

**Communications
to the
Autumn Meeting
of the
British Geriatrics Society**

**12 - 14 November 2008
International Convention Centre
Birmingham**



**programme of
abstracts**

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Thursday 13 November 2008

PLATFORM PRESENTATIONS

Session B - Elder Abuse Update	11:30 - 12:45	ABSTRACT BOOK Nos	1-3
Session C - Palliative Care Update	11:30 - 12:45		4-6

PLATFORM PRESENTATIONS

1

HOSPITAL USE, INSTITUTIONALISATION AND MORTALITY ASSOCIATED WITH DELIRIUM: A COHORT STUDY

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Introduction

Delirium is associated with adverse health outcomes. We investigated the impact of delirium on hospitalisation, institutionalisation and death.

Methods

Patients over 75 years admitted acutely to hospital were screened for delirium. Mean days in hospital per year were determined 4 years before and 5 years after index admission. We calculated time to death and institutionalisation and hazard ratio for death after adjustment for confounders.

Results

Delirium was detected in 103 patients and excluded in 175. Median age was 81 years; 117 men. Outcome data was obtained for 278 patients (98%). Median time to institutionalisation or death was 91 days (95%CI: 48.8-133.2) for those with delirium compared to 1309 days (95% CI: 946.7-1671.3) for those without ($p < 0.001$). Delirium was associated with a higher adjusted risk ratio for death (2.7; 2.0-3.8).

Years before (-) or after (+)	Delirium		No delirium		p value
	Mean days in hospital/year	N	Mean days in hospital/year	N	
- 4	5.3	103	4.4	175	0.75
- 3	6.4		5.1		0.08
- 2	7.3		6.4		0.82
- 1	13.5		10.3		0.61
+1	30.3	67	17.0	165	0.01*
+2	20.0	35	10.6	136	0.34
+3	3.3	21	11.7	110	0.50
+4	10.1	14	13.4	94	0.44
+5	9.7	11	13.4	87	0.42

Conclusion

The impact of delirium is considerable and extends beyond the acute care setting.

2

THE EFFECT OF HEARING AUGMENTATION ON COGNITIVE ASSESSMENT SCALES AT ADMISSION

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Introduction

Cognitive assessment scales such as the Abbreviated Mental Test (AMT) or the Mini Mental State examination (MMSE) have been recommended for routine use in the assessment of elderly patients admitted to hospital to allow early detection and treatment of cognitive impairment. Hearing impairment is very common in this group and may interfere with patients' scores.

Methods

Patients admitted to acute geriatric medicine wards (N=192, 60.4% female, mean (\pm SD) age 82.4(\pm 7.0) years) were randomised into control and intervention groups. Patients with delirium (screened using the Confusion Assessment Method) were excluded from the study. All volunteers had a baseline MMSE and AMT performed within 24 hours of admission and these tests were repeated the following day with the intervention group using a commercially available hearing aid and the control group with no amplification. Paired and unpaired t-test was used to compare mean improvements in scores within and between groups respectively.

Results

Mean improvement in MMSE scores in the intervention group was 2.00 ($p < 0.001$), and 0.19 in the control group ($p = 0.46$). For AMT scores the intervention group improved by 0.48 points ($p < 0.001$) and the control group by 0.24 points ($p = 0.04$). The mean improvements between groups were significant for MMSE ($p < 0.001$) but not AMT ($p = 0.16$).

Conclusion

Hearing amplification significantly improved performance in MMSE. The implications for screening of cognitive impairment in the clinical setting require further investigation.

PLATFORM PRESENTATIONS

3

AUTONOMIC DYSFUNCTION - A BIOMARKER OF COGNITIVE DECLINE/DEMENTIA?

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Introduction

Autonomic dysfunction is prevalent in the most common dementia subtypes most likely due to underlying cholinergic dysfunction. The prevalence of dysautonomia in Mild Cognitive Impairment has not been explored.

Methods

Cardiovascular autonomic function was assessed in 75 MCI patients and 25 age-matched controls by the Ewing's battery of autonomic function tests. The prevalence of orthostatic hypotension and autonomic neuropathies by Ewing's classification were assessed. A subgroup had power spectral analysis of heart rate variability.

Results

Participants and controls had a mean age of 73.0 and 72.2 years respectively. MCI participants had a mean MMSE of 25.5+/-0.7 and CAMCOG of 83.9+/-1.2. There were significant differences in the level and severity of cardiovascular autonomic dysfunction between the MCI and control groups ($p < 0.001$). MCI participants showed consistent impairment of both sympathetic and parasympathetic function tests in comparison with controls ($p < 0.001$). Although there was no difference between the mean change in SBP on orthostasis ($p = 0.57$) there was a significant difference in the heart rate response ($p < 0.05$). Symptomatic OH was also significantly more prevalent in MCI than in the control group ($p < 0.001$)

Conclusion

Autonomic dysfunction is highly prevalent in MCI. This may be a key contributor to the hypotensive changes that precede the onset of dementia. Hypotensive-induced cerebral hypoperfusion may be a key driver in the transition from MCI to dementia. This needs to be further explored by longitudinal studies

4

CASE MANAGEMENT FOR PEOPLE WITH LONG-TERM CONDITIONS: IMPACT UPON EMERGENCY ADMISSIONS AND ASSOCIATED LENGTH OF STAY

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Introduction

Recent DH guidance recommends that patients with complex long-term conditions receive case management (CM) to deliver and coordinate their care from multiple agencies. This DH funded multi-method study investigates whether changes in use of secondary healthcare resources can be attributed to and are associated with different approaches to CM.

Methods

- 1) A cross-sectional postal survey (PCTs $n=10$) classifying services on features of CM implementation.
- 2) A retrospective cohort analysis (CM patients $n=867$): longitudinal admission data 9 months pre- and 9 months post-CM. Regression analyses (ANCOVA) to explore the simultaneous effect of diagnosis and features of CM service provision on changes in emergency admissions and associated length of stay (LOS).

Results

Emergency admissions and associated LOS reduced significantly ($p < .0001$) over the 18 month period. The most powerful predictor of change in emergency admissions was prior admissions. For each day spent in hospital before CM, patients are predicted to experience a reduction of nearly one day after CM. The main contributor explaining increases in LOS for emergency admissions was the number of primary and secondary diagnoses. Each added diagnosis is associated with a 2.4 day increase in LOS, everything else being equal. A very modest effect was shown with regard to CM features.

Conclusion

Despite some methodological weaknesses, the results give some credence to the attempts to reduce readmissions in patients by focusing on those with prior recent admissions.

PLATFORM PRESENTATIONS

5

SAME PATIENT, DIFFERENT SETTING: TO WHAT EXTENT DO MOBILITY MEASURES CONCUR?

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Introduction

It is argued that people with Parkinson's disease (PD) perform differently in a gait-laboratory compared to their own home. Such a systematic bias (or context effect) could render laboratory- or clinic-based mobility assessment invalid. We evaluated to what extent mobility measures in contrasting settings concurred.

Methods

Seventy-five people with PD completed the Timed Up and Go Test (TUG), a 3m walk, the Standing-Start 180 Degree Turn Test (SS-180) and two on-the-spot turns at home and in a gait-laboratory at the same time of day, within two weeks: setting order was randomised. From video, we calculated the 95% Limits of Agreement (mean difference between settings \pm two standard deviations (SD)).

Results

Participants (median Hoehn and Yahr stage 2.5) were reassessed after a mean of 7 days (SD 2). Mean performances and differences between settings were as follows. TUG: 18s, 1s; Speed: 0.8m/s, 0m/s; Stride Length: 0.5m, 0m; Cadence: 104 steps/min, 1 step/min; SS-180: 5 steps in 3s, < 1 step and < 1s; Spot 180: 6 steps, < 1 step; and Spot 360: 11 steps, 1 step.

Conclusions

Differences between settings were small and typical of repeated assessment in only one setting. Differences rarely exceeded 19 steps/min (Cadence); 0.1m (Stride Length); 0.3m/s (Speed); and 2 steps (SS-180 and Spot 180), for example. Performance was similar in both settings and we found no evidence of a context effect.

6

A QUALITATIVE STUDY OF PRIVACY AND DIGNITY IN CONTINENCE CARE OF OLDER PEOPLE

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Introduction

Privacy and dignity in practice is now at the core of national strategies to improve care for older people. Objective definition of what constitutes privacy and dignity and how these concepts can be embedded and measured in practice remains a challenge. This study examined the views of older people with regard to privacy and dignity in continence care.

Method

Semi structured interviews informed by an extensive literature search with a purposive sample of 30 recently discharged frail older patients and nursing home residents requiring assistance with continence were conducted and transcribed. Over-arching themes were coded, sub themes refined and sub categories formed.

Results

Subjects discussed the impact of living with continence, loss of personal control, the embarrassment of dealing with young carers and humour as a coping strategy. Dignity was expressed as being treated as a human being, mutual and self respect, privacy and generation of a personal relationship with carers. Participants indicated that promptness and efficiency in dealing with episodes of incontinence was important.

Conclusion

For older people with continence problems to experience dignity in care settings:

- ◆ they need to be encouraged to identify and share their own ways of managing the problem
- ◆ they need to feel respected; be treated as individuals; have privacy during care
- ◆ they need a prompt response when requiring continence care and given sufficient time not to feel hurried.

POSTER PRESENTATIONS

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7

THE AWARENESS OF FUEL POVERTY WITHIN A MULTIDISCIPLINARY TEAM FOR OLDER PEOPLE IN A HOSPITAL OF A FUEL POVERTY BEACON COUNCIL AREA

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Introduction

Fuel Poverty is when 10% or more of a household's disposable income is spent on fuel to heat a home to an acceptable standard. It is linked to poor health and Winter mortality in older people. The government has set up initiatives to counter this. This study determines whether the multidisciplinary team looking after people age 80 and above in a hospital of a Fuel Poverty beacon council area are aware of this issue and the policies to counter it.

Methods

A questionnaire survey was conducted on a purposive sample of doctors, nurses, physiotherapists, occupational therapists and social workers. A sheet defining Fuel Poverty was distributed. Likert scale data were analysed using histograms. Statistical significance on ordinal data were tested using the Kruskal-Wallis test.

Results

32 questionnaires showed that awareness of the links between cold temperatures and ill health were good (85%) and that Fuel Poverty was deemed an important issue (81%). Prior knowledge of Fuel Poverty was poor (41%) but not significantly different amongst the professional groups ($p > 0.05$). Few assessed their patients for Fuel Poverty (30%) and were unaware of the programmes in order to promote them (50%).

Conclusion

There is still progress to be made in awareness and promotion of Fuel Poverty schemes. The lack of awareness in a beacon council area raises questions on the awareness of fuel poverty in healthcare professionals across the country.

8

PULMONARY REHABILITATION IN OCTOGENARIANS

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Introduction

Pulmonary rehabilitation is an intervention in COPD which improves quality of life and exercise capacity. Published data thus far has an average age of 70 years, and for patients over 80, suggests pulmonary rehabilitation has only limited benefit. We compared pulmonary rehabilitation in patients under and over 80.

Methods

Our study consisted of 26 patients matched for lung function (FEV1), breathlessness (MRC criteria) and sex divided into group A (age < 80, mean 64, range 50-74), and group B (age > 80, mean 82 range 80-89). Baseline measures included a breathing problem questionnaire (BPQ), incremental shuttle walk test (ISWT), endurance shuttle walk test (ESWT) and calculated maximal oxygen uptake (VO2 max). Patients did a seven week individualised programme including working at 60% VO2 max, one hour each of strength and endurance training and education per visit, and a home exercise plan.

Results

ISWT showed a mean 44% increase ($p = 0.516$) in those over 80, and 19% ($p = 0.755$) in the younger group. Similarly, ESWT showed a mean 108% ($p < 0.001$) increase in the older group compared with 47% ($p = 0.038$) in the younger one. VO2 max showed a 19% ($p = 0.02$) vs 11% ($p = 0.252$) increases between older and younger groups, BPQ improved by 8% ($p = 0.516$) vs -3% ($p = 0.755$).

Conclusion

Patients over 80 showed significant benefits in VO2 max and ESWT. Subjective dyspnoea also improved. This data suggests octogenarians benefit from outpatient pulmonary rehabilitation programmes.

CLINICAL EFFECTIVENESS

9

CLOSTRIDIUM DIFFICILE INFECTIONS: 2005-2007 AUDIT

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Introduction

Clostridium Difficile infection (CDI) is a front line health issue. We present 3 cycles of audit in our hospital.

Methods

Retrospective notes of all new Clostridium Difficile cases over 3 months (1st August- 31st October) in 2005, 2006 and 2007. Compliance in prescribing Metronidazole and outcome of the CDI was assessed in the Department of Medicine for Elderly (DoME) at the Worthing Hospital. In the 2nd and 3rd cycles specific education on hospital-acquired infection was given to all junior doctors three times a year.

Results

Thirty-four new CDI within DoME were recorded in 2005, 24 in 2006 and 17 in 2007. Median age was 86, (range 63-100), ratio F:M=2:1 in 2005 and 2006, F:M=3:1 in 2007.

Metronidazole was prescribed according to local guidelines in 57% of cases in 2005, improving to 73.5% in 2006 and 83% in 2007. Number of inappropriate prescriptions for Vancomycin decreased from 10% in 2005 and 12.5% in 2006 to 0% in 2007.

Mortality increased from 56% in 2005 and 37.5% in 2006 to 59% in 2007. At the same time Metronidazole resistance increased from 10% (2/34) in 2005, to 37% (7/24) in 2006 and further to 66% (4/17) in 2007.

Conclusions

Significant improvement can be made in prescribing by teaching junior doctors the pathology of CDI and reasons for treatment. Successive audits however show increasing Metronidazole resistance and mortality.

10

EFFECTIVENESS OF VERTEBROPLASTY AND KYPHOPLASTY IN TREATING OSTEOPOROTIC VERTEBRAL FRACTURE IN OLDER PATIENTS: A SYSTEMATIC REVIEW

A Craig

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Introduction

Osteoporotic vertebral fracture (OVF) is an important and common cause of back pain and immobility in older patients. Standard medical treatment often fails resulting in persistent symptoms.

Percutaneous Vertebroplasty (PCV) and Balloon Kyphoplasty (BK) are available treatments and the aim of this review is to determine whether they are effective.

Search Terms/Methods

Medline, CINAHL, EMBASE, Psycinfo, PubMed, Cochrane Library and Google were searched with the terms 'vertebroplasty', 'balloon kyphoplasty', 'percutaneous', '(osteoporotic) vertebral fracture', 'spinal fracture'. 2032 results were obtained.

Included studies: comparative, participants' mean age \geq 65 years, PCV or BK performed, OVF as indication, pain and functional outcomes, English language.

Excluded studies: non comparative, non OVF indication, other outcomes.

Results/Appraisal

Five publications fit the inclusion criteria.

Author	N (Case, Control)	Similar Baseline?	Randomised?	Blinded?
Alvarez	128 (101,27)	No	No	No
Diamond1	79 (55,24)	Yes	No	No
Diamond2	126 (88,38)	Yes	No	No
Kasperk	60 (40,20)	No	No	No
Voormolen	34 (18,16)	Yes	Yes	No

Patients had acute and chronic OVFs. The controls in 4 studies were patients who refused intervention. Pain and function were improved significantly post procedure. Benefits persisted > 6 months in one study.

The randomised study reproduced improvements in crossover control group.

Several single blinded RCTs are ongoing.

Conclusions

Evidence for PCV and BK is limited by small cohorts, no randomisation or blinding, subjective outcome measures, selection bias and different baseline measures of case/controls.

CLINICAL EFFECTIVENESS

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VITAMIN D DEFICIENCY IN A FALLS CLINIC POPULATION

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Introduction

Vitamin D deficiency is common in older adults and has been related to an increased falls risk due to a number of effects. Vitamin D testing involves a relatively expensive blood test. Previous research has recommended a pragmatic approach of supplementing all attendees at a falls clinic with vitamin D. We wanted to see if a similar approach would be appropriate in our patient group.

Methods

We measured serum 25-hydroxyvitamin D levels on 114 consecutive patients attending the falls clinic. Drug history was obtained, including any vitamin supplements taken. All patients were over 65 years and had had at least one fall in the preceding year.

Results

78 patients (68%) had 25-hydroxyvitamin D levels <50nmol/L. Of the 82 not on vitamin D supplementation, 66 (80%) were deficient in vitamin D. Of the 32 patients already on vitamin D supplements, 12 (38%) were deficient in vitamin D.

Conclusions

The majority of patients not taking supplementation were deficient in vitamin D. Given the expense of checking 25-hydroxyvitamin D3 levels we would agree with blanket prescribing for these patients.

However, a significant number of patients already on supplementation were also found to be deficient in vitamin D. This raises the importance of patient education to improve compliance and suggests the requirement for follow up blood tests to assess the need for additional therapy. Further research is necessary on this group.

12

FRAGILITY FRACTURE SECONDARY PREVENTION

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Aim

Patients with fragility fractures are at highest risk of further fracture, though preventative treatment has been shown to reduce subsequent fracture incidence.

NICE recommended bisphosphonates as a treatment option in women 75 years or over without the need for prior DXA scanning (Technology Appraisal Guidance 87).

Method

We prospectively reviewed three different models of bisphosphonate prescribing on 108 patients who were discharged from our Trauma Units in 2007 to identify if NICE guidance was being followed.

Group 1 had no organised system.

Group 2 had discharge letter advice to the General Practitioner.

Group 3 had a Consultant Orthogeriatrician involved in the patient's care.

Results

Group 1 (47 women) only 12.7% were prescribed a bisphosphonate and only one of the discharge letters recommended commencing a bisphosphonate.

Group 2 (37 women) still only 24.3% were prescribed a bisphosphonate, despite 40.5% of the discharge letters recommending to.

However, **group 3** (34 women) 82.4% were prescribed a bisphosphonate by the Consultant Orthogeriatrician on the Trauma Unit.

This was a significant improvement in secondary prevention management according to Chi Square Test ($p < 0.001$).

Conclusion

Nice guidance regarding bisphosphonate prescribing is only being fully implemented within an Orthogeriatric Service. Only a minority of patients will have contraindications, allergies or be intolerant to bisphosphonates. Important deficiencies in local services have been identified with missed prescribing opportunities and inadequate communication between secondary and primary care.

13

DAY HOSPITALS - DIVERSIFY AND FLOURISH OR DISAPPEAR: A SURVEY OF CURRENT PRACTICE.

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Introduction

Day hospitals (DH) are outpatient health care facilities for older people in the community in which multi-professional treatment is available to full or part-time attendees. In 1994 guidance on the role of DH was produced by the RCP and BGS and in 2006 the BGS published recommendations on day hospital service provision. We undertook the following survey of DH practice throughout the UK.

Method

A data collection form covering the BGS recommendations was developed. The form plus a covering letter was e-mailed to 44 UK day hospitals. Non-responders were mailed again.

