Correlates of self-related health in a geriatric day care centre

Platform and poster presentations

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Bones, Fractures & Trauma
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A STATISTICAL MODEL TO PREDICT OSTEOPOROSIS IN MEN

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Introduction
Although osteoporosis also affects men, a screening programme is difficult to justify. We attempted to develop a statistical model from known clinical risk factors to identify at least 75% of men with osteoporosis. This model could be used to target those who need further investigation.

Methodology
This case-control study included 102 men 55 years of age and older (51 men with idiopathic osteoporosis and 51 age and ethnic matched controls). Osteoporosis was diagnosed according to the WHO criteria (BMD of the lumbar vertebrae and proximal femur –Lunar - DPX). Evaluations included: a questionnaire about known risk factors, analysis of dietary calcium intake (one week recall method - NutriCalcTM), body weight and height.

Results
We developed a logistics regression analysis model to predict the probability of a person having osteoporosis: p=1/{1+exp[-(6.829-0.604E-0.223B+1.261A+1.268S)]}. Where “exp” indicates the natural logarithm base e (2.718) taken to the power of the value in brackets, “E” is the total amount of exercise taken (range 2: least to 8: most), “B” is the body mass index value, “A” is whether the subject consumes excess alcohol (0=no, 1= yes), and “S” is whether the subject smokes (0=no, 1=yes).

This model has a Chi-square value of 41.70 with four degrees of freedom and properly classified 79.6% of the control subjects and 77.8% of the subjects with osteoporosis, a total of 78.7% correct classifications.

Conclusion
This model is based on 4 simple factors: body index, exercise taken, cigarette smoking and alcohol intake. In the population we studied it correctly predicted osteoporosis in 78.7% of instances. This model could be used to identify men at risk of osteoporosis.

SCREENING FOR OSTEOPOROSIS: THE SENSITIVITY OF PERIPHERAL SCANNERS

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Introduction
Osteoporosis is a common condition associated with increased mortality and morbidity. The early detection of asymptomatic patients is warranted as therapeutic modalities can reduce the fracture risk. Relatively cheap and portable heel scanners are now available to screen for osteoporosis. We evaluated the sensitivity of two heel scanners compared to a DXA-scan of the hip.

Methodology
We offered participants at a ‘Health Fair’ the opportunity to measure the bone density of their proximal femur with a Central DXA (Hologic QDR-4000), and that of their left calcaneus with a peripheral unit: PIXI (Lunar) or Sahara (Hologic). The WHO criteria were used to diagnose osteopenia and osteoporosis on the central DXA. The manufacturers’ guidelines were used to differentiate ‘normal’ from ‘abnormal’ heel BMD: t-score –1.6 and –1.5 or lower for the PIXI and Sahara scans respectively.

Results
We scanned 329 postmenopausal women (mean age 56 years, range 47 to 72 years). Whereas 41% of the scanned population had evidence of either osteopenia (39%) or osteoporosis (2%) of the hip when scanned with the ‘central DXA’, only 3.6% and 4.3% of the population scanned had an abnormal heel BMD on the Sahara and the PIXI respectively.

Conclusions
Our results confirm the relatively high prevalence of osteopenia among a healthy postmenopausal female population, but indicate that when using the present t-scores guidelines for peripheral scans, the sensitivity of the Sahara and PIXI heel scans is low. Our results suggest that the t-score level delineating normal from abnormal BMD of the heel should be revised in order to increase the sensitivity of the technique.

PREDICTIVE FACTORS FOR MORTALITY AND INSTITUTIONALISATION AFTER HIP FRACTURE

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Introduction
Mortality and morbidity rates following hip fracture are high. Up to 25% will die in the first 3 months and 25% of survivors fail to return home. The financial and personal cost of institutionalisation is great. Previous studies have concentrated on predictive factors for mortality. Less is known about the factors influencing discharge location after hip fracture.

Methods
Pre-operative parameters relating to medical, physical and mental function were collected prospectively at the time of admission. The admitting doctor was asked to make a global statement regarding the patient's overall 'fitness for theatre'. Patients already in institutional care or hospital prior to fracture were excluded from analysis. Forward stepwise logistic regression (SPSS v9.0) identified independent predictive factors for mortality, and for institutionalisation of survivors.

Results
Data was collected on 232 consecutive admissions, of which 166 (71.6%) were from the patient's own home. 14 (8.4%) died in hospital and 41 (27.0%) of the survivors failed to return home.

Predictive factors for in-patient mortality:

	Sig	R	Exp(B)
Unable to manage stairs	0.0228	0.1821	4.541
Atrial fibrillation	0.0397	0.1525	4.129
Previous stroke	0.0070	0.2341	6.405
'Unfit for theatre'	0.0282	0.1712	4.525

Adjusted R^2 = 0.39

Predictive factors for institutionalisation of survivors:

	Sig	R	Exp(B)
Dementia	0.0005	0.2373	8.813
Previous use of services	0.0393	0.1159	2.381

Adjusted R^2 = 0.20

Conclusions
Predictive factors for mortality after hip fracture (inability to manage stairs, atrial fibrillation, stroke and being 'unfit for theatre') reflect impaired physical condition before the fracture. Predictive factors for institutionalisation of survivors (dementia and previous use of services) reflect impaired functional condition. However, the low values for adjusted R^2 indicate that further work is needed to produce better models.

