively.

Patients who interacted with students used positive language only to describe their experience in 79% of cases. Some 14% used both positive and neutral/negative, whilst 7% used only neutral/negative terms.

Age, gender, and frequency of comorbidities did not differ significantly amongst these groups.

Conclusion
The majority of older inpatients report positive experiences with medical education. This is particularly true of those that had experienced teaching as part of a recent admission. A minority reported mixed and negative aspects, which should necessitate further elaboration in order to develop a strategy to improve patient experience. Despite these concerns, a majority of patients were willing to participate with medical education in the future.
### IMPROVING UPTAKE OF THE BUTTERFLY SCHEME ON AN ELDERLY MEDICINE WARD

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*Medicine for The Elderly Calderdale Royal Hospital Halifax*

#### Evidence-base
The National Audit for Dementia states that organisations should practice person-centred care and ensure that a personal information document is used for patients with dementia. They specifically recommend use of the Butterfly Scheme to ensure that all staff can easily identify people with and provide an appropriate response to care and treatment needs.

#### Change Strategies
Nursing staff and ward doctors on our ward received training in the use of the Butterfly Scheme, led by a nurse consultant for older people. The senior sister on the ward is undergoing a training programme to become a dementia champion. Ward doctors routinely identified patients suitable for the butterfly scheme during ward rounds and would then ask nurses to invite patients or their relatives to opt in to the scheme. Using a continuous improvement process, we performed a weekly spot audit to identify what proportion of patients deemed suitable to be placed on the butterfly scheme opted in. A run chart displayed in the office demonstrated progress made. Lack of time, variable knowledge, and not knowing where the paperwork could be found were identified as barriers to patients being placed on the scheme and these factors are being continually addressed.

#### Change Effects
Only 40% (week 1) and 16.6% (week 2) of patients deemed suitable for the butterfly scheme were successfully placed on it. After our intervention, results improved to 100% (week 4) and have been maintained at 89% in weeks 6 and 7.

#### Conclusion
The Butterfly Scheme is recommended by the National Audit for Dementia for use in patients with dementia but can also be used in patients with delirium or cognitive impairment. Using a multi-professional approach and continuous improvement strategies, we have significantly increased the proportion of patients with dementia, delirium or probable dementia that are placed on the Butterfly Scheme.
INTERVENTIONS TO PREVENT NON-CRITICAL CARE HOSPITAL ACQUIRED PNEUMONIA – A SYSTEMATIC REVIEW

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2. Department of Microbiology, NHS Tayside
3. Population Health Sciences, University of Dundee

Scope
Hospital-acquired pneumonia is a significant burden to healthcare systems around the world, and commonly affects older hospitalised patients. Effective strategies exist to prevent ventilator-associated pneumonia, but less is known about the prevention of hospital-acquired pneumonia in non-critical care settings.

Search Methods
We conducted a systematic review of interventions to prevent non-critical care hospital-acquired pneumonia. EMBASE, CINAHL+, MEDLINE and the Cochrane Library were searched up to end January 2013. Studies were included if they were randomised controlled trials, with hospital-acquired pneumonia as a measured outcome. Seventeen different groups of interventions (both pharmacological and non-pharmacological) were searched for. Trials were excluded if they were in critical care or community settings. No language restrictions were applied; data were extracted by two researchers independently with differences resolved by consensus.

Results
4,393 titles were retrieved; a total of 89 full-text papers were evaluated. Only two trials were eligible for inclusion. One trial reported that early mobilisation and rehabilitation may reduce the incidence of hospital-acquired pneumonia in stroke patients (12.6% v 26.8%, p=0.008). The second found no difference in the rates of hospital-acquired pneumonia (secondary outcome) between dysphagic stroke patients receiving early enteral tube feeding and those who avoided any enteral nutrition for at least a week (30.8% v 31.1%, p>0.90).

Conclusions
Very little direct trial evidence exists for strategies to prevent hospital acquired pneumonia in non-critical care settings. Trials are needed in this area to test whether interventions derived from observational data and critical care trial interventions can reduce hospital acquired pneumonia outside critical care.
POLYPHARMACY AND PROTON PUMP INHIBITOR PRESCRIBING IN OLDER PATIENTS

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². Cork University Hospital, Wilton road, Cork City, Ireland

Evidence Base
Polypharmacy increases with age, potentially leading to avoidable harm. There are safety concerns about inappropriate prescribing of proton pump inhibitors (PPIs) in older patients. Long-term PPI therapy, particularly at high doses, is associated with an increased risk of Clostridium difficile-associated diarrhoea and hip fracture in older adults. Admission to hospital is an ideal opportunity to review PPI prescriptions.

Change Strategies
Review of drug charts for 100 consecutive geriatric inpatients. All patients prescribed a PPI had their medical notes reviewed for a documented indication for use. A departmental presentation was undertaken to draw attention to the licenced indications and dosages for which PPI’s can be prescribed. A re-audit of practice was carried out two months later (n=100).

Change Effects
No significant difference existed in age, gender or number of medications prescribed for both arms of the audit. There was no significant association between polypharmacy and being prescribed a PPI for either arm of the audit, p=0.692. A similar percentage of patients had their prescription of PPI continued on admission to hospital, before and after the educational intervention; 65% (65/100) and 64% (64/100) respectively, p=1. No valid indication was found in 85% (55/65) versus 75% (48/64) of cases following the intervention, p=0.254. In all, 65% (42/65) of prescriptions were at the higher healing dose of the drug versus 61% (39/64) following the intervention, p=0.803.

Conclusions:
PPIs were commonly prescribed among older people admitted to hospital, usually at high doses. The majority had no valid indication documented in their medical records, suggesting that PPIs might be over-prescribed in the elderly population. The audit suggests that simple educational interventions in a hospital setting have little effect on prescribing practice. An increased input from pharmacy on the ward regarding prescribing practices and future e-prescribing with alerts may improve current practice. However, financial constraints may limit their viability to become widespread alternatives.
AUDIT OF DELAYED DISCHARGES FROM A COMMUNITY HOSPITAL

S Escalona¹, S Ponnambath¹, S Elheis², D Jarrett¹

1. Petersfield Community Hospital, Cedar Rehabilitation ward, Portsmouth
2. Royal United Hospital, Bath

Evidence-base
Delayed discharges, definitions and data recording manual - Scottish executive health department. A delayed discharge is a hospital inpatient who has been judged clinically ready for discharge by responsible clinician in consultation with all agencies involved in planning the patients discharge and who continues to occupy a bed beyond the ready for discharge date.