Results

21 (48%) responded, 2 purely psychiatric based DH were excluded. Of the 19 responders, 13 were in England and 3 each in Wales and Scotland.

Service provision is as follows:

Comprehensive assessment performed	84%
Specialist clinics provided	90%
Specialist procedures performed	42%
Rapid access admission avoidance clinics	42%
Access to consultant opinion	90%
On site radiology	73%
On site pathology services	47%
Regular input from allied health professionals	70%
Immediate access to social services	32%
Out of hours use	47%

Conclusions

This survey highlights variation in DH provision across the UK. In the present health economy, this valuable service is vulnerable. Therefore, a formal national audit of DH provision should be considered to optimise and standardise DH services.

14

DIGNITY - OLD CONCEPT, NEW MEANING

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Introduction

Dignity is multi-faceted and a crucial part of patient experience. The recently launched 'Dignity Challenge' promotes dignity for older people in healthcare (SCIE, DoH). Whilst it is recognised that patients often do not know what they should expect from healthcare services (SCIE, DoH), there has been little evaluation of service provider's perception of dignity. This study investigates whether there is any disparity between patients' and doctors' perceptions across key themes highlighted in the Dignity Challenge.

Methods

Modified validated Picker Institute Questionnaires (Jenkinson C et al, IJQHC 2002) were anonymously completed by patients (n=50) and doctors (n=20) over a 4 week period on a Medical Assessment Unit. Mean patient age was 70 years.

Results

Category	Doctors	Patients
Agree that adequate information about care given	82%	82%
Feel can approach Doctors with concerns	50%	22%
Offered privacy in consultation	90%	62%
Patient knows how to complain	75%	28%
Feel patient treated with dignity	50%	82%

Conclusions

Maintaining dignity and respect is fundamental to patient care, particularly in elderly patients, who are arguably the most vulnerable. Although doctors share perceptions of communication with patients, discrepancies exist in terms of privacy and complaints information-giving. Additionally, 50% of doctors do not feel patients are treated with dignity and respect in hospital. This emphasises the need for dignity training at both undergraduate and postgraduate levels, increasing awareness of dignity at the forefront of every consultation.

CLINICAL EFFECTIVENESS

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DEATH IN LONG-TERM CARE FACILITIES: ATTITUDES AND REACTIONS OF PATIENTS AND STAFF. A QUALITATIVE STUDY

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Background

Five percent of older persons are resident in extended-care facilities. Patients and staff in these residential settings frequently form close relationships, and the death of a patient can be traumatic for fellow residents and staff members. Despite this, resources and education in bereavement management have been lacking to date.

Aim

Our aim was to investigate the effect of such deaths on patients and staff in a 320-bed, long stay elderly care facility.

Method

In-depth qualitative interviews were conducted with 10 participants, ≤24 hours following a resident's death. 7 patients, 3 staff interviewed. Interviews were audio-transcribed, and analysed for recurring themes.

Results

9/10 interviewees were female, with age range 70-90 years in patients, 40-60 years in staff. Interviewees frequently described feelings of loss and inadequacy and the need for patients and family to have space and privacy during the dying phase. We identified a four-stage model describing the fellow patient grief reaction: (1) Remembrance, (2) Reflection, (3) Religiosity, (4) Relations.

Conclusion

The majority of participants experienced a grief reaction following the death of a resident. This highlights the need for bereavement care programmes in elderly care units, to allow appropriate care and support for other residents and members of staff. The personal views of all participants concurred vis-a-vis the physical environment in which the quality of end of life can be optimised, providing key indicators for care of the dying patient in long-stay residential facilities.

16

CREATION AND IMPLEMENTATION OF AN ONLINE REHABILITATION REFERRALS SYSTEM

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Background

The origin for this service development was a perception of difficulties in accessing rehabilitation system.

Innovation

A clinical audit showed wide variation in referrals for rehabilitation and a Delphi process was used to agree the content of a referral. There were four PDSA cycles: (1) Establishing a single access point and awareness raising, (2) Piloting an email based referral system, (3) Rolling out the email based referral system, forming a multidisciplinary assessor team and working jointly with the PCT, and (4) Implementing an online referral system with an integrated rehabilitation register.

Evaluation

In 6 months 500 online referrals were made – 2.7 referrals/day – from Medicine for the Elderly (28%), medical specialties (22%), surgery/orthopaedics (20%), A&E/acute (16%), neuroscience (11%), other areas (6%). The mean time to assess was 1 day. Most patients were 65 years or over (88%) and had high/medium nursing dependency levels (81%). Only 53% lived in the local borough. Patients were streamed to various rehabilitation services - hospital rehabilitation ward (46%), community rehabilitation unit (17%), community rehabilitation team (6%), or specialist/regional/national rehabilitation centre (2%). The rest did not require rehabilitation - 13% went home, 11% required an alternative service and 6% died.

Conclusion

This complex service development resulted in a simple online referral service for rehabilitation referrals which provides assessment and service streaming for a high volume of patients with various rehabilitation needs.

CLINICAL EFFECTIVENESS

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MULTI-DISCIPLINARY TEAM (MDT) RECORD KEEPING AUDIT IMPROVES PRACTICE IN REHABILITATION OF OLDER PEOPLE

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Problem

Multidisciplinary comprehensive assessment and management of older people results in good clinical outcome. We audited how well we are adhering to recording of data in the proforma.

Design

A structured proforma was produced, in consultation with MDT staff for recording MDT assessment. Main objective of the audit was to test compliance with agreed standard.

Settings

Both cycles: Retrospective, audited the 2nd MDT meeting post admission on patient in rehabilitation ward.

Improvement measures

Result presented to the staff highlighting suboptimal performance. A minimal standard for documenting MDT meeting was agreed. 2nd cycle carried out after an interval of 3months.

Change strategies

Minimal standards agreed after 1st audit:

- ◆ Patient details, principal diagnosis/problems should be recorded completely -- 100%
- ◆ Basic functional scales to be vs 78 (MTS, GDS, Barthel, Waterlow, Falls risk score, Nutritional score)
- ◆ Chair should sign & date MDT proforma.

Change effects

100% compliant in recording of MDT goals & action plans vs 68% in 1st cycle.

Sign & date of chair present in 97.6% vs 22.5% in 1st cycle.

Documentation of diagnosis in 83% vs 78% in 1st cycle.

Conclusions

Use of standardized structured proforma for recording MDT discussion, results in better documentation and management planning. It also improves interdisciplinary communication of action plan following MDT. 3rd cycle already planned in PDSA (plan do study act) style to show continued development in MDT practice.

18

COPE: AN EVALUATION OF A NEW WAY OF DELIVERING CARE AT THE PRIMARY - SECONDARY CARE INTERFACE

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Background

Government papers suggest we move care out of hospital into the community. PCTs are keen to avoid emergency admissions. There is uncertainty over the role of the Day Hospital.

Innovation

The COPE (Care of Older Persons Excellence) service is a rapid access clinic for multidisciplinary assessment in a day hospital. The clinic is staffed by a GPwSI in geriatrics, nurses and therapists and is supported by strong links with intermediate care and the local hospital geriatric department.

The service provides a comprehensive geriatric assessment, and accepts patients over the age of 65, from GPs, intermediate care, community nurses and social workers.

Evaluation

We evaluated 290 referrals, where the referrer indicated that their normal course of action would have been an emergency admission. Only 31 of these referrals resulted in a secondary care inpatient admission. The COPE service cost £143,774. The predicted cost of the admissions avoided, based on primary diagnosis HRG codes, was £979,978, giving a saving of £836,209.

A smaller longitudinal study followed 20 patients and compared their rate of admissions 3 months prior to COPE and 3 months after assessment. This group had 18 admissions before assessment and 4 after, including 2 arising directly from assessment.

Conclusion

This innovative way of delivering services to elderly people in the community avoids inpatient admissions, is associated with substantial cost savings, and may have lasting benefit.

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OUTCOME OF ERCP IN PATIENTS OVER 85 YEARS OF AGE

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Introduction

Very elderly patients (>85 years) are at higher risk of mortality/morbidity post-ERCP; at times risk outweighs the benefit. A retrospective analysis to identify three-month outcome of ERCP was undertaken.

Methods

Patients over 85 who underwent ERCP over a four-year period (July 2003 - July 2007) identified from the database and followed up to three months post-procedure.

Results

86 ERCPs (M: F 24:62) undertaken in 66 patients (57 emergency and 29 elective). 35 had co-morbid diseases (53%). All intended to have therapeutic benefit; 23 sphincterotomies with stone/debris removals, 29 sphincterotomy and stenting, 19 replacements of existing stents done; 14 unsuccessful of which 9 due to failure of cannulation of duct and 5 due to failure of the intended therapy. One with no visible biliary obstruction was referred for cholecystectomy.

All cause mortality within three months was 22% of which 3.4% were procedure related. Post-ERCP biliary sepsis was 8% of which 3.4% fatal; 2.3% had non-fatal bleeding and 1.2% had pancreatitis.

Conclusion

ERCP is a high-risk procedure in the very elderly. All cause mortality post procedure was as high as 22% in our patient group. Contrary to the existing data (5 % pancreatitis, bleeding, perforation), our leading complication was biliary sepsis (8 %).

The benefits over risk should be thoroughly evaluated before undertaking the procedure.

Further multi centre analysis is required to confirm the data obtained in our study.

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THE EFFECT OF DEVELOPING SPECIALIST PARKINSON'S DISEASE SERVICES ON THE RELIABLE PROVISION OF MEDICATION TO HOSPITAL INPATIENTS: A COMPLETED AUDIT CYCLE

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Problem

Maintaining maximal function in Parkinson's disease (PD) often depends upon an individualised regimen of PD medication. Hospital admission may disrupt this.

Design

In 2004 we conducted an audit of the reliability with which hospital inpatients receive PD medication. Local PD services were reorganised in 2005-2006. The audit was repeated in 2008.

Setting

Northern General Hospital, Sheffield.

Improvement measures

Documentation of preferred drug times; time to first in-hospital medication dose; dose omissions; using alternative administration routes and self-medication.

Change strategies

Improving service integration. Notably establishing a PD stakeholder group and recruiting a PD nurse specialist.

Change effects

Following the change strategies, fewer patients experienced a delay in receiving their first in-hospital dose of PD medication (36/98 v 70/99, p<0.001) and the delay was shorter (median 11 (2-135) v 20 (1-166) hours). Fewer experienced a subsequent dose omission (36/98 v 85/103, p<0.001) with fewer omissions per patient (median 0 (0-56) v 4 (0-78) omissions, p<0.001). Most common reasons for drug omissions (after v before) were: drug unavailable (5/36 v 71/85, p<0.001), patient unable (18/36 v 8/85, p<0.001) and patient NBM (9/36 v 11/85, NS). There was increased use of alternative administration routes (7/98 v 1/99, p<0.05) but no increase in recording preferred drug times or self-medication.

Conclusions

This study demonstrates service improvement, most strikingly reduced delay in receiving the first in-hospital dose of medication and in subsequent dose omissions.

CLINICAL EFFECTIVENESS

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PROBIOTICS FOR THE PREVENTION OF CLOSTRIDIUM DIFFICILE DIARRHOEA IN AN ELDERLY INPATIENT POPULATION

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Introduction

Clostridium Difficile (CDD) is the leading cause of nosocomial diarrhoea and is associated with a high morbidity and mortality, particularly in elderly patients. Strategies for the prevention of CDD are limited. This review of practice aimed to assess the effect of probiotic use on CDD incidence in an elderly inpatient population.

Methods

Two hundred and thirteen patients receiving antibiotics on admission to the geriatric unit at the Royal Sussex County Hospital between November 2007 and January 2008 were prescribed a probiotic drink. The drink containing Lactobacillus Casei, Lactobacillus bulgaricus and Streptococcus Thermophilus was prescribed twice daily for the duration of the antibiotic course and for seven days after according to trust protocol. The incidence of CDD was recorded and compared with the incidence between November 2006 and January 2007.

Results

A reduction in CDD incidence was observed in this population (mean age 88yrs) following the introduction of probiotic. In comparison, the incidence of CDD increased in other wards within the hospital where probiotic was not available. All wards were subject to the same antibiotic prescribing and hand hygiene policies.

Wards	Rates CDD / 1000 Bed Days	
	Nov - Jan 06/07	Nov-Jan 07/08
Elderly Care Unit	5.76	3.28
Other Wards	2.72	3.51

Conclusions

Probiotics may reduce CDD incidence in an elderly inpatient population. Further evidence from a large placebo controlled trial is required to evaluate the role of probiotics in CDD.

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STROKE SURVIVORS PREFERENCE FOR LONG-TERM REVIEW AFTER STROKE. A PILOT STUDY

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Introduction

Stroke care is complex, requiring multiprofessional input. The National Service Framework (1) recommends stroke survivors to be reviewed 6 months after stroke. What is not described is how, where and by whom this should take place.

Objectives

To determine stroke survivors' preferences for follow up.

Methods

Patients completed a questionnaire regarding their preference for follow up six months later.

Results

68 Stroke Survivors completed the questionnaire. 51(75%) were above 65 years. 25(37%) were working prior to admission. 60 (88%) patients preferred a review by a Stroke Consultant as first preference and 43(63%) were happy to see a Specialist Stroke nurse. 21 (32%) would be content to be reviewed by the stroke team or GP. 56 (82%), wished to be reviewed in hospital clinic during working hours. 23 (34%) patients will find a telephone call which might be followed by a hospital visit most satisfactory. However majority did not value an email or mobile phone text (47&56) (69%& 82% respectively).

Conclusions

Most of the patients were retired. This may reflect the wish to be followed up during the day and by the hospital consultant, rather than other members of the team or the use of newer technology. A larger study, with a greater cross-section is planned to test this hypothesis.

References

1. Department of Health. National service framework for older people. London: DoH, 2001.

CLINICAL EFFECTIVENESS

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NEW WAYS TO IMPROVE TIA CLINIC SERVICES

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Introduction

Getting the timing right is the essence of Transient Ischaemic Attack treatment. We attempted to improve the existing TIA services through an audit cycle in a district general hospital in North Wales.

Reason for the Audit

To look for:
Time Delay in the referrals
Appropriateness of the referrals
Delay in Radio-imaging
Use of ABCD scoring system in Prioritizing Reviews

Design & Setting

An audit cycle consisting of an initial randomised retrospective audit of 42 cases. Which led to proposal and implementation of changes. And then re-audit of the changes by looking into 58 cases with similar parameters as in the initial audit.

Findings of the Initial Audit

Average delay from GP referral to Specialist review = 10 Days
60% had ABCD score of > 4
69% concordance in GP's TIA diagnosis
55% patients had CT Brain after 4 weeks
69% patients had carotid Doppler after 2 weeks

Change Strategies

New TIA clinic Proforma and treatment protocol
Trust-wide Educational sessions
Negotiation with Radiology, Vascular Surgery, Arrhythmia Nurse and anticoagulation clinic

Change Effects Noticed in the Re-Audit

Average delay from GP referral to Specialist review was reduced to 5 Days
21% Patients had ABCD score of > 4
67% concordance in GP's TIA diagnosis
Only 24% had CT Brain after 4 weeks
68% had carotid Doppler before 2 weeks

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AMBULANCE STAFF AND MANAGEMENT OF ACUTE STROKE

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Introduction

Recently published National Stroke Strategy (1) emphasises the need for improvement of management of hyperacute phase of stroke. Ambulance staff have an important role in the detection, dispatch and delivery. In addition, they can start some simple measures which could improve outcomes. The aim of this audit was to assess their awareness about emergency response requirements, prehospital detection and 'general intervention' as per Royal Colleges of Physician guidelines for management of acute stroke(2004), Joint Royal Colleges Ambulance Liaison Committee/Ambulance Service Association UK Clinical Practice Guidelines(2004).

Methods

A questionnaire was sent to 220 paramedics/ technicians by West Midlands Ambulance Trust Audit Department via paramedic mentors. 83 completed questionnaires were returned.

Results

84.3% had received training in stroke management. 91.7% were aware of the above guidelines. 97.6% were aware of face arm speech test but only 80.6% relied on it. Only 63.9% believed that blue light transportation to hospital was essential. 83.1% said that Oxygen saturation check and correction of hypoxia was essential. 96% considered a blood sugar check was necessary. 38% thought that temperature check was not important.

Conclusions

Development of skilled workforce for acute stroke care is one of the main ten points in national stroke strategy. As a result of this audit West Midlands Workforce Development Deanery is launching a training programme for the ambulance staff.

Reference

(1) National Stroke Strategy. Department of Health. 2007

CLINICAL EFFECTIVENESS

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A COMPLETED AUDIT OF MEDICAL STAFF KNOWLEDGE OF DRIVING RESTRICTIONS FOLLOWING STROKE, TRANSIENT ISCHAEMIC ATTACK AND UNEXPLAINED COLLAPSE

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Problem

Strokes and Transient Ischaemic Attacks (TIA) are common. Both potentially affect patients' ability to safely perform routine tasks such as driving. The DVLA restricts driving following these events and doctors have a legal and ethical obligation to inform patients of these restrictions. Our aim was to assess whether medical staff possess accurate knowledge of driving restrictions following stroke, TIA and unexplained collapse.

Design

A multiple choice questionnaire was distributed to medical and A+E staff in March 2007 (n=34) and January 2008 (n=39). The questionnaire was completed and returned by all staff immediately to improve yield and reduce bias.

Setting

District General Hospital in Macclesfield, Cheshire.

Improvement Measures

Improvement in awareness should enable medical staff to pass on accurate information to patients.

Change Strategies

Initial data was presented at our local audit meeting. Formal teaching sessions for clinicians were held. The TIA pro-forma was changed, including a driving information sheet for discharged patients who suffered a TIA.

Change Effects

	2007 correct	2008 correct
Restriction post stroke	100%	100%
Restriction length post stroke	29%	36%
Restriction post TIA	79%	90%
Restriction length post TIA	38%	62%
Restriction for unexplained collapse	50%	74%

Conclusions

There has been improvement in awareness of clinical staff, but knowledge is still inadequate. Regular teaching sessions are necessary to ensure continued improved awareness of the issue. An audit of patients regarding driving advice received is needed.

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AUDIT OF MANAGEMENT OF DYSPHAGIC STROKE PATIENTS ON NIL BY MOUTH ORDER

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Problems

Dysphagia is common in hospitalised stroke patients and can adversely affect outcome. There is uncertainty regarding the appropriate timing and route for food and drug administration. Feed Or Oral Diet (FOOD) Trial has shown that early naso-gastric tube (NGT) administration and late PEG insertion is beneficial in these cases. Current practice of management of dysphagic stroke patients on nil by mouth order was audited in an integrated stroke unit.

Design

Two cycles of prospective audit undertaken with pre-designed proforma, data collected by two doctors with independent analysis.

Setting

Integrated stroke unit.