A COMPARISON OF TWO QUANTITATIVE ULTRASOUND SCANNERS IN HEALTHY OLDER PEOPLE

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Introduction
Quantitative ultrasound is used with increasing frequency in the assessment of osteoporosis. With the availability of several scanners it is important to ensure consistency of results between scanners. Correlation coefficient is often quoted as indicative of comparability, yet this method of analysis can be misleading (Bland and Altman, Lancet 1986).

Methodology
59 healthy older volunteers underwent heel ultrasound using 2 scanners reported to have good correlation (Achilles Plus and Achilles Express). The right foot was scanned repeatedly on the Express to assess reliability and then compared with the Plus. Reliability was obtained using analysis of variance. Stiffness indexes and T-scores were compared using Bland-Altman methodology, which evalutates the discrepancy between two measurements in relation to their mean.

Results
The reliability of the Express was 0.98, whilst correlation between Express and Plus was 0.96 ($p<0.001$). However, Bland-Altman analysis showed significant differences between the scanners. The Express stiffness index nearly always exceeded the Plus, with 95% limits of agreement -0.1 to 18.9 ($t=14.3$, $df=54$, $p<0.0001$, with the outlier excluded). This translates to differences in T-scores ($t=12.6$,$df=55$, $p=0.0001$), such that the number of volunteers with T-scores less than -2.5 increased by 230% on the Plus compared with the Express (23vs10).

Conclusions
These scanners cannot be used interchangeably in healthy older people without a correction factor that was not available from the manufacturers. The differences demonstrated between the two scanners raises concerns about the value of both of them against DEXA, the gold standard.

MICROALBUMINURIA IN ELDERLY HYPERTENSIVES

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Introduction
Microalbuminuria (MA) has been shown to be associated with increased cardiovascular risk in non-diabetic essential hypertensives. There is, however, a lack of data on microalbuminuria and elderly hypertensives. We assessed the correlation between microalbuminuria, degree of blood pressure control, cardiovascular risks and target organ damage in treated elderly hypertensives.

Methodology
63 essential hypertensives on individualised treatment with antihypertensives [mean age 78 years (range:70-91years), 73% women] and 32 controls were studied. MA was defined by albumin-creatinine ratio (ACR) > 2mg/mmol creatinine in 2 out of 3 morning urine samples. The hypertensives were divided into 2 groups depending on their mean ambulatory daytime systolic blood pressure (BP) (groupA: systolicBP≥160mmHg ± diastolicBP≥90mmHg; groupB: systolicBP <160mmHg ± diastolicBP <90mmHg). Presence of MA was correlated with blood pressure control, duration of hypertension, antihypertensive treatment, lipids, presence of coronary artery disease (CAD), left ventricular hypertrophy (LVH), retinopathy, peripheral vascular disease (PVD) and past history of strokes.

Results
MA was significantly more prevalent in the hypertensive [22/63 (34%)] than the non-hypertensive population [1/32 (3%), p<0.0001]. There was a significant difference in the prevalence of MA in hypertensive group A [15/25 (60%)] than in group B [7/38 (18%), p<0.001)]. In hypertensives with MA, LVH, retinopathy and PVD were present in 45%, 45% and 27% cases respectively. Similar figures were significantly lower in non-microalbuminuric patients [15%, 12% and 7% respectively (p<0.01)]. There was no significant correlation between MA and duration of hypertension, antihypertensive treatment, lipid levels, CAD and strokes.

Conclusion
In treated elderly non-diabetic hypertensives, presence of MA is related to the degree of control of blood pressure and presence of target organ damage notably LVH, retinopathy and PVD.

THE INFLUENCE OF DIFFERENT AMOUNTS OF CARBOHYDRATES IN MEALS ON POSTPRANDIAL HYPOTENSION IN ELDERLY PATIENTS

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Introduction
Postprandial hypotension (PPH) is a common and serious disorder in older persons. It has been proposed that the presence of glucose in meals primarily causes postprandial declines in blood pressure (BP) (Jansen and Lipsitz. Ann Intern Med 1995;122:286-295). Therefore, we examined the relation between different carbohydrates (CH) amounts in meals and postprandial BP-responses.

Methods
Twelve elderly patients with previously documented PPH (6 male, 75-91 years) ingested a standardized liquid low- (25 g), normal- (65 g) and high- (125 g) CH meal in random order on separate days. In all persons systolic BP (SBP), diastolic BP (DBP) and heart rate (HR) were measured by Dinamap every 5 minutes from 20 minutes before until 75 minutes after each meal. Differences between meals were tested with two-way-ANOVA.

Results
After each meal, the BP-declines were significant. The BP-changes were significantly smaller after the low CH meal. The maximum declines in SBP and simultaneous changes in DBP and HR and duration of PPH after different meals are presented in Table 1 (Mean± SEM).