Change Strategies
We did an audit (A1) from 1st May 2013 to 30th June 2013 and re-audit (A2) from 1st October 2013 to 2nd December 2013. The data was collected prospectively. There was 41 discharges in A1 compared to 49 in A2. 56% delayed discharges were notes in A1 compared to 8.2% in A2. The common reason for delay was social issues (87% in A1 and 50% in A2) followed by medical (39% in A1 and 25% in A2) where patients developed hospital acquired pneumonia.

Change Effects
After first audit A1 we introduced a MDT tool. The essential MDT tool was designed and introduced and reinforced during MDT meetings for the input of all health and social practitioners with clear goals and predicted date of discharge.

Conclusion
Delayed patient discharge remains a hot topic; however with the introduction of the MDT tool we have been able to demonstrate significant improvement. From 23 (56 %) delays to 4 (8.16%) in A2. The delays ranges from 1-7 days, mean delay of 4 days. Total bed days lost to delayed discharges were 17 days compared to 228 days in A1, costing £4,029 compared to £54,036. Although our MDT tool has led to improvement we still need to do more.
AUDIT OF MULTI-FACTORIAL ASSESSMENT OF OLDER PERSONS ADMITTED TO THE OLDER PERSON’S UNIT AT ST THOMAS’ HOSPITAL AT HIGH RISK OF FALLS

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St Thomas’ Hospital Guy’s and St Thomas’ Hospitals NHS Foundation trust

Evidence base
Falls and fall-related injuries are a common and serious problem for older people. An updated NICE guideline (2013) provides recommendations for multifactorial risk assessment and intervention of falls in older people. We performed an audit to ensure our older person’s department at St Thomas Hospital was implementing the key priorities highlighted in NICE guidelines.

Change strategies
We introduced multifactorial falls risk assessment proforma and pre-formed sentences to add to the discharge letter to communicate results to GP. Junior doctors were given education and provided with individualised bags containing ophthalmoscopes, otoscopes, snellen charts and tendon hammers. First audit was done in January-February 2014. Twenty one patient notes were reviewed in both audits and checked if proforma was used or not. Second audit was repeated in March-April 2014.

Change Effects
The results of 1st and 2nd audits are as follow: postural blood pressure measured in 80% of proforma group in both audits vs 19% and 25% in non-proforma group, MMSE done in 80%-100% (proforma) vs 63%-50% (non-proforma), footwear assessed in 60%-100% (proforma) vs 38%-68% (non-proforma), neurological examination done in 100% (proforma) vs 44%-56% (non-proforma). Visual acuity/hearing assessment checked in 80%-100% (proforma) vs 6%-0% (non proforma). Falls risk assessment and intervention mentioned in discharge letter: 100% in proforma group vs <25% in non-proforma group.

Conclusion
The results of both audits showed that patients with falls risk had more systematic assessments with further intervention and follow up plans when the proforma was used. It also appeared to improve clear documentation of these assessments in notes and in discharge letter. Only 24% of patients were assessed using proforma and it shows how hard it is to embed a new assessment into every day working. Juniors are asked to use proforma in fall patients.

We plan to review stands and re-audit later this year.
Background
An audit conducted at our hospital in February 2014 revealed low numbers of patients with symptoms suggestive of delirium were being assessed with an appropriate assessment tool. As a result of this we produced a survey to assess knowledge of delirium prevalence, causes, diagnostic tools and treatment.

Sampling Methods
Surveys were distributed at local and regional educational meetings to medical doctors of all grades including geriatricians and non-geriatricians and were returned immediately after completion.

Results
A total of 94 completed surveys were returned. Of these 27 were from FY1 doctors, 36 were from SHO level doctors (FY2, CMT, GPVTS), 24 from geriatric medicine StR/consultant and 7 from non-geriatric medicine StR/consultants.

Overall 71% of respondents were correctly able to identify the prevalence of delirium as 10-40%. 60% of respondents correctly identified hypoactive delirium as being the most common type and 28% of respondents were able to identify 4 groups of patients at risk of delirium. 66% of respondents were able to give 5 causes of delirium and 43% of respondents correctly named 5 management strategies. 63% of respondents were able to identify the correct order of conservative/pharmacological treatments. 31% of respondents were able to name an assessment tool for delirium, in the geriatric StR and consultant group this was 83%. Of all respondents, 33% of respondents self-rated their knowledge of delirium as good or excellent, 51% as average and 14% as below average. 88% of respondents felt more teaching on delirium would be beneficial.

Conclusion
This survey showed that although most doctors are aware that delirium is a common problem, knowledge about patients at risk, assessment tools and management strategies need improvement. Most participants felt that further teaching would be useful. Addressing this lack of knowledge may improve the assessment of patients with symptoms of delirium.
CLINICAL EFFECTIVENESS

CONSENT TO TREATMENT MENTAL CAPACITY ACT 2005 - MENTAL CAPACITY ACT 2 DOCUMENTATION AUDIT

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Broomfield Hospital, Mid Essex Hospital Trust

Evidence Base
Assessing and determining a patient’s mental capacity is a cornerstone of medical practice, particularly fundamental in Geriatric medicine. The Mental Capacity Act 2005 outlined key requirements and in Essex, a legal document - the Mental Capacity Act 2 (MCA2) form was created to document lack of capacity and best interest decisions for vulnerable adults. An audit was performed to determine whether forms were completed to satisfactory legal standard.

Change Strategies
MCA2 forms were collected over a four month period in 2013 and added to a previous cohort from 2012 giving a total of 477 forms. Each was systematically crosschecked against a single MCA15 – a checklist highlighting each section of the MCA2. A cross audit was completed to highlight any discrepancy in results. Data was analysed and results presented at various departmental meetings. A guide to filling in these forms is available along with posters and arranged teaching sessions for clinicians.

Change Effects
Initial assessment showed that only 86% of forms had two assessor signatures, which is legally required. Exact medical decision to be made was poorly outlined with only 82% of forms filled correctly. Communication with next of kin, although not a legal requirement, was only achieved in 58% of forms. Following our strategy to highlight areas of weakness, on re-audit it was found that there was significant improvement in documentation to a medical legal standard.