Improvement measures

To ensure all dysphagic patients on nil by mouth have early NG tube insertion for adequate food and drug administration

Change strategies

Result of FOOD trial presented to the stroke unit staff, early swallow assessment by stroke coordinator, training more nursing staff as dysphagia trained nurse (DTN), repeatedly emphasizing the importance of early NGT and to decide on PEG referral in MDT in conjunction with Speech and Language Therapists.

Change effects

18% (cycle1) and 24% (cycle 2) - dysphagic on nil by mouth. 100% compliance in early (within three days of stroke) NGT insertion in both cycles.

Conclusions

Increasing awareness among staff and decision making through MDT helped to achieve and maintain evidence based good practice in stroke unit. To continue regular teaching and education programme and develop local guideline to ensure continuous quality improvement.

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ASSESSMENT FOR PERIPHERAL ARTERY DISEASE (PAD) OF PATIENTS ADMITTED TO AN INTEGRATED STROKE UNIT – HOW ARE WE DOING?

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Problem

Peripheral artery disease (PAD) is independently prognostic for mortality/morbidity, part of generalised artery disease and neglected; lack of symptoms does not indicate better outcome; appropriate treatment improves prognosis.

To establish the baseline of PAD assessment on our Stroke Unit and take improvement measures.

Design

Two assessors recorded data from notes and assessed for PAD. Repeated audits thereafter took snapshots of documented PAD assessment. 54 patients assessed (30 female), median age 76 (female 78, male 72). Only 8 (14.8%) had PAD assessment recorded on generic integrated care pathway (ICP) used. 9 had suspected or confirmed PAD (PAD group; median age 74 years; 3 male). 5 had ankle-brachial pressure index (ABPI) requested (4 inappropriate for tests), only 2 performed. In PAD group 6 were smokers (versus 24.4% non PAD group), 3 died (versus 5 from 45), none received Clopidogrel.

Setting

Integrated Stroke Unit in a large District Hospital.

Improvement measures

Address poor awareness of PAD by education, training, introduction of stroke ICP, improving availability of ABPI measurements and performing continuous Plan-Do-Study-Act (PDSA) cycles.

Change strategies

Education; introduction of Stroke ICP. To introduce ABPI measurements on ward.

Change effects

In March 2008 26% and in May 58% of patients had PAD assessment documented (23% and 35% respectively on admission).

Conclusion

Demonstrated that in a Stroke Unit, PAD assessment remains suboptimal, availability of ABPI is poor and simple measures are effective.

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KNOWLEDGE OF HYPERTENSION AMONG COMMUNITY DWELLING STROKE PATIENTS

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Introduction

Hypertension is a very prevalent and modifiable risk factor in stroke. Patient awareness of hypertension may be poor even after a stroke [1]. Principle target for patient education/treatment in our stroke-service. We assessed knowledge among our community patient population after discharge.

Methods

Patients returning to clinic 1-2 years after stroke invited to complete a questionnaire anonymously.

Results

100 participated. 56% aware term "hypertension" meant 'blood pressure'. 14% unaware hypertension can be asymptomatic; 11% unaware of any symptoms of hypertension. 90% aware lowering blood pressure could improve health. 65% realised blood pressure a risk factor for heart attack and stroke; 8% stroke only; 9% heart attack only; 9% unaware of risks of high blood pressure. 27% aware of current BP targets. 36% aware of targets incorrect in target range. 37% unaware of BP targets. Only 30% knew their recent blood pressure reading. 85% aware blood pressure could be controlled; 38% patients unaware of lifestyle measures to lower blood pressure. 37% aware exercise/diet effective in reducing blood pressure. Only 5% aware smoking cessation could help control BP. 27% were still smoking.

Discussion

Survey highlights despite having suffered a stroke and being given secondary preventative advice while in hospital, that knowledge of blood pressure and lifestyle measures is poor after discharge and smoking levels are high. Continued patient education is required after hospital discharge.

1. A Croquelois, J Bogouslavsky :JNNP 2006;77:726-728)

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ADVICE TO PASSENGERS FLYING AFTER A STROKE? CURRENT PRACTICE

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Introduction

Geriatricians are often asked to advise about flying after stroke. Little published evidence and guidelines vary. We assessed frequency, nature and basis for advice given.

Method

Survey Irish geriatricians and neurologists. e-survey of British Association of Stroke Physicians.

Results

105 consultant replies. 51% geriatricians, 20% neurologists, 29% general /stroke physicians. 18% asked for advice weekly, 42% monthly;37% quarterly (3% never). After stroke 8% recommended no flying within a week; 22.4 % a month; 55.1% 2-3 months; 12.2 % 6 months. 44.7 % would allow flying sooner after TIA. 34% differentiate between short and long haul flights.53.3% respondents base their advice on 'experience / colleagues', 13.3% on literature and driving regulations as proxy respectively with only 6.7 % quoting airline sources for advice. 70% give additional advice to ischaemic stroke patients; prophylactic LMWH (8.9%) increased dose of antiplatelet (6.7%), maintaining hydration (86.7%), alcohol avoidance (66.7%), anti-thrombotic stockings (42.2%), exercising limbs (73.3%). 31.1 % give non-medical advice re airline regulations/travel insurance . 13% respondents aware of patient suffering a stroke and 6.7% a post-stroke complication while flying; 46.7 % aware of patient difficulty getting travel insurance after a stroke.

Conclusion

This is a common request for advice. Most recommend no flying for 1-3 months, advice based on 'experience/ colleagues'. 70% give additional medical advice when flying and many respondents aware of travel insurance difficulties for patients after a stroke. Need consensus guidelines.

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EARLY RESPONSE SERVICE

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Background

The Early Response Service (ERS) is a multidisciplinary team aimed at providing a rapid, holistic assessment of elderly patients in the community.

Innovation

The ERS consists of two arms. One based in the community led by a nurse practitioner. The referral system has a single point of contact and patients are assessed in their homes within 4 hours. If required the patients are referred for a medical opinion and multidisciplinary assessment to the Elderly Day Hospital (EDH) with constitutes the second arm of the service.

Evaluation

The total number of referrals received from September 2005 April 2008 is 3997 of which 1604 (41%) were assessed in their own homes. Average age was 80 years. Most of the referrals were from the Local Accident Centre 533/1604(33%) and General Practitioners (GPs) 802/1604 (50%). Following assessment 418/1604(26%) attended EDH, 132/1604 (8%) were admitted to a community rehabilitation unit and 130/1604 (8%) had to be admitted as acute admissions. The remaining were maintained in the community. On referral the GPs stated that they would have admitted 609/802(76%) of this 104/609 (17%) were admitted. Bed days saved was 2525 equating to 9 beds. In addition both GP and patient questionnaires were extremely positive.

Conclusion

The ERS has worked successfully with various agencies to maintain the independence of patients in the community, prevent acute medical admissions and provide a holistic assessment for the frail elderly

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KNOWLEDGE PERCEPTIONS AND ATTITUDES TOWARDS OSTEOPOROSIS AMONGST NURSES-A QUALITATIVE STUDY

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Introduction

Healthcare providers, particularly nurses require an adequate knowledge of osteoporosis to enable application in patient education during disease prevention and management. Except for one study from Ireland, there is no other published literature from the United Kingdom exploring nurses' knowledge on osteoporosis.

Aim

Gain an understanding of hospital nurses' knowledge, their perceptions, attitudes and experiences in tackling this disease within their role. Ultimately, to determine educational and training needs in planning future programmes.

Methods

16 registered nurses were recruited from Accident / Emergency, Fracture clinic and two orthopaedic wards in a UK hospital. Data was collected by semi-structured qualitative interviews. Knowledge was assessed from a wide variety of areas related to osteoporosis. Taped responses were analysed based on themes and key issues emerging from the data.

Results

Major gaps in nurses' osteoporosis knowledge were identified in the definition, risk factors, recognition, consequences, treatment and prevention. Several misconceptions were noted. The majority had positive attitudes and understood their role in patient education. Barriers to acquiring knowledge and tackling the disease were also recognized. Almost all respondents agreed the need for further education.

Conclusion

The deficits identified in nurses' osteoporosis knowledge provide a framework for developing educational programmes. The findings should encourage educators to develop and enhance existing curricula at nursing universities and provide continuing in house training opportunities. Educating nurses can play a pivotal role in improved osteoporosis management amongst fragility fracture patients.

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THE RELATIVE IMPORTANCE OF DEMOGRAPHIC, SOCIO-ECONOMIC, PHYSICAL AND PSYCHOLOGICAL FACTORS IN EXPLAINING SOCIAL INTEGRATION WITH RELATIVES, NEIGHBOURS AND FRIENDS IN A NON-RANDOM SAMPLE OF IRISH COMMUNITY-DWELLING OLDER PEOPLE

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Introduction

The multi-dimensional study of social integration is a Critical Research Area (UN & IAGG 2007). We contribute with a cross-sectional design that explains variance in a geriatric social network instrument, the Lubben Social Network Scale-18 (LSNS18). LSNS18 is normally distributed and explores integration with relatives (LSNS18r), neighbours (LSNS18n) and friends (LSNS18f). We compared how factors in five domains explain variance in these subscales.

Methods

Subjects: 162 participants attending TRIL (August 2007–April 2008); mean age 74.3 (all≥60); 67.3% females; MMSE≥23. Predictors(steps): Demographic (1): age/gender; Socio-economic (2): living alone/working class/driving status; Physical (3): visual acuity (binocular LogMAR)/hearing ability (audiometry)/balance (Berg); Psychological (4): depression (CESD-8)/emotional loneliness (De Jong-Gierveld); Personality (5): extraversion/neuroticism (Eysenck Questionnaire).

Results

Three hierarchical linear regression models were computed. RELATIVES: only step 5 contributed significantly; the global model predicted 11.5% of variance; extraversion (positive) and neuroticism (negative) were the strongest predictors. NEIGHBOURS: none of the steps contributed significantly; the global model predicted 5.1% of variance, at the expense of extraversion. FRIENDS: all steps contributed significantly ($p < 0.01$); the global model predicted 22.6% of variance (physical 2.5%, psychological 3.8%, socio-economic 4.2%, demographic 5.9%, personality 6.2%); loneliness (negative) and extraversion (positive) were the strongest predictors.

Conclusions

The explanation of patterns of social integration and the design of interventions in the field of social isolation necessitate a multi-disciplinary approach. This is particularly true for friends. Personality factors are prominent, indicating the need for longitudinal research with a lifespan approach.

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OLDER PEOPLE'S PREFERENCES ON THEIR HOSPITAL ENVIRONMENT AND DAYTIME CLOTHING IN HOSPITAL

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Introduction

There is a common belief that many older people prefer not to be in single rooms when in hospital and that as in patients' they should ideally wear their own clothes when possible. We sought older in patients' opinions.

Methods

We administered a brief questionnaire to medical inpatients. Patients were encouraged to discuss confidentially their preferences.

Results

We interviewed 100 people (40% male, median age 80 years), 43 in rehabilitation, the remainder on medical and geriatric wards.

69% preferred a 6 bedded ward, 13% would prefer a single room and the remainder rooms of intermediate sizes. 84% of patients agreed that they enjoyed others' company on the ward, while 24% found other patients occasionally disruptive.

70% preferred to wear their own clothes and 25% preferred to wear their own night attire during the day. Only one patient preferred to be dressed in a hospital gown. 64% felt what they wore affected their sense of wellbeing.

48% preferred to wear their shoes and socks, 45% slippers and 3% to go barefoot. Choice of footwear correlated with what they wore at home ($r = 0.315$, $p = 0.001$) and 60% wanted to wear in hospital what they usually wore at home

Conclusion

This study supports the perception that most older in patients prefer wearing their own clothes and footwear in hospital. Gowns aren't popular. Most prefer larger wards to single rooms.

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WHAT'S IN A NAME? A QUALITATIVE STUDY OF CARE HOME NAMES IN YORKSHIRE

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Introduction

As care providers compete to attract clients with marketing tactics, we looked at their use of 'brand names' for care homes. This type of study has never been done before.

Methods

Care homes for adults age 65 years and over were identified within the following local authorities: Calderdale, Leeds, Kirklees, North Yorkshire, Wakefield and York using the website of the commission for social care inspection. (www.csci.org.uk) Care home names were analysed to identify themes.

Results

765 Care homes were identified. 211 were excluded because they were solely for adults under 65 years of age. 339 (61%) did not mention the term 'care home' or equivalent. 18 themes were identified and 44 care homes had no obvious theme. The most common themes concerned geographical location 168 (30%), outdoor imagery 109 (20%) and tree 74 (13%). Care home names were duplicated within 5 local authorities.

Conclusions

Naming of care homes is influenced by geographical descriptors. This reflects the importance of maintaining roots within local communities or may suggest unimaginative marketing. The duplication of names amongst local authority areas is confusing and may cause inconvenience to clients. Care homes do not identify their purpose within their title, because this may have negative connotations within society. Future studies should focus on whether the naming of care homes influences the preferences of older people in selecting a care home.

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**HUNGRY TO BE HEARD TOO?
NUTRITIONAL CORRELATES OF SOCIAL
ISOLATION IN A NON-RANDOM SAMPLE
OF 95 IRISH COMMUNITY-DWELLING
OLDER PEOPLE**

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Introduction

In the UK, 11-17% of older people are socially isolated (Victor 2005). Lack of support from relatives, neighbours and/or friends may increase vulnerability to malnutrition. To test this, we compared isolated and non-isolated elders on some nutritional measures.

Methods

Subjects: all TRIL Clinic participants between August'07-January'08 (N=105, mean age 75.4). All were community-dwelling and provided consent. Definition of isolation: <30 points on the Lubben Social Network Scale-18. Nutritional measures: Body Mass Index (BMI), mid-arm and mid-calf circumferences, grip strength, Mini-Nutritional Assessment (MNA®), and serum Ferritin, Red Cell Folate (RCF), Vitamin B12, Albumin and Insulin-like Growth Factor-1 (IGF-1). Mann-Whitney was used to compare means and Fisher's Exact for proportions.

Results

LSNS18 scores on 10 subjects were missing. Of the remaining 95, 12 were isolated (12.6%). Isolated and non-isolated did not significantly differ in gender and mean values for age, basic Activities of Daily Living score, age-adjusted Charlson Comorbidity Index and self-reported income. Nutritional measures: Abnormal MNA® (at risk of malnutrition or malnourished, found in 9% of the total sample) was closely associated with isolation ($p=0.005$, $OR=12.5$, $95\%CI\ 2.48-62.93$). The isolated had lower IGF-1 mean ($p=0.038$). Mid-arm circumference approached significance ($p=0.057$, isolated lower). The other differences were not significant.

Discussion

Isolated elders seemed to have a worse nutritional profile. Implications emanate for geriatric and public health practitioners.

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**IS THERE EVIDENCE OF AGE OR
GENDER BIAS IN CORONARY
REVASCULARISATION RATES FOR
ACUTE CORONARY SYNDROMES?**

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Introduction

Early coronary revascularisation reduces adverse outcomes in high-risk patients with acute coronary syndrome (ACS). The objective of the study was to look for evidence of age or gender bias in the decision to perform urgent angiography and/or percutaneous coronary intervention (PCI) in ACS.

Methods

200 patients (70% male, mean age 66 years) with ACS were prospectively recruited from a coronary care unit (CCU). Risk of in-hospital recurrent myocardial infarction or death was measured using the GRACE tool. In those who underwent urgent angiography, the GRACE predicted risk was compared across three age groups (<60, 60-70, or >70 years) and by gender using chi-squared test.

Results

Mean ages for those that did and did not receive urgent angiography were 64.0 and 67.3 years respectively (t -test, $p=0.06$). Mean ages for those that did and did not undergo PCI were 64.9 and 65.8 years ($p=0.63$). However, the average GRACE risk in those undergoing urgent angiography and/or PCI rose with age ($p<0.01$). The proportions of those aged <60, 60-70, or >70 years with a GRACE risk>5% who underwent urgent angiography were 85%, 68% and 55% respectively ($p<0.01$). No such differences by gender were seen.

Conclusions

Differences by age in those undergoing aggressive or conservative management were small. However, a higher risk threshold for aggressive intervention was applied in older people, even in this highly selected sample who were admitted to a CCU.

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THE OLDER PATIENT WITH ACUTE CORONARY SYNDROME IN CCU

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Introduction

For many years some Coronary Care Units (CCU) had admission criteria negating access to older people with acute coronary syndrome (ACS). There are few data describing risk profiles and outcomes of older people with ACS admitted to the CCU.

Methods

Risk factor profiles and in-hospital outcomes of 200 volunteers recruited in a CCU-based observational study of risk stratification strategies in ACS were obtained prospectively. The study cohort was divided into those aged under or over 65 years of age.

Results

Older patients generally had more risk factors and a higher overall risk profile – the median (interquartile range - IQR) GRACE Model predicted risk of in-hospital recurrent myocardial infarction or death was 13% (7%-22%) in those aged 65 or over, compared with 8% (4%-16%) in those aged under 65 (Mann Whitney U-test, $p < 0.001$). Median (IQR) lengths of stay were significantly longer in the older group (5 (3-9) days vs 4 (2-6) days, Mann-Whitney U test, $p = 0.001$). However, the observed rate of in-hospital recurrent myocardial infarction or death was the same in older (4/115 = 3.5%) and younger patients (3/85 = 3.5%).

Conclusions

Older patients in CCU had a higher risk profile and longer length of stay than younger patients but similar rates of recurrent myocardial infarction and death. These results support the abolition of age-based admission criteria to CCU.

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HEART RATE VARIABILITY IN RESPONSE TO HOME ORTHOSTATIC TRAINING IN VASOVAGAL SYNCOPE: A RANDOMISED, PLACEBO-CONTROLLED PILOT STUDY

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Introduction

Orthostatic training has been advocated as a treatment for vasovagal syncope (VVS) but its benefits and mechanisms of action have never been evaluated against placebo. We conducted a placebo controlled pilot study to determine the effects of home orthostatic training (HOT) on heart rate variability (HRV).

Methods

22 subjects with recurrent VVS were randomized to 6 months' daily HOT for 40 minutes or sham training. Heart rate variability during 10-minutes' supine rest was assessed at baseline, one week, four weeks and six months. Symptoms were recorded in event diaries.

Results

22 subjects, aged 18 to 85, were randomized to HOT (n=12) or placebo (n=10). 4 (33%) subjects in the intervention arm and 5 (50%) subjects in the placebo arm had syncope recurrence. There were significant improvements in high frequency (HF) HRV and total spectral power density after one week of training for HOT vs. placebo (median week1/baseline ratio= 2.50 vs. 0.66, $p < 0.05$ and 1.63 vs. 0.59, $p < 0.05$ respectively). Low frequency (LF) HRV was also significantly improved from baseline following four weeks of training (median week4/baseline ratio= 2.61 vs. 1.20, $p < 0.05$). There was no additional improvement in HF, LF or total HRV between week 4 and week 24 ($p = 0.626$; $p = 0.845$; and $p = 0.922$).