Conclusion
This audit is the first to be undertaken in this area within the region and acts as evidence of quality assurance. Polices such as MCA2 documentation aim to emphasise the importance of assessing capacity and encouraging doctors, as patient advocates, recognising our statutory and professional duty to patients. Continuing education is imperative in maintaining and improving quality standards in this area.
Y Sote¹, D Jones², K Byng²

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². Berkshire Healthcare NHS Foundation Trust

Background
Older people with complex medical and psychosocial care needs, are high utilizers of healthcare resources and more likely to be admitted to hospital. It is anticipated that proactive management of their long term conditions would reduce the likelihood of emergency admission due to disease progression.

Innovation
From July 2013, weekly multidisciplinary team meetings were held at a General Practice in Wokingham unitary authority on a rotation basis. Members of the MDT at each meeting included Case Coordinator, Community Geriatrician, Community Matron, General Practitioner and Social Worker. Patients discussed had been identified using the Adjusted Clinical Groups (ACG) predictive model, and were non-pregnant adults with chronic conditions in the Resource Utilization Band (RUB) 3, 4 or 5 signifying moderate, high or very high morbidity burden. Issues discussed included optimisation of chronic conditions, review of medication, assessment of care needs and appropriate referrals. An individualised management plan was made for each patient.

Evaluation
Nineteen meetings were held in thirteen General Practices over a six-month period. 138 patients were discussed, 82% of whom were 65 years and over. 45 patients had medication changes. 49 referrals were made, with most referrals made to Community Matron, Community nurses and Social Services. 11 patients required no intervention. RUB scores were analysed at six months. Out of 123 patients, 66% had no change in RUB score, whilst 21% of the patients had a lower RUB score indicating lower utilization of health service. Paradoxically, 13% of patients had an increased RUB score.

Conclusions
This model reduced the morbidity burden in a small proportion of patients in the short term. It is yet to be known whether it would improve morbidity in a larger proportion of patients in the long term. It is hoped that improved identification of appropriate patients would increase the number that would benefit.
END OF LIFE CARE IN PARKINSON'S DISEASE - ARE WE GETTING IT RIGHT?

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². Stobhill Hospital Movement Disorder Service

Background
Patients with Parkinson’s Disease (PD) have an increased risk of mortality. Place of death is used as an indicator of quality of end of life care. Studies show most patients prefer to die in their own home but in Scotland 59% die in hospital. Advanced care planning is important to discuss end of life wishes. In our service the PD nurse specialist (PDNS) carry out home visits to patients unable to attend clinic.

Methods
Clinic proformas and home visit lists were reviewed to identify patients who died. Electronic letters were reviewed. Formal death certificate information was obtained from the National Records of Scotland.

Results
Death certificate information was available for 48/51 patients who died. The hospital letter used for the remaining 3. 50/51 were reviewed within the last year.

<table>
<thead>
<tr>
<th>Place of death</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital</td>
<td>20 (39%)</td>
</tr>
<tr>
<td>Care home</td>
<td>19 (37%)</td>
</tr>
<tr>
<td>Home</td>
<td>5 (10%)</td>
</tr>
<tr>
<td>NHS Long term care</td>
<td>5 (10%)</td>
</tr>
<tr>
<td>Hospice</td>
<td>2 (4%)</td>
</tr>
</tbody>
</table>

Of the hospital deaths 50% were admitted from home. PDNS were reviewing 84% of those who died in care homes versus 65% in hospital. The leading cause of death (in 40%) was pneumonia. Mean number of hospital admissions over the preceding year was 1 (range 0-4).

Conclusions
In this review of our service a high proportion of patients died in their usual care environment and there was a low incidence of hospital admission in the preceding year. The PDNS tended to be visiting more of the patients who died in care homes than in hospital. Further evaluation is required to elucidate their role in reducing hospital admission.
PREDICTORS OF GLOMERULAR FILTRATION RATE DECLINE IN OLDER PEOPLE WITH TYPE 2 DIABETES

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Objectives
To study the progression and predictors of glomerular filtration rate (GFR) decline in older people (aged ≥ 65 years) with type 2 diabetes attending an outpatient clinic.

Method
A retrospective medical record analysis in an outpatient diabetes clinic for older people with diabetes. Baseline characteristics and blood pressure readings for each clinic visit were recorded. All laboratory results were downloaded from the central database of the pathology laboratory. Annual rate of GFR decline was calculated by linear regression analysis as the slope per year for each individual. Patients were then divided into 2 groups on either side of the mean GFR decline. Group 1 had a slower GFR decline (below the mean value) and group 2 had a faster GFR decline (above the mean value). Five variables were investigated as predictors of faster decline in GFR: development of cardiovascular disease (CVD), hypertension, diabetes control (HbA1c <7%), use of angiotensin-converting enzyme inhibitors or angiotensin receptor blockers, and albuminuria.

Results
The study included 100 patients with a mean age of 69.5 (standard deviation [SD], 3.9) years on first referral to clinic and 54 patients were men. The mean duration of the study was 14.4 (SD, 2.0) years. A total of 3908 GFR results were downloaded. The mean annual rate of GFR decline was 1.5 (SD, 1.2) mL/min/1.73 m². GFR values were comparable in both groups on first referral. Mean annual rate of GFR decline was 2.6 (SD, 0.9) mL/min/1.73 m² in group 2 compared with 0.7 (SD, 0.5) mL/min/1.73 m² (P<0.001) in group 1. Development of CVD was the only independent predictor of faster renal function decline (odds ratio, 2.9; 95% CI, 1.1 to 7.6; P = 0.03).

Conclusion
Cardiovascular disease is an independent risk factor for faster decline in GFR in older patients with type 2 diabetes mellitus.
THE RELATIONSHIP BETWEEN RENAL FUNCTION, PHYSICAL FUNCTION AND SURVIVAL IN OLDER PATIENTS DISCHARGED FROM INPATIENT REHABILITATION

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2. Dept of Renal Medicine, NHS Tayside
3. Population Health Sciences, University of Dundee
4. Scottish Collaboration for Public Health Research and Policy, University of Edinburgh

Background
Chronic kidney disease is common in older people, but it is unclear if chronic kidney disease has effects on survival independent of comorbid disease and physical function in this population.