Conclusion

Orthostatic training enhances parasympathetic (HF-HRV), sympathetic (LF-HRV) and overall autonomic tone in patients with VVS. Maximal benefits were observed at 4 weeks, but sustained at 24 weeks.

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IS THERE AN ASSOCIATION BETWEEN SARCOPENIA AND CARDIOVASCULAR DISEASE?

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Introduction

Sarcopenia is defined as the loss of muscle mass and strength with age. It has serious adverse health consequences in terms of mortality and morbidity and previous work has shown associations with both type 2 diabetes and metabolic syndrome. However its relationship with cardiovascular disease (CVD) has not been explored. We used data from the Hertfordshire Cohort Study to test the hypothesis that sarcopenia is associated with CVD in older men and women.

Methods

We studied 1,579 men and 1,418 women born between 1931 and 1939. Trained researchers used standardised questionnaires and an electrocardiogram grading protocol to identify participants with established CVD (typical angina, previous bypass surgery or presence of significant Q-waves on ECG). Information was also collected on co-morbidity and lifestyle (smoking and alcohol history, physical activity). Sarcopenia was characterised by measurement of grip strength and anthropometry included measurement of weight.

Results

225 (15%) men and 127 (9%) women had CVD. CVD was associated with lower grip strength in women (average grip strength 24.9kg vs 26.7kg for those with and without CVD, $p=0.001$) but not in men. The relationship among women remained significant after adjustment for age, weight, lifestyle and physical activity ($p=0.04$).

Conclusions

We have shown a significant association between sarcopenia and cardiovascular disease in older women. The association was not replicated in men. Replication and investigation of potential underlying mechanisms are the next stage for this research.

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24 HOUR HOLTER MONITORING IN AN ISCHAEMIC STROKE POPULATION

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Introduction

Previous studies have revealed a low rate of detection of occult AF with Holter monitoring. We aimed to evaluate the incidence of paroxysmal atrial fibrillation (PAF) in our stroke population as diagnosed by a 24-hour Holter.

Methods

Using our stroke register, we reviewed the records of all ischaemic stroke patients admitted in 2007. We examined the reports of all holter monitors completed and medical notes and electrocardiograms of those with abnormal holters.

Results

175 patients with ischaemic strokes were admitted under our service in 2007. Their average age was 66.8 years. The majority were female (52.6%). 49 patients (28%) had known AF/PAF. Of the remainder, 128 had holter monitoring of whom 10 (7.8%) revealed occult AF/PAF. Minnesota Code Classification confirmed 8 of these to have an abnormal admission electrocardiogram.

Conclusion

Under-recognition and treatment of AF in stroke patients increases the recurrence risk. We observed 7.8% detection of new AF with 24-hour Holter. This is at the higher level of previous reports, both Irish and a systematic review (1, 2), and should prompt increased vigilance. Recent studies have suggested additional methods that could be employed to improve detection including serial ECG assessments (3) and prolonged monitoring (4). Better strategies for detecting occult AF must continue to be explored if we are to improve secondary stroke prevention.

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VASCULAR COMPLIANCE AS A PREDICTOR OF END-ORGAN DAMAGE IN POORLY CONTROLLED HYPERTENSIVE OLDER PATIENTS

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Introduction

Previous studies have shown that poor blood pressure (BP) control is associated with worse end-organ damage. Ambulatory blood pressure monitoring (ABPM) measures the Q-KD interval (time between the Q wave and arrival of diastolic Korotkoff sound). QKD as a marker of vascular compliance offers additional information in assessing cardiovascular risk in elderly patients. We hypothesize that higher Q-KD predicts renal impairment in poorly controlled elderly hypertensives.

Methods

We studied a group of 50 elderly patients (age>60 years) with poor blood pressure control at baseline (BP>140/90) according to British Hypertension Society Guidelines. All patients had ABPM, blood tests for renal function and 25 patients had ECGs. Ambulatory measurements recorded the QKD interval, which was corrected for a systolic BP of 100 mmHg and a heart rate of 60. Ambulatory 24 systolic and diastolic BP, clinic BP, dipping status, LVH, serum creatinine and QKD-c were correlated using SPSS version 14 (Chicago, USA).

Results

Fifty patients were recruited (42% males, average age 71.6 years, SD +6). There was a significant and independent correlation between QKD-c and plasma creatinine (r=0.35, p=0.01), clinic DBP (r=0.34, p=0.02), and 24 hour DBP (r=0.34, P=0.02). There was a weak association between QKD and LVH (r=0.14, p=0.53), and between QKD-c and abnormal dipping patterns (r=0.20, p=0.48).

Conclusions

Higher QKD-c as a marker of vascular compliance is associated with renal impairment in elderly poorly controlled hypertensives.

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EDUCATIONAL NEEDS ASSESSMENT OF FP1 DOCTORS IN RELATION TO CARE OF OLDER PEOPLE

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Introduction

Undergraduate curricula need to adapt to current demographic shifts, to ensure tomorrow's doctors are adequately trained to meet the needs of an increasingly ageing population. This survey was undertaken to evaluate the Welsh medical undergraduate curriculum from the perspective of recently graduated FP1 doctors.

Methods

A questionnaire assessing educational needs and provision in relation to core knowledge and essential skills in the care of older people, was mailed to all FP1 doctors in Wales.

Results

Of 247 questionnaires, 98 were returned (40% response rate). 44% of graduates felt the undergraduate curriculum had prepared them for assessing and managing older people, 24% were unsure and 28% felt unprepared. The majority reported having experienced formal teaching as undergraduates in core topics: delirium (88%), dementia (83%), Parkinson's Disease (85%), stroke (96%), osteoporosis (86%), depression (90%) and macular degeneration (87%).

Fewer graduates reported teaching in mobility (27%), incontinence (56%) and rational prescribing (51%). Only 54% felt competent in assessing older people. 15% felt competent to assess balance and 27% nutrition. 97% of graduates agreed care of the elderly is an important learning area. Their suggestions for improvement included more clinically focused teaching, a dedicated care of the elderly placement and examination.

Conclusions

From the FP1 perspective, the undergraduate curriculum has covered core knowledge more than skills in assessment of older people. A period of clinical consolidation of learning is needed

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**CORNEAL ABRASION MANAGEMENT:
IS THERE A DIFFERENCE BETWEEN
OLDER AND YOUNGER PATIENT
GROUPS**

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Introduction

Corneal abrasion management has no national guidelines, but evidence suggests that all patients should be formally assessed for visual acuity, examined using fluorescein stain and prescribed analgesia and topical antibiotics. With recent concerns about care for older people in the emergency department (British Geriatric Society Compendium 2008). This study compares the management of older and younger patients.

Methods

A retrospective case note study of patients with corneal abrasion attending a large emergency department over a six month period. Of the 769 patients only 35 were aged over 65 years (mean age 74 years) these patients were compared to a random sample of 50 younger patients (mean age 35 years). The groups were not matched. Case notes were analysed for documentation of the four management criteria and compared using Yates' chi square test.

Results

There was no significant difference between the groups for visual acuity assessment ($p=0.6380$), fluorescein examination ($p=0.400$) or antibiotic therapy ($p=0.3798$). There was however a significant difference in analgesia provision ($p<0.05$) with only 17% of the older population receiving analgesia.

Conclusions

The significant difference in analgesia provision reflects concerns about pain management in the older person. It highlights the importance of pain assessment in the older patient, especially where communication difficulties may be more prevalent. Until national guidelines are formulated, all patients should receive analgesia (topical or oral) regardless of age.

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WITHDRAWN

WITHDRAWN

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THE ASSOCIATION BETWEEN BIRTH WEIGHT AND GRIP STRENGTH: ABSOLUTE AND RELATIVE EFFECT SIZE

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Introduction

Sarcopenia, the loss of muscle mass and strength with age, has serious health consequences. Its adult determinants are well known but developmental influences may also contribute. We reviewed the evidence for an association between lower birth weight and reduced hand grip strength in later life.

Methods

Relevant articles were identified using Pubmed, OVID Medline and ISI Web of Knowledge. Study details were collated in tabular form. Stata 10 was used to produce a forest plot and to estimate the pooled coefficient for the relationship between birth weight and grip strength. The relative effect sizes of birth weight, age and height on grip strength were identified using the Hertfordshire Cohort Study (HCS).

Results

Ten studies of men and women considered the full range of birth weight; these varied from 316 to 1,562 participants, with follow-up ages 18 to 67 years. A forest plot showed homogeneity of association between birth weight and grip strength (Q-statistic 7.36, $p=0.60$) with a pooled estimate of a 2.06kg decrease in grip strength per kilogram decrease in birth weight (95%CI 1.77, 2.35). Birth weight, age and adult height accounted for 2.2%, 3.6% and 16.2% of variance in grip strength in HCS.

Conclusions

The association between lower birth weight and reduced grip strength in later life is consistent across studies. Future studies need to elucidate the underlying molecular and cellular mechanisms of developmental influences on sarcopenia.

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ASSOCIATION BETWEEN GENDER, FRAILITY AND USE OF HEALTH AND SOCIAL CARE SERVICES: FINDINGS FROM THE HERTFORDSHIRE AGEING STUDY

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Introduction

Provision of health and social care services is costly and there is interest in the determinants of use. Uptake rates, overall and in relation to gender and frailty, were described in the Hertfordshire Ageing Study (HAS), UK.

Methods

Use of health and social care services was characterised among 151 men and 106 women, aged 74 to 82. Frailty was classified using the Fried score.

Results

67% of men and 60% of women had been admitted to hospital since age 65, but women were more likely to have been admitted in the last year (33% vs 19% $p=0.040$). Of the personal social services, only lunch clubs (7.5%) and private domestic help (10.6%) were used by >5% of participants, more frequently by women than men ($p=0.006$ for lunch clubs and $p=0.063$ for private domestic help). 6.6% ($n=10$) men and 7.5% ($n=8$) women were classified as frail. Among men, frailty was associated with higher hospitalisation rates since age 65 (100% vs 65% frail vs non frail, $p=0.03$) and greater use of private domestic help (40% vs 5%, $p=0.003$). Frail women were more likely to have been hospitalised (100% vs 57%, $p=0.02$).

Conclusion

Hospital admission rates were similar in men and women, although women were more likely to have been admitted in the last year. Use of personal social services appeared higher in women despite a similar prevalence of frailty to men.

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DIETARY SUPPLEMENT USE AMONG OLDER MEN AND WOMEN: FINDINGS FROM THE HERTFORDSHIRE COHORT STUDY

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Introduction

Use of dietary supplements has increased over recent decades in the UK, although evidence of the health benefits is inconsistent. Supplement use increases with age but little is known about the characteristics of older supplement users. We examined the prevalence of dietary supplement use and its determinants in the Hertfordshire Cohort Study (HCS).

Methods

3217 HCS participants, aged 59 to 73, were interviewed about their use of dietary supplements over the previous 3 months. The gender, age, BMI, prudent diet score, physical activity score, smoking status, alcohol use, self reported health, education, social class and marital status of supplement users and non-users were compared.

Results

Supplement use was prevalent with 57.5% and 45.4% of women and men taking at least one supplement. Supplement use was associated with healthier diets, higher social class and not smoking in men and women ($p < 0.05$ for all). Female supplement users had a lower BMI (27.1 kg/m² vs. 28.4, $p < 0.001$). Male supplement users reported better health (14.8% vs. 10.7% rating health as excellent, $p = 0.002$) and were more likely to be married or cohabiting (88.2% vs. 83%, $p = 0.01$).

Conclusion

Use of dietary supplements is common in older people. Supplement users are more health aware, have better diets and higher social class. Continued follow-up of this cohort will determine the associated health risks and benefits of supplement use.

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SURVIVAL IN THE ZERO STATE OF FRAILITY IS A CANDIDATE MARKER FOR THE HEALTH OF POPULATIONS

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Introduction

As measured by the Frailty Index, frailty predicts mortality with high precision. We hypothesized that survival amongst the fittest older people might provide insight into the ambient health of populations, characterised here by strata of social vulnerability.

Methods

Adults (n=3647) aged ≥ 70 (mean 77.9, SD 5.8, 61% women) were followed for five years in the Canadian Study of Health and Aging. Responses to 40 self-report social variables were assigned a value of 0 if the "deficit" was endorsed and 1 if it was not. These were summed to construct a social vulnerability index. A frailty index was operationalized analogously, using 31 health deficits. In the "zero state" of frailty, people report no or one deficit. Association with mortality was analysed using logistic regression, Cox regression, and Kaplan-Meier curves.

Results

443 individuals were in the zero state of frailty. Adjusting for age and sex, high social vulnerability was associated with an increased risk of mortality (HR 2.5, 95% CI: 1.3-4.5). Absolute zero state mortality rose with increasing social vulnerability: 11.5% (low), 18.2% (intermediate), and 32.2% (high social vulnerability).

Conclusions

Mortality in the zero state of frailty stratifies by level of social vulnerability, with a 21% absolute mortality difference. Survival in the zero state of frailty is a candidate marker for the health of populations.

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PREVALENCE OF, AND RISK FACTORS FOR, 'LOW NORMAL' HAEMOGLOBIN AMONG OLDER PEOPLE IN THE GENERAL POPULATION IN ENGLAND

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Introduction

Both anaemia and 'low-normal' haemoglobin predict increased morbidity and mortality but there is no estimate of how common 'low normal' haemoglobin is among older people in the general population, nor its associations.

Methods

Prevalence of 'low-normal' haemoglobin (≤ 1 g above WHO anaemia thresholds) were calculated by age, sex, and self-reported longstanding illness in a cross-sectional, nationally representative sample of 2,174 people aged 65+ (Health Survey for England 2005). Multivariate regression assessed factors associated with 'low normal' haemoglobin.

Results

19% and 21% of older men and women had 'low-normal' haemoglobin, increasing to 39% among men and women reporting a limiting longstanding illness (LLI). Anaemia was more than twice as common in men reporting LLI than in men reporting no longstanding illness (16% vs 7% by WHO criteria, $p < 0.001$; 5% vs 2% by Joosten's criteria, $p < 0.05$) and more than four times as common in women with LLI than with no longstanding illness (WHO criteria: 18% vs 4%, $p < 0.001$; Joosten's criteria: 8% vs 21%, $p < 0.001$). Age, LLI, low serum ferritin, reporting having diabetes, and never or rarely drinking alcohol were positively associated with 'low normal' haemoglobin.

Conclusions

'Low-normal' haemoglobin, predictive of future morbidity and mortality, is common. Prospective studies are required to examine whether specific interventions or routine care can improve health outcomes if individuals with 'low normal' haemoglobin are identified.

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OBJECTIVE MEASURES OF PHYSICAL FUNCTION IN A NATIONALLY REPRESENTATIVE SAMPLE OF NON-INSTITUTIONALISED OLDER PARTICIPANTS IN THE HEALTH SURVEY FOR ENGLAND

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Introduction

The ability to carry out everyday activities is essential for good quality of life. There has been no objective assessment of function in the English general population.

Method

The Health Survey for England 2005 included objective tests of physical function in a nationally-representative sample of almost 3,000 people aged 65+ living in private households.

Results

Hand-grip strength for women was about 60% that for men. Women's likelihood of completing the balance and chair rise tests was approximately that of men five years older. Functional ability decreased with age in both sexes. However, among women, the top quartile aged 85+ had stronger grip strengths than the bottom quartile aged 65-69. The 'full tandem' balance test was the most sensitive: 87% of men aged 65-69 could hold this for 10 seconds, falling to 31% aged 85+. The decline in women was more pronounced and started younger. 74% of women aged 65-69 could hold the full tandem position for 10 seconds, falling to 19% aged 85+. 91% of men (89% of women) aged 65-69 could raise themselves out of a chair, falling to 68% (54%) aged 85+. Overall, 84% of men and 74% of women could complete five chair rises.

Conclusion

This study quantified the reduction in physical function with age. However poor function is not inevitable: many of the older participants were stronger than many of those aged 65-69.

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CAN OLDER PEOPLE CROSS THE ROAD IN TIME? WALKING SPEED DATA FROM HEALTH SURVEY FOR ENGLAND

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Introduction

Being able to walk even short distances is essential for independence. Walking speed is also important: pedestrian crossing timings assume a minimum walking speed of 0.5m/s (1.13mph).

Method

Nationally-representative cross-sectional survey of non-institutionalised general population. 2,797 participants aged 65+.did a timed walk over 2.44m (8').

Results

Walking ability declined sharply aged 75-79 in women and aged 85+ in men. 14% of men and 25% of women had 'walking impairment', (9% of men and 14% of women aged 65-69, 36% and 56% respectively aged 85+). Mean walking speed fell from 1.0m/s in men aged 65-69 to 0.7m/s aged 85+ (0.9m/s to 0.5m/s in women). Adjusting for each other factor, walking impairment increased with age; poor self-reported health; number of functional limitations reported; anaemia; and low vitamin D levels. Those reporting difficulty walking were at least twice as likely to have walking impairment.

	Age Group					
	65-69	70-74	75-79	80-84	85+	All
Men						
% Unable to do test	5	6	7	6	13	6
% Walking speed ≤ 0.5m/s	4	7	8	11	23	8
Women						
% Unable to do test	5	5	7	14	17	8
% Walking speed ≤0.5m/s	9	8	19	27	39	17

Conclusions

Walking impairment is common in the older general population. In addition to treatment of remedial factors and provision of aids, environmental changes are required, eg longer road crossing times for pedestrians.

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PREVALENCE AND TEN YEAR OUTCOMES OF FITNESS AND FRAILTY IN COMMUNITY-DWELLING PEOPLE

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Introduction

The prevalence of frailty is variably reported in elderly people, and largely unreported for younger adults, where its risk status is less clear. We estimated the prevalence and outcomes of frailty in people aged 15-80.

Methods

This is a secondary analysis of the National Population Health Survey of Canada. Participants (n= 14,127) were followed every two years from 1994-5 to 2004-5. Fitness and frailty were described in relation to deficit accumulation, recorded in a frailty index (FI). The most fit reported 0-1 deficits (from 39, i.e. FI<0.03) compared to those as frail (defined here as FI>0.25).

Results

Most respondents (8033; 56%) reported the highest level of fitness at baseline; only 967 (6.8%) were frail. Compared with the frail, the fittest were significantly younger on average (age 38.3 yrs vs. 64.0 years) and more highly educated (58% had completed secondary school vs. 30%). At all ages, fit people had a much lower 10-year mortality (e.g. 2 % vs. 24% at age 40-5; 42% vs. 84% at age 75-9) than frail people. More than half of the most fit (4800/8033; 59.8%) maintained this status at all follow-up interviews. These people had the lowest 10-year mortality (3%) compared with those most frail (75%).

Conclusion

Fitness and frailty can be described in relation to deficit accumulation across the adult spectrum. A frailty index and can be operationalized from self-report data.