Methods
Analysis of prospective, routinely-collected, linked clinical datasets. Data on patients discharged from a single inpatient geriatric rehabilitation centre over a 12 year period were linked to ICD-10 coded hospitalisation data and local biochemistry and haematology data. CKD stage was determined from the estimated glomerular filtration rate derived from serum creatinine using the MDRD4 equation; the last measurement before discharge from rehabilitation was used. Survival post-discharge was modelled using Cox regression analyses, unadjusted and adjusted for age, sex, comorbidities (ischaemic heart disease, chronic obstructive pulmonary disease, stroke, diabetes and heart failure), Barthel score on discharge, serum calcium, haemoglobin and albumin.

Results
2644 patients had complete data available for analysis, mean age 84 years. 771 patients were in CKD class 3a, 508 were in CKD class 3b, 151 patients were in CKD class 4 and 13 patients were in CKD class 5. Compared to patients with a glomerular filtration rate of >90ml/min, unadjusted hazard ratios of death were 1.05 (95% CI 0.89, 1.23) for CKD class 3a, 1.33 (95% CI 1.12, 1.57) for CKD class 3b, 1.39 (95% CI 1.11, 1.73) for CKD 4 and 1.49 (95% CI 0.83, 2.66) for CKD stage 5. In the fully adjusted model, the hazard ratios for death rose in all CKD classes: 1.46 for CKD 3a (95% CI 1.22, 1.73), 1.88 for CKD 3b (95% CI 1.56, 2.26), 2.03 (95% CI 1.61, 2.56) for CKD stage 4, and 1.89 (95% CI 1.05, 3.40) for CKD 5.

Conclusion
Impaired renal function is an independent risk marker for survival in older people discharged from rehabilitation.
THE RELATIONSHIP BETWEEN SUBJECTIVE AND OBJECTIVE MEASUREMENTS OF PHYSICAL ACTIVITY IN COMMUNITY DWELLING OLDER PEOPLE

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2. Dundee Epidemiology and Biostatistics Unit, University of Dundee
3. Health Psychology, University of Newcastle
4. Public Health, University of Dundee
5. Geography and Sustainable Development, University of St Andrews

Introduction
Subjective measurements of physical activity include self-report tools such as questionnaires and diaries. Such tools have not been well studied in older adults. We assessed the relationship between subjective and objective measures of physical activity in a large community-dwelling sample of adults aged 65 and over.

Methods
Analysis of prospectively collected cross-sectional survey data from the Physical Activity Cohort Scotland. Accelerometry data were collected using the RT3 triaxial accelerometer. Activity counts were converted to minutes of activity using a previously validated algorithm. Subjective physical activity (minutes per day) was assessed concurrently using a seven day activity diary. Pearson correlations and Bland-Altman plots were generated to examine how subjective and objective measurements differed at varying levels of activity, as well as to compare whether different subgroups had any effect on the accuracy of these measurements. Regression analyses examined the interaction between objective and subjective activity level and other factors including age, sex, deprivation, anxiety and depression.

Results
547 participants, mean age 78.5 (SD 7.7) were included in this analysis; 297 (54%) were male. There was moderate correlation between subjective and objective measurements (r=0.39, p<0.001), but most individuals under-recorded levels of PA in their diaries. Mean objective activity was 177 minutes/day, mean subjective activity was 80 minutes/day. Bland-Altman plots revealed less discrepancy between subjective and objective measures at varying levels of activity, as well as to compare whether different subgroups had any effect on the accuracy of these measurements. Regression analyses examined the interaction between objective and subjective activity level and other factors including age, sex, deprivation, anxiety and depression.

Conclusions
In this cohort of community-dwelling older people, physical activity levels were systematically underestimated with subjective measures when compared with objectively measured accelerometer counts.
ARE ACCELEROMETERS A USEFUL WAY TO MEASURE ACTIVITY IN CARE HOME RESIDENTS?

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⁴ NIHR Research Design Service for the East Midlands, Faculty of Medicine & Health Sciences, NICRC; ⁵ Nottingham Healthcare NHS Trust; ⁶ Nottingham CityCare Partnership, Nottinghamshire Healthcare Trust; ⁷ Department of Rheumatology, Orthopaedics and Dermatology, School of Medicine, University Of Nottingham

Introduction
Accurate measurement of activity in care home residents is important for monitoring and evaluating interventions for activity promotion. Accelerometers provide a potential method. However, their usefulness in this population has not been well documented. We aimed to explore the feasibility of these in care home residents.

Method
Mobile residents who had fallen in the past year, were asked to wear a tri-axial accelerometer (ActivPAL3TM) on the lower thigh for 7 days. Care staff were trained in device application. Users’ skin and problems with use were checked daily. Activity data sought were: step count, time sedentary, time standing and Metabolic Equivalent of Task. Care records were checked for falls.

Results
10/16 residents agreed to wear accelerometers. 7 wore them for 7 days and the remainder for 4, 5 and 6 days respectively. No falls were recorded. Data indicated 1 resident continuously standing which was disconfirmed through observation. Problems were: data disturbance through removal/fidgeting, hydrofilm dressing flaccidity, premature detachment, care staff non-compliance to waterproof continuous wear, resident skin check non-compliance, prior leg ache attributed to accelerometers (with no worsening), pink skin and activity restriction by care staff. The accelerometers and attachment materials total cost was £2062.59.

Table 1: Daily activity

<table>
<thead>
<tr>
<th></th>
<th>Steps</th>
<th>Sedentary (mins)</th>
<th>Standing (mins)</th>
<th>METs</th>
<th>Minutes &gt;3 METs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (SD)</td>
<td>832 (914.63)</td>
<td>1358.67 (79.68)</td>
<td>77.67 (53.16)</td>
<td></td>
<td>4.95 (5.64)</td>
</tr>
<tr>
<td>Median (IQR)</td>
<td>1.26 (1.26 - 1.3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>5.0 - 2685.0</td>
<td>1228.2 - 1472.4</td>
<td>2.57 - 163.71</td>
<td>1.25 - 1.32</td>
<td>0.0 - 16.11</td>
</tr>
</tbody>
</table>

Conclusion
In this small feasibility study of care home residents tri-axial accelerometers were so problematic to be of negligible use and we will not be using them in our definitive trial. Activity levels, where recorded parelled published literature showing care residents to be highly sedentary.
Introduction
Falls is the leading cause of morbidity and mortality in the elderly. However, majority of community dwelling elderly at risk of falls remain unidentified with limited targeted intervention available. We sought to determine the effectiveness of a validated fall risk assessment tool in guiding a targeted fall prevention program in community dwelling elderly.

Methods
A home-based multifactorial fall risk assessment was conducted using the Fall Risk for Older People in the Community (FROP-Com) questionnaire on a cohort of low-income community dwelling elderly (age ≥ 55 years old) in Singapore. Fall prevention advice was provided to all participants based on participant’s FROP-Com response and high-risk individuals were advised to seek medical review when specific factors were identified. Long-term follow-up was conducted via telephone calls by blinded investigators to monitor for subsequent falls.

Results
68 participants successfully completed the fall risk assessment, of which 60 participants were available for follow-up. The mean age of our participants was 73.4 ± 9.2 years old and 43.3% were male. The baseline fall prevalence in the past year was 45.0%, and the fall prevalence post-intervention at 9 months follow-up was 13.3% (p < 0.001). Based on the FROP-Com, the baseline fall risk profile of our cohort was 15.0% (high fall risk), 35.0% (moderate fall risk) and 50.0% (low fall risk). When comparing pre and post-intervention fall prevalence, participants at low fall risk showed similar fall rates (5.0% vs 10.0% respectively, p=0.706). However, participants at moderate/high fall risk had a significant reduction in falls (73.3% pre-intervention vs 16.7% post-intervention, p < 0.001).

Conclusion
The FROP-Com was an effective tool in identifying fall risk and targeted intervention resulted in a significant reduction in falls on follow-up. Such interventions may have a future role in large-scale community fall risk prevention.
THE DEBATE OVER MECHANICAL THROMBOPROPHYLAXIS AFTER HIP FRACTURE: TIME TO CHOOSE SIDES

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Introduction
Graduated compression stockings carry a potential risk of pressure, vascular and other complications. Current understanding of deep vein thrombosis (DVT) risk in the fractured and the un-fractured limb leaves it uncertain whether patients with hip fracture should wear stockings on both legs.

Methods
All 3,657 patients presenting with hip fracture between March 2007 and December 2013 were identified from our unit’s National Hip Fracture Database records. We excluded 404 patients (11.0%) normally resident outside our catchment area, to leave a total of 3,253 patients with a median age of 83 (± 12.44) years. We cross-linked their details with Department of Medical Physics records, to identify a total of 634 patients (19.5%) who had undergone one or more lower-limb Doppler ultrasound scans during the study period.

Results
Many of the total of 634 scans were unrelated to the hip fracture, including 226 (35.6%) performed prior to the fracture which indicated a baseline rate of DVT of 3.7 per 1,000 patients per year in the 3-month period immediately before the fracture. Scans performed following hip fracture showed that DVT risk was highest in the 3-month period after fracture (35.7 per 1,000 patients per year). This resulted from a significant six-fold increase in DVTs on the side of the fracture (29.5 per 1,000 patients per year). We found only a very small non-significant increase in DVT on the contralateral leg (6.1 per 1,000 patients per year).

Conclusion
The additional risk of DVT after hip fracture is essentially confined to the fractured limb – the leg to which it is most painful to apply stockings. There appears little justification for using stockings in the other leg.
# VITAMIN D, PARATHYROID HORMONE AND LENGTH OF STAY IN HIP FRACTURE PATIENTS

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## Introduction
A recent Australian study found that secondary hyperparathyroidism (SHPT) was associated with a greater length of stay (LOS) after hip fracture (HF), irrespective of vitamin D levels (Fisher A. et al. Calcif Tissue Int. 2009;85:301-9). We report associations between parathyroid hormone (PTH), 25-OH vitamin D levels and LOS for HF patients admitted to a UK District General Hospital.

## Methods
A retrospective analysis using data collected for the UK National Hip Fracture Database from HF patients admitted to Conquest Hospital, combined with blood results including PTH, 25-OH vitamin D, calcium, albumin and creatinine. LREC approval reference: 14/LO/0159.

## Results
408 patients were admitted to Conquest Hospital with HF between August 2012 and January 2014; their average age was 83 (47-104) years, 74% of them were female. 25-OH vitamin D was measured in 307 of these patients (75%), 243 of whom also had PTH measured (60%). PTH was significantly correlated with 25-OH vitamin D: p=0.00005. 63% of these patients were vitamin D deficient (25-OH vitamin D <30nmol/l), 46% of whom showed SHPT (PTH>72ng/l, the upper limit of normal for our laboratory). In agreement with the Australian study, a greater LOS was found in those with SHPT compared to those whose PTH was in the normal range (p=0.003). In contrast to the Australian findings our patients with 25-OH vitamin D levels below 50nmol/l also had significantly greater LOS compared to those with 25-OH vitamin D levels >49nmol/l (p=0.006). In those with 25-OH vitamin D <50nmol/l there was no significant difference in LOS between normal and raised PTH sub-groups. However in those with 25-OH vitamin D levels >49nmol/l, a raised PTH was significantly associated with a greater LOS (p=0.012).

## Conclusion
These results suggest that both low vitamin D and SHPT contribute to poor outcome after HF but may act by different mechanisms.
CAN CARE HOME RESIDENTS ACHIEVE THE RECOMMENDED DOSE AND INTENSITY OF FALLS PREVENTION EXERCISE? – ANALYSIS FROM THE PREVENTION OF FALLS IN COGNITIVELY IMPAIRED OLDER ADULTS LIVING IN RESIDENTIAL CARE (PROF-COG) STUDY

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Introduction
Exercise effectively reduces falls in older people living in the community but there is less evidence for its effect on those living in care homes. This may be due to difficulty achieving the required duration and intensity of exercise. Effective programmes should be of high dose (>120 minutes weekly over 6 months) and include highly challenging balance training. (Sherrington C, Tiedemann A, NSW Public Health Bulletin, 2011; 22(4); 78-83). There is limited research to demonstrate that care home residents are capable of meeting this dose and intensity.

Method
Exercise participants (n=29) from 4 separate care homes (2 nursing:2 residential) involved in a falls prevention study had their twice weekly exercise sessions timed over 3 months. A total of 265 sessions were timed individually including session duration and time challenging balance whilst standing.