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AN INDEX OF SELF-RATED HEALTH DEFICITS AND ADVERSE OUTCOMES IN OLDER PEOPLE

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Introduction

Poorer self-rated health is associated with adverse outcomes but its relationship with age, gender and other health measures are incompletely understood.

Methods

In the Canadian Study of Health and Aging, individuals aged ≥ 65 completed a self-administered questionnaire. We constructed an index of self-rated health deficits (SRHDI) for 1318 participants. Heterogeneity in health status was evaluated ($n = 247$) by determining their Frailty Index (FI). Higher values for each index indicated worse status.

Survival was analysed using Kaplan-Meier curves and Cox regression adjusted for covariates.

Results

Comparing those with the lowest versus highest SRHDI, significant differences ($p < 0.001$) were seen in hospital admissions in the past year ($0.2 (\pm 0.6)$ vs $0.8 (\pm 1.2)$), 3MS cognitive score ($85.0 (\pm 10.6)$ vs $78.4 (\pm 17.0)$) and ($p = 0.003$) for age ($75.3 (\pm 7.0)$ vs $77.1 (\pm 8.0)$)

The strongest associations between SRHDI and death were in younger (< 75) men and older (≥ 85) women. Increasing SRHDI scores were associated with an increased risk of death (RR 1.02 95%CI (1.02 -1.04)), controlling for age (RR 1.03 (1.01-1.06)) and physical activity (RR 1.23 (1.06-1.42)). Although the SRHDI predicted mortality, as does frailty, there was no association between SRHDI and FI.

Conclusions

Measuring self-rated health by an index of deficits is a valid construct and associated with adverse health outcomes. The SRHDI may facilitate exploration of the complex relationships between health attitudes, illness burden and outcomes.

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THE EFFECT OF TEXTURED SURFACES ON POSTURAL STABILITY AND LOWER LIMB MUSCLE ACTIVITY IN HEALTHY OLDER ADULTS

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Introduction

Footwear interventions may improve balance control in older adults. Textured insoles may help ameliorate age-related postural instability by enhancing sensory input to the soles of the feet: this has not been investigated in older adults. This study aimed to determine whether textured surfaces alter postural sway and muscle activation during quiet standing balance (QSB) in older adults.

Methods

50 healthy older adults (mean age 75.1 ± 5.0 years), conducted bilateral QSB tests (30 seconds) with eyes open and closed under randomised conditions. Three textured surfaces of differing indentations (C, T1, T2) were laid over a force plate. Centre of pressure (CoP) velocity (mm s^{-1}), anterior-posterior and mediolateral range and standard deviation (mm) were extracted and EMG amplitude (μV) recorded from five dominant lower limb muscles.

Results

Repeated measures ANOVA showed a statistically significant difference in CoP velocity with eyes closed ($p < 0.05$). Post-hoc analysis identified a mean difference of 2.8 (95% CI: 0.5 to 5.0) mm s^{-1} between T1 and T2. No significant differences were reported for any other postural sway variable or EMG amplitude in all 5 lower limb muscles ($p > 0.05$).

Conclusion

Textured surfaces did not significantly change postural sway or lower limb EMG from control levels during QSB in healthy older adults. However, in the absence of visual stimulation, the two textured conditions appear to have opposite effects, suggesting further research is necessary.

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LOW TRAUMA NON-VERTEBRAL FRACTURES AND SOCIAL DEPRIVATION

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Introduction

Socio-economic variation influences osteoporosis and fracture. We looked at the relationship between non-vertebral low trauma fractures, osteoporosis and socio-economic deprivation in the Nottingham population.

Methods

Data analysis was done on patients attending the osteoporosis clinic during January 2004 to April 2007. Low trauma fracture, age >50yrs, fracture of the wrist, humerus and ankle were analyzed. Patients completed a questionnaire and had a Bone Mineral Density scan. The index of multiple deprivation score (IMD-2004) was assigned to participants according to their postcode.

Results

1652 patients attended the scan and completed the questionnaire (89.8% female). Median age was 67yrs (IQR 60-74), 40.9%(676) were over 70yrs.

31%(512) had osteoporosis. A significant higher median IMD score (19.9) was seen in the osteoporotic group when compared with those without osteoporosis (P=0.01). There was no statistically significant difference in the IMD score and fracture type (P=0.51).

Adjusted Odds Ratio (OR) for osteoporosis was increased in the most deprived group (OR=1.40, 95%CI 1.05, 1.86), but reduced with higher body mass index (BMI>30, OR= 0.23, 95% CI 0.17, 0.32) and alcohol consumption of 1-2 units per day (OR= 0.64, 95% CI 0.42, 0.97).

Conclusion

There is evidence that people with a low trauma osteoporotic fracture of humerus, wrist and ankle have a higher level of deprivation. However, there was no evidence that social deprivation determines the fracture type.

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IS ANKLE FRACTURE DUE TO OSTEOPOROSIS?

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Introduction

Osteoporotic fractures tend to occur mostly in the vertebrae, hips and wrists. We looked at ankle fractures and its association with osteoporosis in comparison with humerus and wrist fractures in Nottingham.

Methods

Baseline data analysis was done on a prospective cohort of patients attending the osteoporosis clinic during January 2004 to April 2007. Patients over 50yrs, with a low trauma ankle fracture were analysed in comparison with humerus and wrist fractures. Patients completed a risk factor questionnaire and had a Bone Mineral Density scan.

Results

329 patients had ankle fracture (82.4% females). The median age was 64yrs (IQR 57-70yrs), 24.7% were over 70yrs. 263 patients attended the scan.

Ankle fractures occurred in younger and more males (p=<0.001) when compared to the other fractures. They were less likely to have osteoporosis, a previous fracture and to be only active indoors (p=<0.001). Patients with ankle and humerus fractures were more likely to have a high body mass index (BMI) when compared with wrist fractures (p=0.003). Adjusted Odds Ratio (OR) for osteoporosis was reduced in all 3 fracture types with BMI >30 and in the over 70yrs ankle fractures were significantly less likely (OR=0.36 95%CI 0.19, 0.71)

Conclusion

Ankle fractures were less likely to be osteoporotic, occurred in younger and more likely in males when compared to the other fractures. People with ankle and humerus fractures were more likely to be obese.

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EFFECT OF LOW HAEMOGLOBIN LEVELS ON MORBIDITY AND MORTALITY FOLLOWING FRACTURED NECK OF FEMUR (NOF) REPAIRS

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Introduction

The one-year mortality rate following fractured NOF repairs is 20-35%, significantly higher than in the general population of comparable age. There is also significant post-surgical morbidity. Studies have linked post-operative outcomes, such as time to mobilisation (TTM) and time to discharge (TTD) with worsened morbidity and mortality. Identification of risk factors for poor prognosis is therefore important. Recent studies suggest that haemoglobin levels may be one such risk factor. A retrospective study of patients undergoing fractured NOF repairs, at University Hospital Lewisham, was conducted between September 2007 and April 2008.

Methods

Data on 77 patients, over 65 years old, was obtained from case notes and hospital computer records. Post-operative outcomes (including mortality, TTM, TTD and pre- and post-operative infection rates) were analysed against pre- and post-operative haemoglobin levels using both parametric and non-parametric statistical tests.

Results

Median age 87 years (range 65-100 years), 25% male. Seven deaths pre-discharge. Significant ($p < 0.05$) relationships were found between post-operative haemoglobin levels and in-hospital mortality and patients with post-operative haemoglobin levels >10 and both faster TTM and TTD. Similarly, there was a significant ($p < 0.05$) relationship between pre-operative haemoglobin levels >11 and faster TTD and also, a lower ($p < 0.05$) rate of pre-operative infections.

Conclusions

The relationship between higher haemoglobin levels and improved morbidity and mortality suggests a need to consider pre- and post-operative interventions to maximise haemoglobin. Key levels are >11 pre-operatively and >10 post-operatively.

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DESCRIPTIVE SURVEY OF 5-YEAR SURVIVAL OF OLDER PEOPLE UNDERGOING COLONOSCOPY

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Introduction

Colonoscopy is safe in older people but its longer term effectiveness has been questioned in a recent American study which showed that comorbidity was a stronger predictor of outcome than indication for colonoscopy or its findings (Kahi et al. *Gastrointest Endosc* 2007; 66: 544). We have previously reported procedure tolerability and 30-day morbidity in a cohort of patients over 75 years undergoing colonoscopy (Gentles et al. *Age Ageing* 2002; 31: Suppl 2, 41 (abstract)). We now report preliminary 5-year follow-up data.

Methods

Retrospective cohort study, using the local clinical information system, of people aged >75 who underwent colonoscopy during 2000-2001, by one colonoscopist* in a UK DGH. Comorbidity was assessed by the Charlson index (CI). LREC approval was obtained for the study.

Results:

	Kahi et al. (N=404)	Present study (N=109)
Age (mean)	75-92 (79)	76-95 (83)
CI (SD)	2.7 (+/-1.8)	1.7 (+/-1.6)
Women	26%	59%
Cancer on colonoscopy	2%	11%
5-year survival	59%	42%

Discussion

Our cohort demonstrated a higher mortality at 5 years despite lower overall comorbidity and higher female to male ratio. The diagnostic yield was higher in our group in line with Syn et al. (*Age Ageing* 2005; 34: 510). Those with cancer had lower 5-year survival (36.4%) and higher CI (2.7) in accord with Kahi et al. (37.5% and 2.6 respectively). The findings have implications for colonoscopy surveillance of older subjects.

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NASOGASTRIC FEEDING IN FRAIL ELDERLY PATIENTS: AN OBSERVATIONAL STUDY

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Introduction

There is increasing recognition of the frequency and detrimental outcomes of under-nutrition in elderly patients admitted to hospital. It is, however, unclear what steps should be undertaken to address poor nutrition. Nasogastric tube feeding (NGF) is one approach, but there is little evidence to determine outcome in frail elderly patients outwith the setting of acute stroke and severe dementia.

Methods

The study was conducted in a department of elderly medicine with no specific age- or diagnosis-related admission criteria, but inpatients are generally frail elderly with multiple co-morbidities. All patients who commenced NGF during a 3 month period were identified.

Outcomes were assessed at 30 days from insertion of nasogastric tube.

Results

25 patients were identified, mean age 78.1 years (SD 8.3), 60% male.

Main indication for feeding: 13 (52%) inadequate oral intake, 12 (48%) poor swallow or suspected aspiration.

Outcome at 30 days	Number (%)
Dead	9 (36%)
Inpatient rehabilitation	9 (36%)
Continuing NHS care bed	4 (16%)
Discharged to/waiting for Nursing Home	2 (8%)
Discharged Home	1 (4%)

7 (28%) patients suffered complications during NGF including aspiration pneumonia (5), placement in lung (1), loose stool (1).

Conclusion

Nasogastric feeding in frail elderly patients is associated with a high rate of mortality and complications. Research is needed to help differentiate those who benefit from nasogastric feeding from those who are in the terminal phase of their illness.

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ORTHOSTATIC GRADING SCALE IS BETTER THAN TIMED UP AND GO AT IDENTIFYING FALLERS WITH PRIMARY BILIARY CIRRHOSIS

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Introduction

Risk factors for falls are prevalent in Primary Biliary Cirrhosis (PBC). Timed up and Go (TUG) is a simple, common screening tool for falls; a score >14 indicates high falls risk and need for multi-factorial falls assessment.

Methods

PBC patients underwent multi-factorial falls assessment including Tinetti Gait (TG) and Balance (TB), TUG and Orthostatic Grading Scale (OGS, a score >4 consistent with dysautonomia).

Results

39 PBC subjects (1 male), mean age 66 years (39-81) were assessed, 22 had fallen (56%), 10 in the last year (26%), age was not associated with falls. 15 (38%) had orthostatic intolerance (dysautonomia, OGS>4). Increasing dysautonomia correlated with poorer gait ($R=-0.456$, $p<0.05$) and balance scores ($R=-0.381$, $p<0.05$) and was significantly more common ($p<0.05$) in recurrent fallers. Balance scores were poorer in fallers than in non-fallers (22 ± 2 v 24 ± 5 ; $p=0.02$), however TUG scores were not significantly different.

Conclusions

Falls are common in PBC and are associated with dysautonomia and abnormal balance. Dysautonomia is associated with recurrent falls in PBC with OGS more useful than TUG in identifying those who would benefit most from multi-factorial falls assessment. TUG may not be the best screening tool for falls in disease-specific groups.

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NON-ALCOHOLIC FATTY LIVER DISEASE IS MORE SEVERE IN THE ELDERLY

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Introduction

Despite a previous report that octogenarians have more severe non-alcoholic fatty liver disease (NAFLD) than younger controls it was still considered a benign condition. However, severity ranges from simple steatosis, through hepatitis to cirrhosis. Risk factors (RFs) include obesity, hypertension, hyperlipidaemia and diabetes, with insulin resistance (IR) central to its pathogenesis.

Methods

Data from a tertiary liver clinic database, divided into an older (>60years) and younger (<50years) group, was analysed for past medical history, BMI, serum biochemistry, haematology and liver biopsy. All patients consented.

Results

92 subjects were in the older and 158 in the younger group. RFs, and the metabolic syndrome, were significantly more prevalent in the older group ($P<0.001$), and associated with more severe disease ($p<0.001$). Albumin, ALT, ALT/AST, platelets were significantly lower, and ALP, MCV, glucose and HbA1C were significantly higher in the older group ($p<0.05$). IR was similar in both groups, and did not correlate with disease severity. Significantly more severe fibrosis scores were seen in the older group on biopsy. Patients with cirrhosis and hepatitis were older than those with steatosis ($p<0.0001$).

Conclusions

NAFLD is not a benign disease and is more severe in the elderly who have more RFs than younger patients. Geriatricians should consider NAFLD in older people with abnormal liver blood tests, and should be alert to more severe disease, especially in those with multiple RFs or the metabolic syndrome.

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DETERMINANTS AND OUTCOMES OF DELAYED TRANSFER OF CARE IN OLDER ADULTS AGED 65 YEARS AND OVER: NORFOLK EXPERIENCE

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Introduction

The delay in discharge or transfer of care following an acute hospital admission in older adults has long been a recognized problem in the UK. In this study, we examined the determinants and outcomes of delayed transfer of care in a District General Hospital (DGH) setting.

Methods

A prospective observational study was carried out in those ≥ 65 years admitted to two care of the elderly wards during February 2007 in a DGH with a catchment population of ~250,000. Once identified, patients were prospectively followed-up until their discharge.

Results

N=158, median age 82.5 (66-98) years, male (50%). 58 (36.7%) encountered a delay in transfer of care. These individuals tended to be older ($p 0.012$), had poorer pre-morbid mobility ($p 0.05$), and were more likely to be confused on admission ($p 0.002$). In comparison to the 2003 National Audit, a significantly higher percentage (29.3%vs.17%) awaited therapist assessments or (27.6%vs.9%) domiciliary care, with a lower percentage (<1%vs.14%) awaiting further NHS care. Five deaths (out of 18 inpatient deaths, 28%) occurred during the delay. Seven patients developed medical conditions during delay making them unfit for discharge. The number of extra bed days attributable to delayed discharges in this study was 682 (mean=4.8) days.

Conclusions

Lack of therapy and domiciliary care significantly contributed to delayed transfer of care. Similar local assessments could provide valuable information in formulating how best to improve local health services.

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A MULTI-CENTRE RANDOMISED
CONTROLLED TRIAL(RCT)OF HOME
BASED VERSUS DAY HOSPITAL
REHABILITATION

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Introduction

The literature suggests that Day Hospitals are an effective setting for comprehensive services for older people. Recently there has been increased interest in providing services closer to the patients home. Previous trials have addressed questions about the Day Hospital as a setting for rehabilitation for stroke, inpatient, outpatient and nursing home care. Most previous RCTs have not compared Day Hospital Rehabilitation (DHR) to Home Based Rehabilitation (HBR)

Methods

We have conducted a four centre, two-arm randomised controlled trial which randomised patients to either HBR or DHR. The primary outcome measure was change on the Nottingham Extended Activities of Daily Living Scale(NEADL) at six months. Secondary outcome measures included EQ-5D, Hospital Anxiety and Depression Scale(HADS), Therapy Outcome Measures(TOMs), hospital admissions and the General Health Questionnaire(GHQ-30) for carers.

Results

Estimated sample size was not achieved, only 42 subjects received HBR and 42 DHR. The groups were well matched at baseline. At 6 months there was no significant difference in the primary outcome measure NEADL Total (DHR: mean=30.78,SD=15.01; HBR: mean=32.11,SD=16.89; P=0.37). EQ-5D, TOMs and GHQ for carers showed no significant differences between settings. HADS depression scale suggested borderline advantage for HBR.

Conclusion

The trial was underpowered. Overall HBR does not appear to disadvantage older people or their carers compared to DHR. Patients receiving HBR may experience less psychological distress than those receiving DHR.

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COMPREHENSIVENESS OF ASSESSMENT
OF OLDER PATIENTS IN AN INPATIENT
ACUTE MEDICAL UNIT

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Introduction

Comprehensive geriatric assessment (CGA) is generally regarded as an effective intervention for older people experiencing inpatient hospital care, but do they get it? We performed a prospective cohort study in an integrated inpatient medical unit to find out.

Methods

Older (>65 years), consenting patients were studied. We excluded those with trivial, severe and terminal illness. We measured demographic variables, the receipt of up to 6 elements of CGA, frailty (Rockwood index), Barthel, AMT, co-morbidity, length of stay, discharge destination and readmissions over 6 months follow up. We compared those who received 5 or 6 elements of CGA against those who received 4 or fewer.

Results

123 patients were studied: 60(48.8%) male, average age 76.6(6.8SD) years, 95(77%) were measurably frail, 72(58.5%) received 5 or 6 elements of CGA.

Compared to those who received 4 or fewer there were no differences in gender distribution, marital status, co-morbidity AMT and ADL scores and length of stay. Patients in receipt of CGA were more likely to be older (77.7 vs 74.9 years, p=0.019, t-test), frail (61/72(84.7% vs 34/51(66.7%), p=0.019, chi-squared) under the care of a geriatrician (59/72 (82%) vs 32/51 (67%), p=0.017, chi-squared) with fewer readmissions (0.9 (1.2SD) vs 1.4(1.3SD), p=0.03).

Conclusion

CGA was being delivered to an older, frailer group. The results reveal a potential for more comprehensive targeting of frail older people with elements of CGA.

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DOES DEMENTIA CARE MAPPING (DCM) ADEQUATELY CAPTURE SUBJECTIVE REPORTED PATIENT EXPERIENCE IN HOSPITAL?

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Introduction

Reliable methods are required to improve dignity and person-centred care for older hospitalised people. DCM, an observation-based practice development tool, might provide one such method but requires further investigation. Our research objective was to explore the validity of DCM with self-reported patient experience.