Results
Mean exercise session duration was 22.8 minutes with a mean standing time of 11.0 minutes. Those living in residential homes (n=11) had longer session and standing times compared to nursing home residents (n=18), (27.4mins vs 20.0mins (p<0.02) and 14.5mins vs 9.0mins (p<0.01), respectively). There was no significant correlation between cognition (ACE-R) and mean session and standing times but better functional ability (Barthel) was associated with longer session and standing times (r =0.63, N=29, p<0.001 and r=0.67, N=29, p<0.001, respectively).

Conclusion
This study presents data on time spent standing within a falls prevention exercise programme and provides a unique insight into the actual intensity of balance training undertaken. Results of this small study reveal that even in a research context the recommended exercise dose for falls prevention exercise could not be achieved by care home residents. The dose of exercise achieved was 74 minutes shorter per week than that recommended. Dose and intensity seem to be limited by physical frailty as opposed to cognitive impairment.
FRAILSAFE VERSUS ISAR (IDENTIFICATION OF SENIORS AT RISK) – WHICH IS BETTER AT SCREENING FOR ADVERSE OUTCOMES IN PATIENTS PRESENTING TO THE MEDICAL ASSESSMENT UNIT?

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Introduction
Frailsafe is a safety checklist designed to reduce harm to frail older patients in acute hospitals. It includes a frailty identification stage (stage 1). Identification of Seniors at Risk (ISAR) is a screening tool to identify patients with frailty for detailed assessment. We compared Frailsafe stage 1 and ISAR as predictors of adverse outcomes.

Method
An observational cohort study was undertaken during August-November 2013. Consecutive patients aged ≥65 presenting to medical admissions at a teaching hospital underwent ISAR and Frailsafe scoring. ISAR positivity was defined by a score ≥2. Follow-up lasted 30 days. Outcome measures were readmission at 14 and 30 days, 30 day mortality and length of stay (LoS).

Results
799 patients were seen. Mean age was 83 (SD8.2). 490 were Frailsafe and 462 ISAR positive. Frailsafe and ISAR were positively correlated (R=0.369; p<0.01). Screening properties of the indices are outlined in the table.

<table>
<thead>
<tr>
<th></th>
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<th>30 Day Mortality</th>
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<tbody>
<tr>
<td></td>
<td>PPV</td>
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<td>PPV</td>
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</tr>
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<td>ISAR</td>
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</tr>
<tr>
<td></td>
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<td>NPV</td>
<td>NPV</td>
</tr>
<tr>
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<td>0.38</td>
</tr>
<tr>
<td>ISAR</td>
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<tr>
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</tr>
<tr>
<td>Frailsafe</td>
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</tr>
<tr>
<td>ISAR</td>
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<tr>
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<tr>
<td>Frailsafe</td>
<td>0.84</td>
<td>0.92</td>
<td>0.90</td>
</tr>
<tr>
<td>ISAR</td>
<td>0.90</td>
<td>0.90</td>
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</tr>
</tbody>
</table>

Conclusion: Frailsafe was inferior to ISAR as a screening tool and should not be used in its current version primarily to select patients for service inclusion. This does not impact on its usefulness as a safety checklist.
A SURVEY OF OLDER PEOPLES’ ATTITUDES TOWARDS ADVANCE CARE PLANNING

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Introduction
Advance care planning (ACP) is a process to establish an individual’s preferences of care but few UK studies have been conducted to ascertain public perspectives. The aim of this study was to assess the attitudes of older people aged over 65 in East Midlands, through the development of a survey.

Methods
Domains of questioning were identified through focus groups. Items were generated to address each domain through a review of the literature with expert stakeholder input. The final questions were then re-tested with lay volunteers.

Thirteen general practices were enrolled to send out surveys. Simple descriptive statistics were used to describe the responses.

Results
1823/5375 (34%) community-dwelling older people returned questionnaires. 13% of respondents had prepared an ACP document with 4% completing an Advance Decision to Refuse Treatment (ADRT). 5% of respondent’s stated that they had been offered an opportunity to talk about ACP. Multivariate predictors of completing an ACP document included: being offered the opportunity to discuss ACP (Odds Ratio (OR) 16.5, 95% CI 13.2 - 35.9), older age group (OR 1.5, 95% CI 1.1-2.0), better physical function using the Katz scores (OR 0.6, 95% CI 0.4-0.9) or male gender (OR 0.5, 95% CI 0.3-0.8). Only 33% would be interested in talking about ACP if sessions were available. Independent predictors of willingness to engage in ACP training sessions included male gender (OR 0.6, 95% CI 0.5-0.8) and older age (OR 0.6, 95% CI 0.5-0.8).

Conclusions
A third of respondents were keen to explore Advance Care Planning, but only a relative minority (17%) had actively engaged. Preferences were for informal discussions with family rather than professionals. It is not clear from this study if older people would like more engagement from professionals or not.

More qualitative exploration is required to better understand the issues.
COST AND RESOURCE USE IN NON-INSTITUTIONALISED ALZHEIMER’S PATIENTS – RESULTS FROM AN OBSERVATIONAL STUDY IN THE UK OVER 18 MONTHS

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⁴. RICE (The Research Institute for the Care of Older People), Royal United Hospital, Bath, UK

Introduction
Observational studies are important for collecting real life data to complement clinical trial results. The GERAS study has assessed the societal costs associated with Alzheimer’s disease (AD) for patients and caregivers over 18 months, stratified by severity of patients’ AD at baseline.

Methods
The GERAS study is a prospective, multi-centre, non-interventional cohort study in the UK (with studies also conducted in Germany and France). Patients presenting within the normal course of care, ≥55 years, diagnosed with probable AD, not institutionalised and with an informal caregiver were stratified according to Mini Mental State Examination (MMSE) score as mild (26-21), moderate (20-15) or moderately severe/severe (14 or less) AD. Data collected included demographic characteristics, current medications and resource use on both patient and caregiver, clinical measures of cognition, function and behaviour of the patient, and burden and health-related quality of life for the caregiver. Total societal costs comprised patient healthcare costs, patient social care costs and caregiver informal care costs.

Results
526 patients (200 mild, 180 moderate and 146 moderately severe/severe) from 24 centres across the UK were recruited. At 18 months, data was collected on 348 (66.2%) patients remaining in the study. The main reasons for discontinuation were institutionalisation (50.8%), subject decision (22.2%) and death (21.6%). The MMSE deteriorated by 3.6 points in the mild group, 3.5 points in the moderate group and 4.7 points in the moderately severe/severe group over 18 months. Total societal costs of AD over the 18 month period were £25,865 for mild disease, £30,905 for moderate disease and £43,560 for moderately severe/severe disease.