Methods

58 elderly patients were observed ("mapped") for 84 hours. Semi-structured interviews with seven cognitively intact patients and unstructured conversations with 51 patients were conducted. Concurrent validity was investigated by comparing reported experience with quantitative mapping data. The adequacy of DCM to capture important aspects of patients' reported experience was investigated using framework analysis.

Results

There was congruence between observed and reported types of activities, but not their frequency. There was less congruence between quantitative assessments of well-being. Reported examples of being treated with or without dignity or respect were consistent with observed staff actions. Patients framed their well-being in terms of their independence and quality of care provided by staff (which are captured by DCM), health status and perceived potential for recovery/returning home (which are not).

Conclusions

We conclude that DCM has the capacity to record relevant patient issues in a systematic way; but it is not comprehensive and does not identify all the issues of importance for well-being.

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PREVALENCE OF POST VOID RESIDUAL VOLUME IN GERIATRIC PATIENTS

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Introduction

Post Void Residual Volume (PVRV) is a known risk factor for urinary infection, incontinence and renal insufficiency. Objectives of this study: to determine the prevalence and examine risk factors for PVRV > 150 ml.

Method

In a prospective study 100 consecutive patients admitted to a geriatric ward had an ultrasound bladderscan (UB) performed three times during the first two days of stay. Parameters registered: age, gender, MMSE, modified Barthel score, bacteriuria, urinary incontinence and constipation.

Exclusion criteria: urinary catheter, incapability of giving informed consent. Patients could only be included once.

Results

142 patients were screened. 100 were included (81 women and 19 men). Mean age 83,9 years (range 65-101). Constipation 29 %, urinary incontinence 41%, bacteriuria 37%. Barthel (maximum score 100): 12% score < 26, 25% score 26-49, 41% score 50-79 and 20% score > 79. MMSE : 12% < 15, 37% between 15-24 and 39% > 24.

UB results: In all three UB's 48 patients had PVRV < 100 ml and 14 patients had PVRV > 150 ml. 38 patients had PVRV between 100 and 150 ml or diverging results.

Barthel score (p=0,03) and bacteriuria (p=0,04) varied significantly between patients with PVRV > 150 ml and PVRV < 100 ml.

Conclusions

PVRV is a common condition in a geriatric population.

This study showed that it is feasible to implement UB as a screening procedure in a geriatric ward

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A QUALITATIVE STUDY OF THE IMPACT OF CARING FOR A PERSON WITH URINARY INCONTINENCE

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Introduction

Whereas it is well recognised that urinary incontinence has a negative impact on the quality of life of the sufferer (Hunnskaar & Vinsnes, 1991), little is known about the impact of this distressing condition on the primary caregiver. This study aimed to explore the effects on people caring for an incontinent person.

Methods

All patients registered on the Camden PCT continence database were mailed and carers invited to take part in semi-structured interviews. Zarit Burden Interview Score (ZBI) was collected. A literature review preceded the interview to facilitate data gathering and suggest themes. A qualitative method using grounded theory was used. Interviews were recorded, transcribed, analysed for emerging themes and coded.

Results

A purposive sample of 8 carers was interviewed. Mean ZBI was 40/88. Three major themes were extracted, coded as foundations, adaptations and outcomes. The foundations were loyalty, love, dedication, gradual evolution and acceptance. The adaptations were information gathering and coping strategies. Outcomes were poor sleep, social isolation, financial constraints, poor health, frustration and changing relationship. Outcomes were strongly influenced by education and good communication with professionals. Carers preferred to look after loved ones at home.

Discussion

Burden was strongly influenced by education, appropriate advice and good communication. Improvement in communication at both primary and secondary care level along with formation of local carer groups was identified as an important factor likely to lead to reduced burden.

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SOLIFENACIN IS NOT ASSOCIATED WITH COGNITIVE IMPAIRMENT OR SEDATION IN THE ELDERLY

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Introduction

Antimuscarinics for overactive bladder potentially cause cognitive impairment. Solifenacin is a newer antimuscarinic which is effective and well tolerated in elderly patients [Wagg A. Am. J Geriatr Pharmacother 2006;4:14-24]. This study examined its effect on cognitive function compared to placebo and oxybutynin.

Method

This was a randomised, double-blind study in 12 healthy subjects >65 y who received assessment training then 6 treatment sequences; solifenacin 10mg in one, oxybutynin 10mg in another, and placebo. 14 day washout separated treatment. Assessment of cognitive function was carried out at baseline regularly to 24 hours post dose. Model adjusted t-tests for mean change from baseline between active treatment and placebo at each time point, together with 90% CI were calculated with ANCOVA.

Results

At Tmax Solifenacin showed no statistically significant deterioration in cognitive function, alertness or mood compared with placebo. Oxybutynin was associated with impairment of attention, working and episodic memory, speed of memory, and self-rated alertness, (p<0.05 at 2 hours post-dose) Quality of episodic memory, speed of memory and mood were unaffected.

Conclusion

There was no cognitive impairment with solifenacin at Tmax or any other time point. It appears unlikely that any will be seen in routine practice. Solifenacin has some M3-receptor selectivity and low ability to cross the blood-brain barrier which may explain this. Solifenacin may be valuable for use in patients where total anticholinergic load is a concern.

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CONTINENCE STATUS IS OFTEN NEGLECTED IN THE ASSESSMENT OF FALLS

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Introduction

Urinary incontinence and nocturia are risk factors for falls (Int J Clin Pract. 2007;61:320-3). Assessment of continence is recommended in national falls guidelines (NICE CG21, 2004). This study examined adherence to this guidance using data from the National Clinical Audit of Falls and Bone Health in Older People (2007)

Method

Sites returned data on consecutive patients, 40 with non-hip and 20 with hip fractures. Data regarding assessment, presence of impairment, action taken to prevent related falls and referral to continence services were analysed.

Results

3184 (99.8% admitted) hip and 5642 (34% admitted) non-hip fractures were analysed (table). Hip fracture patients were significantly more likely to receive assessment of continence status and have impairment detected ($p < 0.05$ χ^2), but were no more likely to receive intervention to prevent related falls. Non-hip fracture patients were referred more frequently than hip fracture patients.

	Hip # (3184)		Non-hip # (5642)	
	%	n	%	n
continence assessment	63	2009	21	1187
Impairment detected	41	817/2009	27	316/1187
Intervention performed	37	300/817	39	123/316
Appropriate referral	28	232/817	40	125/316

Conclusion

In common with general falls and bone health assessments (BGS meeting Spring 2008), rates of continence assessments and actions were low, particularly for non-admitted patients. Being admitted to hospital is the likely explanation for the better guideline adherence observed in association with hip fractures. Improved community referral pathways are needed.

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TREND IN D-DIMER IN SURVIVORS FOLLOWING STROKE

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Introduction

Studies show elevated D-Dimer levels following Stroke or transient ischaemic attack (TIA), and prognostic influence at 1 year. No studies were found recording D-Dimers beyond 30 days after stroke.

We measured D-Dimer over 2 years following stroke and looked at intertest variation of over 7 days.

Methods

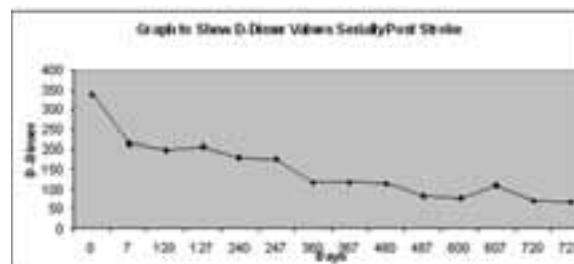
A prospective, longitudinal, observational, cohort study. We followed 20 patients (12 females, mean (SD) age of 68.8 (8.4)) years for 2 years after their first ischaemic stroke or TIA.

D-Dimer levels were measured within 48 hours of admission, day 7, day 120, day 127, 240, 247, 360, 367, 480, 487, 600, 607, 720, 727. Samples were taken 7 days apart at each time point, to look for inter-test variation.

Wilcoxon rank compared D-Dimers, as data were not normally distributed.

Results

D-Dimer fell from median 312 to 207 ($p = 0.03$) in the first 7 days. This trend continued over a 2 year period. Example day 240 (175) to day 600 (77) $p = 0.01$.



Conclusions

In long-term survivors, D-Dimer fell significantly over the first seven days but also consistently over 16 months. Some statistically significant variation in levels 7 days apart toward the end of the 2 year follow up, was likely due to small numbers. Further work is ongoing on larger numbers to examine this later variation and correlating D-Dimers to infarct size.

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GFR AND NUTRITIONAL PROFILE IN OLDER REHABILITATION PATIENTS

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Introduction

The Modification of Diet in Renal Disease (MDRD) formula is increasingly used to estimate glomerular filtration rate (GFR). It does not incorporate weight or nutritional status, which show marked heterogeneity in older people. We compared the GFR determined by MDRD and the Cockcroft-Gault formula (which includes patient weight) in medically stable older patients in a rehabilitation unit.

Methods

101 patients were assessed using the Mini-Nutritional Assessment Tool (MNA). Weight, serum creatinine and Charlson Co-morbidity Index were recorded. The MDRD and Cockcroft-Gault formulae were used to estimate GFR. GFR >60ml/min/1.73m² was considered normal.

Results

Ninety-eight patients completed the MNA, mean (SD) age 80 (+/-7) years, 51% female. Thirteen patients had a normal MNA, 85 were either malnourished or at risk of malnutrition. Co-morbidities were not significantly different between these groups. The median (SD) eGFR was 67 (53-81) ml/min/1.73m² using MDRD. The median (SD) GFR was 50 (37-63) ml/min using Cockcroft-Gault formula. There was a significant difference in GFR determined by MDRD and Cockcroft-Gault ($p < 0.001$). Poor nutritional status was associated with higher 'normal' eGFR using MDRD versus Cockcroft-Gault ($p, 0.001$)

Conclusion

Poor nutritional status was associated with a higher proportion of 'normal' eGFR values using MDRD. Cockcroft-Gault identified more renal dysfunction in the malnourished group than the MDRD. MDRD and Cockcroft-Gault measures of renal function are not interchangeable. Caution is required when estimating GFR in poorly nourished older people.

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MYELODYSPLASTIC SYNDROME IN THE OLDER PATIENT – EPIDEMIOLOGY AND CLINICAL OUTCOMES

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Introduction

Myelodysplastic syndrome (MDS) is a clonal marrow disorder, common in older individuals, characterised by ineffective haematopoiesis, peripheral blood cytopenias, and risk of evolution to acute myeloid leukaemia. Predominantly an illness of older people, there are few studies outlining the natural history of MDS in older people.

Methods

This study evaluated the epidemiology, presentation, management, and clinical course of 119 MDS patients aged over 65 years, presenting to a single institution from 1999-2007 and those reported to the Pilot National Irish MDS Registry.

Results

Of 119 patients (54% men), 96 patients (81%) were anaemic at presentation, the only blood abnormality present in 24(20%). Haemoglobin was >10g/dl in 50%. Cytogenetic analysis in 60% of patients, detected clonal abnormalities in 18. Eighty-nine patients were transfusion dependant but only 40 received erythropoietin. Forty patients received high- or low-dose chemotherapy with 72 receiving no specific therapy. Median survival was 22 months (range 1-87 months). Forty-five patients died, most from complications of MDS or AML transformation ($n=18$). During the National Registry Pilot Study, we estimated that we identified only 60% of expected MDS cases.

Conclusions

MDS may be under-diagnosed in older people. Presentation may be subtle, sometimes involving only one cell line. Distinction from other causes of anaemia or marrow suppression is important. Marrow examination with cytogenetic analysis is helpful in establishing a definitive diagnosis and has prognostic and therapeutic implications.

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VOLAEMIC ASSESSMENT OF ELDERLY HYPONATRAEMIC PATIENTS

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Introduction

A crucial step in the diagnosis and management of hyponatraemic patients is assessment of their volaemic status. This can be problematic in elderly patients due to degenerative disease and altered physiology. We sought to determine the inter-observer variabilities of clinical measures of volaemic status in elderly hyponatraemic patients.

Methods

Subjects comprised 22 patients, mean age 83.3 years (SD 5.7). Two experienced assessors independently assessed indicators of volaemic status (skin turgor, peripheral oedema, axillary moistness, mucous membrane moistness, capillary refill time and JVP) and also assessed overall volaemic status (hypovolaemic, euvoalaemic or hypervolaemic). Subjects were assessed on 2 occasions, 3 days apart, giving 44 paired sets of measurements. Postural changes in blood pressure (BP) and heart rate were measured on each occasion.

Results

	Kappa	95% CI	p
Overall assessment	0.59	0.38 - 0.79	<0.01
Tongue moistness	0.30	0.02 - 0.58	0.04
Mouth and nose moistness	0.16	-0.10 - 0.43	0.25
JVP	0.18	-0.04 - 0.40	0.06
Peripheral oedema	0.45	0.24 - 0.65	<0.01
Axillary moistness	0.21	-0.04 - 0.46	0.11
Capillary refill time	0.27	0.02 - 0.51	0.02
Skin turgor	0.42	0.17 - 0.66	<0.01

Overall assessment of volaemic status was significantly correlated with skin turgor, peripheral oedema, JVP, tongue moistness and postural drop in systolic BP

Conclusion

There was moderate inter-observer agreement of overall volaemic assessment, however, there was poor inter-observer agreement between individual indicators of volaemic status.

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FLUID MANAGEMENT IN ELDERLY HYPONATRAEMIC PATIENTS: COULD BIOELECTRICAL IMPEDANCE ANALYSIS HELP?

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Introduction

Hyponatraemia occurs commonly in elderly inpatients. It is associated with increased mortality and morbidity. Treatment requires determination of volaemic status and subsequent replacement / restriction of fluid to increase sodium levels. This can be problematic in elderly patients, where clinical determination of volaemic status is unreliable.

Bioelectrical impedance analysis (BIA) instantly measures total body water (TBW) aiding determination of volaemic status. Low sodium affects BIA readings, so to determine validity in the setting of hyponatraemia, we compared BIA measurement of TBW with the gold standard of deuterium dilutional analysis (DDA), which is impractical for routine clinical use.

Methods

Elderly inpatients with plasma sodium <130mmol/l on day 0 had TBW measured by BIA and DDA on days 1 and 4, and were assessed clinically to determine clinical volaemic status and cause of hyponatraemia.

Results

20 patients, 75% female, mean age 83.2 years (SD 6.0) were identified.

Mean sodium on day 1 was 126.1 mmol/l (SD 4.6, range 116 – 133).

Mean TBW measured by DDA was 35.65 L (SD 8.69), mean TBW measured by BIA was 32.75 L (SD 7.53) [Pearson correlation coefficient (r) = 0.69 (p<0.001), intraclass correlation coefficient of agreement = 0.65 (95% CI 0.40 – 0.80)].

Conclusion

In elderly hyponatraemic patients, TBW measured by BIA correlates well with the gold standard DDA. BIA may be of use in guiding fluid management in this difficult clinical situation.

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IMPACT OF DIFFERENT DIAGNOSTIC THRESHOLDS ON PREVALENCE OF ANAEMIA AND IMPAIRED IRON STATUS AMONG OLDER PEOPLE IN THE GENERAL POPULATION IN ENGLAND

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Introduction

Anaemia is common in older people and predicts increased morbidity and mortality. However, there is controversy over haemoglobin thresholds for anaemia in older men and women.

Methods

Cross-sectional, nationally representative sample of 2,797 people aged 65+ providing blood samples in Health Survey for England 2005. Prevalence of anaemia (World Health Organization (WHO) criteria (<13g/dl in men, <12g/dl in women) and Joosten's criterion (<11.5g/dl, <7.2mmol/l)), and iron status (using the Ferritin-serum transferrin receptor model) were calculated by age, sex, and self-reported longstanding illness. Multivariate regression assessed factors associated with anaemia.

Results

14% of older men and women had anaemia using the WHO criteria, but only 4% and 6% of men and women respectively when using the lower (Joosten's) criterion. 11% of men and women had raised soluble transferrin receptor (sTfR) levels (>2.3g/l); 15% of men and 29% of women had low ferritin levels (<45ng/ml). Raised sTfR increased with age, especially in women, in whom impaired iron status was slightly higher than in men. Logistic regression analysis showed age, longstanding illness and soluble transferrin receptor levels were associated with anaemia (sTfR OR 6.16, p<0.001 for Joosten's anaemia).

Conclusions

Consensus is required on the haemoglobin threshold defining anaemia in older people. Raised sTfR appears to be a better predictor for anaemia than a low ferritin (<45ng/ml). Policy guidelines targeting older adults are needed for anaemia prevention and management.

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POST HOSPITALISATION INSTITUTIONALISATION

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Introduction

Patients with Parkinsonism may be admitted to hospital because of poor disease control, complications related to Parkinsonism or its treatment, or reasons unrelated to PD. This has considerable implications. The aim of the study was to identify where do admitted patients with Parkinsonism come from and their discharge destination.

Methods

Prospective observational study. Consecutive patients with Parkinsonism admitted, for any reason, to an UK General Hospital in a 15 months period were studied. Patients in the psychiatric unit were excluded. Patients were reviewed and the notes and the electronic database were studied. Patients were followed up until discharge. Data were downloaded on SPSS and descriptive statistics were used.

Results

The study included 107 patients who were admitted 133 times. Mean age was 79.4 years (range 52–95 years). There were 84 male (63%) and 49 female (37%) admissions. 129 admissions (97%) were emergency and 4 (3%) were elective. 9 admissions (7%) were clearly related to Parkinsonism, 52 (40%) were unrelated, and 72 (54%) were due to causes that could be related to Parkinsonism. 91 patients (68%) came from home, however 50 (38%) were discharged to home. 21 patients (16%) came from nursing homes, and 30 (23%) were discharged to nursing homes. 16 patients (12%) came from residential homes, and 18 (14%) were discharged to residential homes. 4 (3%) came from warden controlled accommodations, and 2 (2%) were discharged to warden controlled accommodations.

The average duration of rehabilitation for patients with Parkinsonism (19.3 days) was more than double that of hospitalised patients. 105 patients (79%) were discharged alive, however 28 (21%) died during hospitalisation.

Conclusion

◆ Hospitalisation of patients with Parkinsonism may be a "life changing" event heralding institutionalization or upgrading previous category of care.

◆ Services need to be implemented to aim at better disease control, early recognition of complications, prevention of crisis situations, prolonging independency and avoidance of hospital admissions.

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THE PREVALENCE, NATURE AND ASSOCIATIONS OF NON-MOTOR SYMPTOMS IN PARKINSON'S DISEASE

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Introduction

Non-motor symptoms (NMS) have a detrimental effect on quality of life of patients' with Parkinson's disease (PD). A novel tool (Non-motor symptom scale (NMSS)) has been developed to aid in their evaluation. The work in this area has largely been undertaken in tertiary neurology centres.

Methods

All patients attending PD Northumbria, a geriatrician-lead district general hospital service, on the 1st September 2006 with Idiopathic PD according to the UKPDS Brain Bank Criteria (n=546) were prospectively invited to take part over a 15-month period. The NMSS was completed, together with a standard measure of PD severity (Hoehn and Yahr stage), and basic demographic information (age, gender, levodopa dose). Data were compared using non-parametric analysis and multiple linear regression.

Results

160 subjects participated. Median age 74.0 years (range 55-93), 53% male. Median disease duration 4 years (0-30), median UPDRS 35.5 (7.0-93.0) and median Hoehn and Yahr stage 2.0 (1.0-5.0). Median NMSS 58.5 (range 15.0-162.0). No subject reported complete absence of NMS. Symptoms pertaining to the following NMSS domains were most common: Urinary (97.5%), sleep/fatigue (96.9%) and gastrointestinal (93.1%). Of those variables above, only disease severity emerged as independently associated with NMSS burden on multivariate analysis (b 0.381, R20.145).

Conclusions

NMS were universally present in a representative sample of PD patients, with urinary, gastrointestinal and sleep problems being most frequently seen. NMS burden increased with advancing disease severity.

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SURVEY OF PATIENT EXPERIENCE OF 123I-FP-CIT SPECT SCANNING IN CLINICALLY UNCERTAIN PARKINSONISM - WHAT DOES IT MEAN FOR PATIENTS AND RELATIVES?

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Introduction

Recent NICE guidelines highlight the importance of how satisfaction with the explanation of the diagnosis of Parkinson's disease impacts on quality of life. 123I-FP-CIT SPECT scanning may be a significant event in a patient's disease journey. The aim of this survey was to evaluate the attitudes of patients and relatives to SPECT scanning. It assessed their satisfaction with the process and whether they felt they had received enough information regarding how the result could aid understanding of the working diagnosis.

Methods

30 patients who had recently undergone SPECT scanning and 16 relatives/carers were evaluated using a brief questionnaire. They also spoke freely about their experience and their comments were recorded.

Results

Most patients were happy with the explanation given regarding the need for the scan and how it would be carried out (27/30 and 26/30). Fewer patients were content with the explanation they were given about the meaning of the result (21/30). Nearly all those questioned were glad they had undergone SPECT scanning and felt it had helped them to understand their diagnosis. These opinions were shared by the majority of relatives. Recorded comment themes included; claustrophobia, clarity surrounding diagnosis regardless of result and overall positive experience.

Conclusions

This survey suggests most patients and relatives are content with the SPECT scanning process and that having the scan has aided understanding of working diagnosis regardless of the result.

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DEHYDRATION IS VERY COMMON IN PATIENTS PRESENTING WITH DELIRIUM

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Introduction

One of the standards for the management of delirium in the RCP guidelines is the prompt correction of biochemical derangements. As part of a larger study investigating effects of dehydration on brain volume and cognitive status in the elderly, we performed an audit of the extent to which dehydration was seen in patients presenting with delirium to our department.

Methods

Inpatient notes were reviewed on 4 geriatric wards (n=108). Those with a past history of stroke, known diagnosis of dementia or other brain disorder were excluded. Patients where delirium was a contributing factor to admission were identified by the presence of a lowered AMT or MMSE score or a clearly documented history of acute confusion. The biochemical hydration status of each patient was calculated for each patient (urea:creatinine ratio ≥ 0.1 and/or calculated serum osmolality ≥ 295 defining dehydration).

Results

32 of the 108 inpatients (30%) presented with signs of delirium. The mean age was 85 years (range 68 – 97). 21 of the 32 patients with delirium (66%) fulfilled the biochemical criteria for dehydration.

Conclusion

These results demonstrate how common dehydration is in people presenting with delirium. What is not clear is the effect of significant changes in volaemic status on sensitive organs like the brain. Further work is needed to establish how 'promptly' this biochemical abnormality should be corrected.

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β -SITE AMYLOID PRECURSOR PROTEIN CLEAVING ENZYME DOES NOT INFLUENCE GENETIC SUSCEPTIBILITY FOR ALZHEIMER'S DISEASE

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Introduction

The β -secretase β -site amyloid precursor protein cleaving enzyme (BACE1) is rate limiting in generation of β -amyloid peptide, a key step in the pathogenesis of Alzheimer's disease (AD). Our group has demonstrated increased platelet β -secretase activity in AD (Johnston JA et al, Neurobiol. Aging 2008;29:661-8). The present study investigates whether the apolipoprotein (ApoE) $\epsilon 4$ allele or polymorphisms in the BACE1 gene are associated with AD or with alterations in platelet β -secretase activity.

Methods

Subjects with a diagnosis of AD (NINC-ADRDA criteria) were recruited from a regional Memory Clinic. Control subjects with no evidence of cognitive impairment were also recruited. Blood samples were drawn for assay of β -secretase activity. 11 single nucleotide polymorphisms (SNP) in the BACE1 gene were analysed for association with AD. Statistical analysis was performed using SPSS for Windows version 14 and HaploView version 4.

Results

ApoE $\epsilon 4$ was strongly associated with AD ($p < 0.0001$) but did not correlate with the platelet membrane β -secretase activity ($p = 0.47$). HWE was observed for all BACE1 SNPs. Variation in the BACE1 gene was not associated with AD in single marker analyses or multimarker tests in accordance with selection of tag SNPs and did not correlate with the platelet membrane β -secretase activity.

Conclusion

Common variants in the BACE1 gene do not influence the genetic susceptibility for AD in the NI population.

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SOCIODEMOGRAPHIC CHARACTERISTICS AND INCIDENT DEMENTIA IN THE HYVET TRIAL

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Introduction

Dementia prevalence increases with age. Various sociodemographic characteristics have been associated with an increased risk of dementia. We examined whether sociodemographic characteristics in HYVET influenced incident dementia.

Method

HYVET was a randomised double-blind placebo-controlled trial of hypertensive subjects aged 80 or more with no clinical diagnosis of dementia at baseline. Cognitive function assessment using the Mini-Mental State Exam (MMSE) was performed at baseline and annually thereafter. Sociodemographic characteristics were collected prior to randomisation. Possible incident dementia cases were validated by an independent committee.

Results

3336 participants were able to be evaluated for possible incident dementia, 263 cases were diagnosed (126 active group, 137 placebo group). 6680 patient-years were accrued. Baseline characteristics that remained significant (results given as hazard ratio with 95% confidence limits) after controlling for treatment were living alone 0.71 (0.52-0.97) $p=0.033$ and educational level 0.59 (0.45-0.78) $p=0.0002$. Age, gender, smoking, alcohol consumption and body mass index (BMI) were not. In a multiple regression model living alone, and education remained significant with BMI becoming significant 1.04 (1.01-1.08) $p=0.0115$ per 1kg/m² increase. Inclusion of baseline systolic blood pressure did not change the direction or significance of these results.

Conclusion

In a hypertensive healthier very elderly population living alone and being educated were associated with a decreased risk of developing dementia. Smoking, drinking alcohol, age and gender had no impact. Higher BMI was associated with an increased risk of dementia in a multivariate model only.

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COMPARISON OF CLOX, MMSE AND PENTAGON COPYING FOR PREDICTING SPIROMETRY PERFORMANCE

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Introduction

We hypothesised that clock drawing tests (CLOX 1 and 2), being validated tests of cognitive executive function, might predict spirometry performance with a higher sensitivity and specificity than the Mini Mental State Examination (MMSE) or copying intersecting pentagons (IP).

Methods

We studied 113 (84 female) spirometry-naïve inpatients, mean age 84 (range 74-97). All performed the MMSE, IP and CLOX 1 and 2. All attempted to perform assisted spirometry to the American Thoracic Society/European Respiratory Society standard. A separate observer determined whether the criteria for forced vital capacity (FVC) had been met.

Results

49/113 met the criteria for adequate spirometry. Using established thresholds for probable impairment, inability to perform spirometry was predicted by an MMSE < 24/30 with a sensitivity of 81% and specificity 90% ($P<0.0000$); by inability to draw IP with a sensitivity of 92% and specificity of 100% ($P<0.0000$); by CLOX 1 < 10/15 with a sensitivity of 81% and specificity of 49% ($P=0.0006$); and by CLOX 2 < 12/15 with a sensitivity of 63% and specificity of 65% ($P=0.0003$). For CLOX 1 the sensitivity and specificity was not improved by setting any other threshold except a score of 14/15, which was reached by only 4 subjects. For CLOX 2 no improved threshold could be set.

Conclusion

CLOX tests did not perform better than MMSE and IP to identify subjects unlikely to be able to perform spirometry.

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CAN MEASURES OBTAINED USING PULSE WAVE ANALYSIS BE USED TO PREDICT OUTCOME AFTER ACUTE ISCHAEMIC STROKE?

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Introduction

Pulse wave analysis (PWA) is a non-invasive technique for analysing the pulse waveform. The augmentation index (Alx), a measure derived from PWA, is correlated with endothelial function and arterial stiffness, both implicated in the aetiology of stroke. The potential utility of PWA in prognostication after ischaemic stroke has never been evaluated. The aim of this study was to discover whether baseline Alx can predict short-term outcome after acute ischaemic stroke.

Methods

60 subjects (mean age 64.5 years, 36 (60%) male) were recruited within six days of ischaemic stroke onset. PWA was performed daily for the first seven days after stroke, then weekly until discharge. The outcome measures used were Barthel Index at admission, one week, and discharge; length of hospital stay; and discharge destination (home or other). Spearman's rank correlation was used to compare baseline Alx (standardised to a pulse rate of 75 beats per minute) with the main outcome measures.

Results

Baseline Alx was negatively correlated with the Barthel Index, though this was only significant for Alx at admission and Barthel Index at discharge ($r=-0.391$, $p=0.009$). A higher baseline Alx was also associated with a longer length of hospital stay ($r=0.402$, $p=0.006$). No statistically significant association was found between baseline Alx and discharge destination.

Conclusion

In subjects with acute ischaemic stroke, a higher baseline Alx was associated with a poorer short-term outcome.

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VALIDATION OF THE INTRACEREBRAL HAEMORRHAGE SCORE FOR PROGNOSIS OF STROKE PATIENTS IN CLINICAL PRACTICE

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Aims

To evaluate the Intracerebral Haemorrhage Score (ICH) as a measure of prognosis of patients with haemorrhagic stroke.

Methods

Thirty patients were studied, mean age 73 ± 13 years. Outcome was measured as death versus discharge and functional recovery.

Results

There was no significant difference in the pre-stroke Rankin (0.76 vs 0.85, $p=0.8$) and Barthel scores (19 vs 18, $p=0.8$) of the discharged vs deceased patients. There was a significant difference between the two groups for blood volume on CT scan, (50 mls vs 124 mls; $p=0.01$) and ICH score (1.82 vs 4.5, $p<0.001$). All patients with a score of 0 to 2 survived, 67% of patients with score 3 survived whereas only 28% of the score 4 survived and none of the patients with score 5 and 6 survived. Only 6% of patients with scores 0 to 3 died (16 patients) vs 85% of the scores 4 to 6 (14 patients); $p<0.001$. Patients with the score of 0-3 had a significantly better post stroke functional recovery with Barthel index of 15.5 vs 1.3, $p<0.001$ and post-stroke Rankin score of 2.25 vs 5.6, $p<0.001$. Logistic regression revealed ICH score to be the most significant variable predicting mortality.

Conclusion

The ICH score for haemorrhagic stroke has a prognostic value for mortality and functional recovery; patients with a lower score have a better functional recovery and lower mortality.

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**THE STROKE OXYGEN PILOT STUDY:
THE EFFECT OF ROUTINE FIXED
OXYGEN SUPPLEMENTATION ON
NEUROLOGICAL OUTCOME AT ONE
WEEK**

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Introduction

Mild hypoxia is common after stroke, and associated with worse long-term outcome. Oxygen supplementation could prevent hypoxia and improve recovery. The aim of this study was to assess if routine oxygen supplementation after stroke affects outcome.

Methods

Acute stroke patients were recruited within 24h of hospital admission if they had no definite indications for and no contraindications to fixed dose oxygen treatment. Participants were randomised to oxygen supplementation via nasal cannulae for 72h (3L/min if oxygen saturation (SpO₂) at baseline \leq 93% or 2L/min if baseline SpO₂ > 93%) or to control treatment (oxygen only if clinically indicated).

Results

300 patients were randomised, 36 dropped out (2 withdrawal of consent, 25 discharge or transfer before final assessment, 9 stroke diagnosis not confirmed), 1 week follow-up data were available for 265 patients. Baseline data for oxygen (n=139) and controls (n=126) respectively were: mean age 73sd12 and 71sd11y; male sex 45 and 50%, time between stroke and recruitment 12:45sd7:11 and 12:11sd7:24 h:min, SpO₂ at randomisation 96.0sd1.8 and 96.0sd1.9%, mean National Institute of Health Research Stroke Scale (NIHSS) score 7.4sd5.8 and 7.0sd6.2. At one week follow-up the NIHSS score had increased by 1.6sd6.0 and 0.8sd5.0 (p<0.05) and 4 and 3 patients had died (p=1.0) in the oxygen and control groups respectively.

Conclusions

Routine oxygen supplementation for 72 hours led to a small, but significant improvement in neurological outcome at one week.

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**HYPERTENSION AND HYPOTENSION
ARE BOTH ASSOCIATED WITH
FATIGUE FOLLOWING TIA AND
STROKE**

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Introduction

Fatigue affects up to 68% of stroke patients. We hypothesised that, an association may exist in patients with stroke or TIA between fatigue and measures of abnormal blood pressure (BP) detected on ambulatory monitoring.

Methods

Subjects recruited from a secondary prevention clinic underwent 24 hour ambulatory BP monitoring and completed a Fatigue Severity Scale (FSS).

Results

100 subjects were included (51% female, median age 70 years). Mean FSS was 3.6 and 42 had a FSS > 4 indicating significant fatigue. Mean daytime BP was 134/74 (s.d.16/10). There was no significant difference in mean systolic (SBP) or diastolic (DBP) between patients with and without significant fatigue. Patients with stroke suffered worse fatigue than those with TIA (mean FSS 3.8 vs 3.0 p=0.03).

24 subjects were hypertensive (mean 24hr SBP > 145mmHg or DBP > 90mmHg), 26 had a lowest daytime DBP < 50mmHg and 4 had both features leaving 55 normotensive subjects. Normotensive subjects had lower mean FSS than those with low daytime DBP (Mean FSS 3.2 vs. 4.2. p=0.01. t-test) or those with hypertension (Mean FSS 3.2 vs 4.1. p=0.02. t-test). Subjects with daytime diastolic hypotension were more likely to suffer significant fatigue (chi square 7.8, p=0.005. O.R. 3.9 (1.5-10.4) as were hypertensive subjects (chi square 3.8, p=0.05. O.R. 2.7 (1.0-7.3).

Conclusion

In patients with Stroke or TIA, fatigue is associated with both hypertension and daytime hypotensive episodes.

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THE RELATION BETWEEN SUBJECTIVELY REPORTED MEASURES OF SLEEP QUALITY, SLEEPINESS AND FATIGUE FOLLOWING STROKE AND TIA

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Introduction

Fatigue affects nearly 70% of people following stroke. Sleep disordered breathing affects 70%. 30% of the older population suffer symptoms of insomnia and stroke is associated with disruption of sleep structure. We determined the relation between self reported sleep difficulties and fatigue/sleepiness in patients following stroke.

Methods

Patients were recruited from clinics, interviewed and completed questionnaires as to their sleep habits. They also completed Fatigue Severity Scores (FSS) and Epworth Sleepiness Scores (ESS). % point likert scales were completed as to frequency of sleep disorders. Reports of ‘often’ or ‘always’ were marked as significant.

Results

89 subjects (median age 70 years, 53% female) completed interviews. Mean FSS was 3.9 (>4 is significant), mean ESS was 6.6 (>10 is significant). Reported sleep associated problems were as follows

	n significant	Proportion
I have problems falling asleep.	25	(28%)
I wake frequently at night.	32	(36%)
I wake early in the morning	40	(45%)
I have problems rising in the morning	18	(20%)
I often feel sleepy during the day	28	(31%)
Any of above	73	(82%)

There was no significant correlation between ESS and FSS ($r=0.067$, $p=0.55$ Pearson’s Rho) or with any Likert scale, but ‘problems rising’ and ‘feel sleepy’ correlated with FSS ($r=0.267$, $p=0.16$ and $r=0.300$, $p=.006$)

Conclusion

Although self reported sleep problems are common in this population they correlate poorly with measures of sleepiness and fatigue.

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LOOPED NASOGASTRIC TUBE FEEDING IN ACUTE STROKE

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Introduction

50% of patients with acute stroke develop dysphagia of which one third will require short term enteral feeding, usually via a nasogastric (NG) route, but this is limited by frequent tube removal and difficulties in tube positioning. Looped nasogastric tube feeding is a method of fixing the NGT to the nasal septum to improve fixation of the tube.

Method

Two centre randomised controlled trial comparing looped vs conventional NG feeding, stratified by centre and stroke severity. Participants: all stroke patient with dysphagia requiring NG feeding. Exclusions: nasal trauma or obstruction. Outcome measures: proportion of prescribed feed and fluids delivered in 2 weeks, number of NGTs and X-rays, failure of feeding, adverse events and tolerability.

Results

104 patients were randomised: 51 in the loop group and 53 in the conventional group. The loop group received a mean 17% (95%CI 5-28%) more feed and fluids than the conventional group and required a median 3 fewer NGTs and 2.5 fewer days of intravenous fluids. Tolerability and adverse events were similar between the groups.

Conclusions

Looped NG feeding improves enteral feed delivery in acute stroke and is also preferable because it reduces the discomfort of repeated tube insertions.

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QUALITY OF LIFE OF ELDERLY PEOPLE ON WARFARIN FOR ATRIAL FIBRILLATION

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Introduction

The prevalence of non-valvular atrial fibrillation (AF) rises sharply in old age accounting for nearly 25% of ischaemic stroke in people aged over 80 years. Warfarin reduces this risk substantially compared to aspirin. However, it remains underused for fear of perceived reduction in quality of life (QL). We studied QL of older people at initiation and six months after starting warfarin treatment using short form 12 questionnaire v2 (SF12v2).

Methods

AF patients over 75 years filled up the SF12v2 on initiation in the anticoagulation clinic, when they were also provided with a blank SF12v2 in a stamped envelope to complete after six months (with telephone reminder) while continuing on warfarin. We recorded stroke risk (CHADS2 score) and excluded patients with dementia and who sustained stroke during the study.

Results

Eighty-five percent (94/110) of questionnaires were returned. Fifty-five percent were women, mean age: men 80 years, women 82 years. Seven incomplete responses were excluded. The mean Physical Component Score (PCS) was 36.61 at initiation and 34.83 at six months (matched pairs t-test $p=0.062$, Not Significant). The mean Mental Component Score (MCS) was 44.40 at initiation and 43.65 at six months ($p=0.427$, Not Significant).