Conclusions
In this large observational study, cognition deteriorated over the 18-month study period across all severity levels, as measured by the MMSE. The total cost of treating these patients in the community was substantial, and increased with baseline severity level.
Geriatrician Consultations on Appropriate Prescribing for Frail Older People in Residential Aged Care Facilities

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³. Centre for Safe and Effective Prescribing, University of Queensland
⁴. School of Clinical Sciences, Queensland University of Technology

Introduction
Residential aged care facilities (RACFs) in Australia have attracted considerable attention in recent times as institutions where prescribing of certain classes of high-risk drugs such as antipsychotics, potent analgesics, and sedatives is excessive and potentially inappropriate. To ensure appropriateness of therapy in RACFs, well-organized approaches are needed. We examined the patterns of prescribing, and subsequent changes made by geriatricians, in the context of comprehensive geriatric assessment consultations provided to residents of RACFs delivered by video-consultation.

Methods
Design: Prospective observational study.
Setting: Three residential aged care facilities in Queensland, Australia.
Participants: 75 residents referred by General Practitioners (GPs) for comprehensive geriatric assessment delivered by video-consultation.

Results
Patients had multiple co-morbidities (mean 6), high levels of dependency and were prescribed a mean of 8.6 regular medications. Polypharmacy (≥5 medications) prevalence was over 90% with 10% (n=70) of medications identified as potentially inappropriate according to the 2012 Beers criteria. High-risk medications (based on the list of high risk medications in older people) accounted for 26.5% (n= 183). Geriatrician intervention recommended withdrawal of 12% (n=83) and dose alteration in 7% (n=48) of all medications prescribed. New medication were initiated in 56% (n= 42) patients. Of those medications identified as potentially inappropriate and high-risk, only 11% (n=28) were stopped and dose altered in 9% (n=23).

Conclusion
There was a high prevalence of potentially inappropriate and high-risk medications. However, in spite of this awareness, geriatricians made relatively few changes, suggesting either that, on balance, prescription of these medications was appropriate or, because of other factors, there was a reluctance to adjust medications. Further research, including a broader survey, is required to understand these dynamics.
A PILOT STUDY TO EVALUATE THE CLINICAL FRAILTY SCALE FOR PREDICTING POSTOPERATIVE MORBIDITY IN ELDERLY EMERGENCY SURGICAL PATIENTS

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**Introduction**
Frailty scoring has been suggested as a tool for predicting post-operative outcomes in older patients. The Canadian Study of Health and Ageing Clinical Frailty Scale (CFS) is easy to use and does not require objective measurements or laboratory results. Our aim was to compare the accuracy of the CFS against existing Risk Stratification Tools (RSTs) in elderly patients undergoing emergency surgery.

**Method**
A prospective study of patients aged 64 years or older who underwent emergency non-cardiac surgery. Patients were seen by a geriatric trainee and assigned a CFS score. Perioperative data was collected prospectively. The primary outcome was prolonged morbidity defined using Post-Operative Morbidity Survey (POMS) on day 14. The CFS was compared against the other RSTs using the areas under receiver operator characteristic curves (AUROC). Data were analysed using Excel 2008 for Mac and Stata/IC 13 for Mac.

**Results**
Data were collected on 164 patients with average age 77 years. 22% were moderately to severely frail, scoring 6-7 on the CFS. 45% had prolonged postoperative morbidity. Alone, the CFS was poor at predicting prolonged morbidity (AUROC 0.67) and performed less well than other tools (Elderly POSSUM: 0.76; SRS 0.74).

**Conclusion**
The SRS is the most accurate and simple previously validated predictor as it does not require intra-operative values or laboratory results. Elderly POSSUM is the best predictor but requires intra-operative values. Frailty alone is a poor predictor of prolonged postoperative morbidity. As none of the tools demonstrated predictive accuracy greater than AUROC 0.8, this suggests there may be other factors which influence perioperative outcome.
THE CORRELATION BETWEEN PATIENTS, PATIENT’S RELATIVES AND HEALTHCARE PROFESSIONALS INTERPRETATION OF QUALITY OF LIFE - A PROSPECTIVE STUDY

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2. University of Exeter

Introduction
In the presence of delirium, hospital doctors are advised to seek opinions from next of kin (NOK) to guide treatment escalation plans. Such practice has never been validated. We piloted a study to explore the validity of surrogate perceptions of quality of life (QOL) and resuscitation decisions between patients, doctors and NOK.

Methods
Patients admitted to hospital with delirium who regained capacity (MOCA≥21) completed validated QOL questionnaires (SF36 and EQ-5D) and were asked their resuscitation wishes. NOK and doctors caring for the patients provided surrogate interpretation of QOL and resuscitation decisions. At least 2 months post discharge patients and NOK were again asked about resuscitation wishes and QOL.

Results
22 patient/NOK/doctor units were recruited. The SF36 showed strong correlation between patients and NOK (Spearman’s rho = 0.89), and patients and doctors (rho 0.91). The visual analogue score of QOL showed a trend towards stronger correlation between NOK and patient than between doctor and patient (p=0.09), with physicians tending to underestimate QOL. Physicians, however, better predicted patients’ wishes regarding resuscitation (91% agreement, Kappa 0.62, p=0.0008 for doctor/patient agreement, vs. 76% agreement Kappa 0.40, p=0.02 for NOK/patient agreement: p for ANOVA = 0.006). Admission to hospital made little difference to the patients’ interpretation of their QOL (mean SF36 88.3 vs. 88.5 before and after admission respectively), whereas the admission tended to reduce the NOK interpretation (85.5 vs 81.3 respectively).

Conclusions
These results suggest NOK may have a better perception of patients’ QOL, whereas doctors may be better at predicting resuscitation wishes. These results require validation in a larger population, the feasibility of which has been demonstrated by this study.
NASO-GASTRIC FEEDING IN OLDER HOSPITALISED PATIENTS WITH SEVERE DYSPHAGIA DUE TO CONCURRENT ILLNESS – DOES IT CHANGE OUTCOMES?