Conclusions

We did not find any clinically or statistically significant decline in physical or mental QL in this small elderly AF population while on warfarin therapy for six months.

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THE STROKE OXYGEN PILOT STUDY: THE EFFECT OF ROUTINE FIXED RATE OXYGEN SUPPLEMENTATION ON OXYGEN SATURATION AFTER ACUTE STROKE

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Introduction

Mild hypoxia is common after stroke, and may affect outcome. Oxygen supplementation could prevent hypoxia and improve recovery. The aim of this study was to assess the effects of routine fixed rate oxygen supplementation on oxygen saturation (SpO₂) in patients with acute stroke.

Methods

Stroke patients were recruited within 24h of hospital admission if they had no definite indications for and no contraindications to fixed dose oxygen treatment. Participants were randomised to oxygen supplementation via nasal cannulae for 72h (3L/min if oxygen saturation at baseline $\leq 93\%$ or 2L/min if baseline SpO₂ $> 93\%$) or to the control group (oxygen only if clinically indicated). SpO₂ was measured by pulse oximetry from 23:00-08:00 on night 2 after recruitment.

Results

Oxygen (n=139) and control (n=125) groups were well matched for age, sex, comorbidities (IHD, CCF, COPD), neurological deficit (NIHSS score), time between stroke and recruitment, and baseline SpO₂ (96.0sd1.8% and 96.0sd1.9% respectively). Results (means) of the overnight pulse oximetry for the oxygen and control groups respectively were: nocturnal SpO₂ 95.8%sd2.1 and 94.4%sd1.7 ($p<0.001$), lowest SpO₂ 87.5%sd10.7 and 84.9%sd14.7 ($p=0.03$), 4% desaturation index 2.4sd6.7 and 2.5sd4.7 ($p=0.005$); time spent with SpO₂ $< 95\%$ 2:22sd2:58 and 4:02sd3:25 hh:mm ($p<0.001$), and time with an SpO₂ $\geq 98\%$ 2:57sd3:41 and 0:38sd1:36 hh:mm ($p<0.001$).

Conclusions

This regime of oxygen supplementation significantly improved all parameters of oxygenation in patients with acute stroke.

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DOES TELEPHONE FOLLOW UP IMPROVE BLOOD PRESSURE IN PATIENTS AFTER STROKE OR TIA?

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Introduction

Hypertension is a common risk factor for stroke/TIA and there is good evidence that blood pressure (BP) control prevents recurrent stroke. The aim was to investigate whether regular Telephone Follow-Up (TFU) improved risk factors in hypertensive patients after visit to the Stroke Clinic.

Methods

We conducted a RCT and hypertensive patients within 1 month after stroke or TIA received TFU (n=29) or not (n=27). The primary outcome was the difference in 12-hour ambulatory systolic BP change from baseline to 6 months (Δ SBP) in both groups. TFU at 7 days, 1, 2 and 4 months included patient-focussed education and promoted patient-led management using motivational interviewing.

Results

Mean baseline clinic BP was 145/83 (SD 21/14). There was no significant difference in Δ SBP over 6 months with TFU. Median Δ SBP was 0 mmHg (IQR 20) in the TFU group and 3.0 mmHg (15) in the control group (p=0.29). There were no differences between groups in number of antihypertensive agents taken; level of exercise; quality of life or total cholesterol at 6 months. Only 32.1% of all patients were treated to a target BP of 130/80 at follow-up in comparison to 48.2% at baseline.

Discussion

The study found that TFU promoting patient-led management of risk factors after Stroke/TIA did not improve BP control or increase the number of antihypertensive agents taken in primary care at 6 months follow-up.

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RATES, DETERMINANTS AND OUTCOMES OF EARLY RECURRENT STROKE- THE NORTH DUBLIN POPULATION STROKE STUDY

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Introduction

Recurrent stroke is associated with increased disability and mortality. Few data exist regarding rates and determinants of early recurrence since the introduction of modern stroke prevention strategies.

Methods

All strokes, over 12 months, within a population-based prospective cohort study in North Dublin city (population 294,592) were identified using overlapping ascertainment methods. Outcomes were assessed at 7 and 28 days. Early recurrent stroke defined as any new neurological deficit lasting \geq 24 hours, not attributable to worsening of initial stroke or another cause.

Results

Of 543 stroke cases analysed (mean age 70.9 [SD 13.3], 55.6% female), qualifying event for inclusion was first-ever stroke in 85.1%, recurrent stroke 14.9%. 84.3% (458) were infarcts. Recurrence data available for 512. Overall, recurrent stroke occurred in 1.47% at 7 days (8/543), 3.5% at 28 days (19/543). Univariate analysis revealed a strong trend for association 7-day recurrence and stroke of large artery origin (p=0.065). Age, blood pressure, diabetes, smoking, atrial fibrillation, and pre-stroke medication not associated with early recurrence. Recurrence associated with higher 28-day Rankin Score (p=0.015) but not death.

Conclusion

Risk of early recurrent stroke was substantially lower in our cohort compared to earlier studies, suggesting benefit of newer secondary prevention measures at a population level. The strong trend towards 7-day recurrence in large artery stroke supports previous research. These data will inform the design of trials examining early prevention strategies post-stroke, and allow identification of high-risk patients.

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ELECTROCARDIOGRAM QT INTERVAL INCREASES AFTER ACUTE STROKE

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Introduction

Increased QT interval (QT) and QT interval dispersion (QTd) on electrocardiogram (ECG) predict cardiovascular disease, stroke and death. Case control studies have demonstrated greater QT and QTd in acute stroke, but no previous study has compared QT values before and after stroke. This retrospective observational study examined the change in QT interval following acute stroke.

Method

Data were obtained from the hospital records of 45 patients admitted over a 12-month period with stroke (ischaemic or haemorrhagic; median age 80 years, 56% female). The most recent available 12-lead ECG before the stroke and the earliest afterwards were studied. QTd and the longest QT interval (QTmax) were measured manually using image software.

Results

The median period between ECGs was 16 months (range 10 days to 161 months). Mean QTmax increased from 404 to 419 msec (increase 14.9, 95% confidence interval 6.1 – 23.7, $p < 0.002$). QTd increased from 41 to 45 msec (increase 4.1, 95% confidence interval -1.3 – 9.5, $p = 0.14$). QT correction for heart rate using Bazett's formula did not alter the findings. Regression analysis revealed no significant confounding effect of other variables. Change in QT was no different for particular stroke sites or subtypes.

Conclusions

This study identifies an increase in QTmax following acute stroke, and a non-significant increase in QT dispersion. Further research is warranted to explore this association, and to examine the effect of particular stroke subtypes.

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EARLY OUTCOME FOLLOWING STROKE - THE NORTH DUBLIN POPULATION STROKE STUDY

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Introduction

Prospective cohort studies are required to determine the outcome of stroke while avoiding selection bias which may complicate retrospective and hospital-based studies. Few population-based data include older patients, as these have been excluded in previous studies (eg. MONICA).

Methods

The North Dublin Population Stroke Study is a prospective population-based cohort study of stroke and TIA in an Irish urban population of 294,592 individuals, according to recommended criteria for 'ideal' stroke epidemiology studies.

Results

The cohort included 567 stroke patients. 23 (4.1%) were lost to follow-up. Mortality rates at 28 days were 38.0/100,000 person-years of observation and 49.2/100,000 at 90 days. Overall case-fatality rates were 19.75% at 28 days and 25.57% at 90 days. At 90 days, 29.9% of ischaemic stroke patients had moderate-severe disability (Rankin score 3-5), compared to 24.6% of those with intracranial haemorrhage, and 13.8% of subarachnoid haemorrhage. 28-day case-fatality was 44.8% (13/29) for subarachnoid haemorrhage, 40.98% (25/61) for intracranial haemorrhage and 12.5% (56/448) for ischaemic stroke and at 90-days 51.72% (15/29) for subarachnoid haemorrhage, 40.98% (25/61) for intracranial haemorrhage and 18.75% (84/448) for ischaemic stroke.

Conclusions

Mortality, case-fatality and disability rates from stroke in the North Dublin population are lower than those in the WHO MONICA study and similar to those in other recent studies (eg. OXVASC), suggesting that improvements in acute stroke care in recent years are associated with improved outcomes at population level.

CAN THE TIMING OF CAROTID IMAGING BE PRIORITISED ON CLINICAL GROUNDS?

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Introduction

Carotid endarterectomy is indicated following recent transient ischaemic attack(TIA) or minor stroke in severe symptomatic carotid stenosis(CS). Prioritisation of timing of carotid imaging(CI) on clinical grounds may be useful in hospitals where immediate imaging is not possible.

Two methods

- ABCD2 score
- Presence of any one of clinical features: Previous TIA, carotid bruit, diabetes, not a lacunar event were useful^{1,2} in predicting CS and we sought to determine their utility in our population. Two methods were compared in TIAs but for minor strokes we tested the second method only.

Results

Retrospective consecutive series of 129 patients seen by a senior clinician at a TIA clinic. CI was performed with duplex scanning.

	TIA		TIA and Minor stroke
Number	81		129
Ipsilateral stenosis	8/81		10/129
Method (95% CI)	ABCD2 score >4	Presence of any one of four features	Presence of any one of four features
Sensitivity	63(26-90)	100(60-100)	100(60-100)
Specificity*	75(64-84)	48(36-60)	48(36-60)
Positive predictive value	22(8-44)	17(8-32)	17(8-32)
Negative predictive value(NPV)	95(85-99)	100(88-100)	100(88-100)

* Difference was only significant for specificity(P<0.05)

Conclusions

Both methods have high NPV suggesting that if patient's ABCD2 score is below 5 or if none of the four features is present, CS is unlikely. These methods could be used for prioritisation if CI cannot be performed immediately in all patients.

References

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2. J Neurol. Neurosurg. Psychiatry 1999;66:6-19

Friday, 14 November 2008

PLATFORM PRESENTATIONS

Session I - Stroke Update

09:00 - 10:15

ABSTRACT BOOK NOS 96

Session J - Free Communications

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RISK OF BLEEDING WITH COMBINATION ANTIPLATELETS IN ACUTE TIA AND MINOR STROKE

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Background

In the EXPRESS Study, early preventive treatment after TIA and minor stroke reduced early recurrent stroke by 80% without increasing bleeding complications. However, safety data were not reported separately for patients given aspirin plus clopidogrel (A+C). In the absence of other data on the safety of acute treatment with A+C in elderly non-trial populations, we determined the 30-day risk of bleeding.

Methods

We studied patients treated in the EXPRESS clinic from 1/4/02- 1/4/08. A+C was given for 30 days in patients presenting acutely. Brain imaging was done prior to treatment of minor strokes. Bleeding events, categorised by the CURE Trial criteria, were identified by regular face-to-face follow-up, diagnostic coding in primary and secondary care, and blood transfusion data.

Results

Of 826 patients with TIA or minor stroke (28% aged ≥80) given aspirin alone (AO) or A+C, 7 had minor (n=3), major (n=4) bleeding in the first 30 days: 2/447 on AO (0.4%, 95%CI 0.12-1.62) versus 5/250 (2.0%, 95%CI 0.3-3.8) on A+C (p=0.010) The age, sex and other baseline characteristics of the AO and A+C groups were similar, as were the subsequent monthly bleeding risks from day 30-180: 0.31% (0.10-0.53) in the AO group and 0.44% (0.09-0.78) in the A+C group (after stopping clopidogrel).

Conclusion

A 30-day course of A+C acutely after TIA or minor stroke was associated with a greater risk of non-disabling bleeding than aspirin alone.

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PARACETAMOL USE IS ASSOCIATED WITH LOWER GRIP STRENGTH IN OLDER PEOPLE: FINDINGS FROM THE HERTFORDSHIRE COHORT STUDY

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Introduction

Lower grip strength in older people is associated with major adverse health consequences and there is interest in identifying modifiable influences. Paracetamol is commonly prescribed in later life, but its effect on muscle strength is not known.

Methods

Paracetamol use and peak grip strength were ascertained for 1572 men and 1415 women, aged 59-73, who participated in the Hertfordshire Cohort Study, UK. Multiple linear regression analyses were conducted.

Results

7% of men and 13% of women used paracetamol. Paracetamol use was associated with reduced grip strength in men (regression coefficient for reduction in grip strength after adjustment for age and height: b 2.24kg [95%CI 0.92-3.57], p<0.01) and women (b 2.73kg [95%CI 1.89-3.57], p<0.01). Associations remained significant after further adjustment for self reported pain scores and use of NSAIDs and DMARDs as drug markers of inflammation and arthritis (b 1.38kg [95%CI 0.004-2.77], p<0.05; women b 1.12kg [95%CI 0.22-2.03], p=0.02).

Conclusions

Paracetamol use is associated with lower grip strength. This association may be partly mediated through co-morbidity but a direct effect is also possible because paracetamol can inhibit skeletal muscle cyclo-oxygenase and may impair prostaglandin mediated protein synthesis. These findings warrant replication as they have potential implications for prescribing of paracetamol in older people, especially for those who are frail.

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AN ASSESSMENT OF THE ASSOCIATION BETWEEN LOW HANDGRIP STRENGTH AND FRAILITY IN A PROSPECTIVE POPULATION BASED STUDY IN THE OLDEST OLD

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Introduction

Sarcopenia has frequently been associated with the geriatric syndrome of frailty. Aim of this study was an assessment of the association between sarcopenia and changes in three important domains of the frailty syndrome: psychological, social and functional domain.

Methods

The Leiden 85-plus Study is a prospective population based follow-up study among a representative cohort of 555 individuals all aged 85 years at baseline with a mean follow up of 5.6 years. Handgrip strength was used as a proxy for sarcopenia and measured with a handgrip strength dynamometer. Psychological, social and functional status was assessed annually.

Results

Handgrip strength at 85 years in women was 19.7 ± 5.1 kg (mean ± SD) and in men handgrip strength was 31.7 ± 7.6 kg. At baseline, low handgrip strength was correlated with poorer scores in the psychological, social, and functional domain (ANOVA, all p < 0.03). However, over time low handgrip strength was not associated with an added additional decline in any domain (all p ≥ 0.05), except in ADL-disability (p = 0.002).

Conclusions

In this prospective study among community dwelling oldest old we found multiple cross-sectional correlations between sarcopenia and three domains of frailty, however no associations were found in the longitudinal analyses. It seems therefore unlikely that sarcopenia is causally related to these three domains of frailty.

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PREVENTING HEART FAILURE IN THE HYPERTENSION IN THE VERY ELDERLY TRIAL (HYVET)

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Introduction

The HYVET trial reported a highly beneficial reduction in heart failure events. We examined whether this benefit varied according to sex, age, previous cardiovascular disease (CVD) and baseline systolic blood pressure (SBP).

Method

HYVET was a randomised, double-blind, placebo-controlled trial recruiting patients aged 80 or more. Entry criteria included a SBP of 160-199mmHg. Active treatment was indapamide SR 1.5mg with the addition of perindopril (2-4mg) as required to reach a target BP of 150/80mmHg.

Results

The main intention-to-treat analysis showed a reduction in all heart failure of 64% (p<0.001). The hazard ratios with 95% confidence intervals are presented according to the parameters above for all heart failure events. The interaction terms between active treatment and the various subgroups were not significant being 0.10<p<0.80.

	n	All Heart Failure Events
Men	1519	0.30 (0.14-0.67)
Women	2326	0.39 (0.21-0.74)
80-85years	2807	0.28 (0.15-0.50)
≥85years	1038	0.60 (0.25-1.44)
History of CVD	452	0.45 (0.14-1.43)
No history of CVD	3393	0.33 (0.19-0.57)
SBP 160-169mmHg	1621	0.21 (0.08-0.50)
SBP 170-179mmHg	1406	0.45 (0.21-0.93)
SBP ≥180mmHg	818	0.58 (0.19-1.77)

Conclusions

The positive benefits in the reduction of heart failure in HYVET with indapamide SR based treatment were seen across sex, age, previous CVD and baseline SBP. Given the increased prevalence heart failure with age it is important that strategies are in place to ensure that very elderly hypertensives are treated.

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PLATELET β -SECRETASE ACTIVITY IS INCREASED IN ALZHEIMER'S DISEASE

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Introduction

Alzheimer's disease (AD) is a common neuro-degenerative disorder associated with significant morbidity and mortality. The amyloid cascade hypothesis is favoured in AD pathogenesis and the β -secretase β -site amyloid precursor protein cleaving enzyme (BACE1) is rate limiting. Cholesterol is inconsistently associated with AD and may influence activity of this membrane located enzyme. This study aimed to investigate whether there are differences in the β -secretase activity between platelets of AD subjects and cognitively normal control subjects and to determine whether the concentration of cholesterol influences this activity.

Methods

Subjects with a diagnosis of AD (NINCDS-ADRDA criteria) were recruited from a regional Memory Clinic. Control subjects with no evidence of cognitive impairment were recruited. Blood samples were drawn for assay of β -secretase activity. Statistical analysis was performed using SPSS for Windows version 14.

Results

399 subjects were recruited; 201 with probable AD and 198 controls. Mean platelet membrane β -secretase activity was significantly higher in the AD group, compared to the control group ($p < 0.0001$). Age ($p = 0.008$) and serum cholesterol concentration ($p = 0.009$) were significantly higher in the AD group, but did not correlate with the platelet membrane β -secretase activity. Platelet membrane cholesterol concentration was significantly lower in the AD group ($p = 0.03$) and was significantly positively correlated with the platelet membrane β -secretase activity ($r = 0.22$, $p = 0.003$).

Conclusions

Platelet membrane β -secretase activity is elevated in AD and is correlated with the platelet membrane cholesterol concentration.

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IMPACT OF EXERCISE ON HEALTH STATUS AND SURVIVAL IN OLDER ADULTS

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Introduction

Concern has been expressed that preventive measures in older people merely create a different set of health problems. We investigated the impact of exercise on probabilities of health improvement, deterioration and death in community-dwelling older people.

Methods

In the Canadian Study of Health and Aging, health status was measured in a frailty index based on the number of health deficits. Exercise was classified as high or low/no exercise using a validated self-administered questionnaire. Health status and survival were re-assessed at 5 years.

Results

5555 participants had complete data. For both genders, exercise attenuated the impact of age on mortality across all grades of frailty. Exercise conferred its greatest mortality benefit in those with lower baseline frailty (eg Relative Risk of death for low exercisers 1.68 with 0 deficits, vs. RR=1.07 for those with 7 deficits). By contrast, the greatest impact on health status was to those who were more frail (eg improved or stayed the same: 19.6% of high vs. 22.0% of low exercisers for those with 0 deficits. 37.3% of high vs. 27.0% of low exercisers for those with 7 deficits).

Conclusions

Here, exercise was strongly associated with improved health in older people. As the majority of the mortality benefit was seen at lower levels of baseline frailty and declined as frailty increased, the net effect of exercise should be to improve health status at the population level.

published by the British Geriatrics Society



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