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Introduction
Little evidence exists regarding the benefits of naso-gastric (NG) feeding in older patients who develop dysphagia due to physical illnesses (except stroke), and NICE guidelines suggest NG feeding should be considered. Of these patients, we evaluated the outcome of those who received NG feeding compared to those offered oral intake.

Methods
Dysphagic subjects ≥75 years old were identified retrospectively from a speech and language therapy (SALT) database (April 2012-December 2013) in a district general hospital. Only patients whom SALT advised should be “nil-by-mouth” had their case-notes reviewed. Excluded patients were those whose advanced dementia or obstructing cancer was causing dysphagia, those with Parkinson’s disease, bowel obstruction, ileus or acute stroke during that admission. Baseline demographics, modified Rankin scale (MRS), body mass index (BMI), malnutrition universal screening tool(MUST) score, serum albumin, length of stay(LOS), death rate and 30-day readmission rate were compared between those given NG feeding with those that were not. Data are presented as numbers and percentages or medians and inter-quartile ranges. Comparative tests used were the Mann-Whitney or Krukal-Wallis tests.

Results
106 patients were included, with the data summarised below. The 2 groups had similar acute illnesses except 6 out of 8 post-operative patients received NG feeding.

<table>
<thead>
<tr>
<th></th>
<th>No NG Feed N=61</th>
<th>NG Feed N=45</th>
<th>P value</th>
</tr>
</thead>
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<tr>
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<td>86[82-91]</td>
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</tr>
<tr>
<td>Residence, N[%]</td>
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<td></td>
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</tr>
<tr>
<td>Own home</td>
<td>36[59]</td>
<td>37[82]</td>
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</tr>
<tr>
<td>Care home</td>
<td>25[41]</td>
<td>8[18]</td>
<td></td>
</tr>
<tr>
<td>MRS[IQR]</td>
<td>4[3-4]</td>
<td>3[3-4]</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>MUST[IQR]</td>
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<td>0[0-1]</td>
<td>0.18</td>
</tr>
<tr>
<td>Albumin[IQR]</td>
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<td>31[27-35]</td>
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<tr>
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<td>10[5-22]</td>
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<tr>
<td>LOS, days[IQR]</td>
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<td>33[19-47]</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Hospital death, N[%]</td>
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<td>26[58]</td>
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<td>Total dead 30d, N[%]</td>
<td>39[64]</td>
<td>28[62]</td>
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</tbody>
</table>

Conclusions
Within the study limitations, NG feeding of older patients with dysphagia due to concurrent illness does not appear to improve mortality but increases LOS compared to patients offered oral intake.
WHY DO PEOPLE WITH PARKINSON’S MAINTAIN OR STOP LEISURE ACTIVITIES?

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Introduction
Participation in leisure benefits physical, psychological and social health but we barely understand the choices made by people with Parkinson’s (PwP). We aimed to identify factors contributing to leisure maintenance or cessation, and suggest ways of optimising beneficial continuation.

Methods
Following a survey of leisure participation, motivators and deterrents (224 PwP recruited via a clinic and 34 branches of Parkinson’s UK) we purposely selected 10 PwP who had abandoned or were considering abandoning a leisure activity to interview at home. We audiotaped semi-structured interviews with 5 men and 5 women (aged 63 to 81), four living alone; three spouses contributed. Two researchers independently analysed transcripts, coding and categorising content: building on themes derived from the survey, they discussed and recoded transcripts before agreeing final categories and emergent themes.

Results
The dominant theme was that, while physical aspects of Parkinson’s (notably balance, mobility and fatigue) influenced leisure participation, psychological features appeared more pervasive. Interviewees’ attitudes to their progressive, fluctuating condition (e.g. ‘My confidence went before my ability’) and underlying traits such as determination, flexibility and optimism (‘You are what you let yourself be’) appeared central to coping (generally) and participating in leisure (specifically). Other key determinants of participation were their attitudes to change (e.g. ‘So afraid of making a fool of myself’), the suspected attitudes of others (‘Everybody comes and helps me - I hate that’) and isolation/loneliness (‘I get bored hearing my own voice’).

Conclusions
To help PwP reap the multiple benefits of leisure and optimise their perceived wellbeing, health professionals can promote leisure activity. Specifically they can assist PwP to 1) manage and understand their condition, 2) identify and access activities meeting their needs and 3) set realistic goals, tailoring the timing, amount and intensity of activity to their ability.
INCIDENCE AND RISK FACTORS FOR THE DEVELOPMENT OF HOSPITAL ACQUIRED PNEUMONIA IN OLDER HOSPITALISED PATIENTS

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Background
Older people are at risk of hospital-acquired pneumonia. Few data exist on the incidence or risk factors for hospital-acquired pneumonia in non-intensive care patients. Our aim was to determine the incidence and key risk factors for hospital-acquired pneumonia in a sample of hospitalised older people.

Methods
A prospective survey of people 65 years and over admitted to Acute Medical, Medicine for the Elderly and Orthopaedic wards in NHS Tayside over a 12 month period. Hospital-acquired pneumonia was defined in accordance with the European and Scottish National Prevalence Survey of Healthcare Associated Infection and Antimicrobial Prescribing, June 2011. Key analyses included: incidence of case-defined hospital-acquired pneumonia, risk factors for development using Cox regression analysis and the percentage of clinically diagnosed hospital-acquired pneumonia that met the criteria for case-defined hospital-acquired pneumonia.

Results
A total of 1307 patients were included in the survey, 539 (41%) male, and mean age 82 years (SD 7.9). Median length of hospital stay was 14 days (IQR 20). 157 episodes of hospital-acquired pneumonia were suspected clinically in 143 patients (incidence 10.9%), but only 83 episodes (53% of total) in 76 patients met the diagnostic criteria (incidence 5.8%). Case fatality rate was 29% in patients with confirmed hospital-acquired pneumonia, and 19% in patients with suspected but not confirmed hospital-acquired pneumonia. Risk of hospital-acquired pneumonia increased by 0.3% per day spent in hospital. Swallowing problems were the single most important risk factor; HR 3.7 (95% CI 2.2 to 6.1, p<0.001).

Conclusion
Hospital-acquired pneumonia is common but over-diagnosed in older hospitalised patients. Older patients with swallowing problems have a greater risk of developing hospital-acquired pneumonia. Given the high mortality rate, knock on effects on antibiotic use and length of hospital stay, ways of preventing hospital-acquired pneumonia would be of potential importance to health services.