Meal	SBP (mmHg)	DBP (mmHg)	HR (bpm)	Duration of PPH (minutes)
Low CH	-27.5±4.7*§	-12.5±2.4‡	-1.8±2.1*	17.9±5.5†§
Normal CH	-38.7±6.5	-16.6±2.3	2.7±1.8	37.1±6.6
High CH	-39.8±5.3	-18.7±3.5	1.0±2.1	42.9±6.0

Table 1. * p<0.05, † p<0.01, versus normal CH meal, ‡ p<0.05; § p<0.01, versus high CH meal

Conclusions
Reducing the CH amount in meals results in significantly smaller SBP decreases and a significantly shorter duration of PPH in elderly patients. Limiting the CH content of a meal and increasing the frequency of such low CH meals can be a successful intervention in the overall non-pharmacological management of PPH in elderly patients.

A PLACEBO-CONTROLLED TRIAL OF FUROSEMIDE WITHDRAWAL IN ELDERLY HEART FAILURE PATIENTS WITH NORMAL LEFT VENTRICULAR SYSTOLIC FUNCTION

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Introduction
Diuretic therapy in heart failure (HF) patients with intact left ventricular (LV) systolic function may be unnessecary and have negative hemodynamic and functional effects.

Methodology
We performed a placebo-controlled trial of furosemide withdrawal with three months follow up in 32 HF patients (aged 75.1 ± 0.7 [mean ± SEM] years) with a LV ejection fraction of 60 ± 2% without current overt congestion, including repeated clinical assessment, quality of life questionnaire, spirometry, standardized six minutes walking test, and chest X-rays. Measurements of blood pressure (BP) response on active standing and Doppler echocardiography were performed before and after furosemide withdrawal.

Results
In a 2:1 ratio, twenty-one patients were randomized to withdrawal, eleven to continuation of furosemide. Congestive HF occurred in 2 of 21 patients withdrawn, and in one of 11 patients continuing furosemide (p=not significant). Two patients restarted furosemide for ankle edema, one for BP levels >180/100 mm Hg. After 3 months, there were no differences in HF scores, BP, spirometry results, walking tests, or quality of life scores between both groups. However, in patients successfully withdrawn, Doppler E/A ratio increased from 0.68 ± 0.05 to 0.79 ± 0.06 after withdrawal (n=16, $p<0.01$), and maximum systolic BP decrease on standing improved from -8 ± 5 mm Hg to +5 ± 3 mm Hg ($p<0.05$).

Conclusion
Withdrawal of furosemide in elderly HF patients with a normal LV systolic function and without current congestion appears frequently feasible, and may have beneficial effects on LV diastolic filling and BP homeostasis on standing.

CAROTID SINUS HYPERSENSITIVITY IN PARKINSON'S DISEASE

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Introduction
Parkinson's Disease (PD) is an independent risk factor for recurrent falls. Patients with PD have multiple potential risk factors for falls meriting full multidisciplinary assessment. Carotid sinus hypersensitivity (CSH) is an important, potentially treatable, and often overlooked cause of unexplained falls and syncope in older persons. CSH is common in other neurodegenerative conditions. We assessed the prevalence of recurrent falls and CSH in patients with PD.

Methods
Subjects were recruited prospectively from a register of patients attending a district general hospital PD service. Structured interview was used to seek a falls history. Patients reporting 2 or more unexplained falls were assessed further with standardised supine and erect carotid sinus massage (CSM). Atropine was not used which meant that mixed CSH could not be diagnosed.

Results
109/141 eligible patients with PD (assessed by the Brain Bank criteria) agreed to participate. 34/109 described at least 2 unexplained falls. Five of the excluded patients already had pacemakers in situ, 3 of which were for previously diagnosed cardioinhibitory CSH. CSM was not performed in 9/34 subjects (one had a recent MI and 8 refused). Of the patients undergoing CSM, 17/25 were female. The median age was 75 years (range 54-92). 6/25 demonstrated cardioinhibitory CSH of whom 3 were on potential culprit medications. A further 9/25 had vasodepressor CSH in the absence of a cardioinhibitory response, of whom 3 were on non-parkinsonian culprit medications.

Conclusions
Our results suggest that recurrent unexplained falls are common in PD often in association with CSH, not all of which could be attributed to culprit medications. We suggest that falls assessment in PD should include cardiovascular investigations and CSM. Ideally further studies should assess the benefit of intervention in this area.

CEREBROVASCULAR RESPONSES TO HEAD-UP TILT IN NORMAL SUBJECTS AND PATIENTS WITH RECURRENT VASOVAGAL SYNCOPE

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Introduction
The effect of orthostatic stress on cerebral haemodynamics is unclear as impaired and intact cerebral autoregulation (CA) have been reported in both normal subjects and patients with recurrent vasovagal syncope (VVS). This study assessed the cerebrovascular responses of two such groups to head-up tilt (HUT).

Methods
17 patients with recurrent VVS were pair-matched for age, sex and systolic blood pressure (BP) with 17 normal control subjects with no previous history of syncope. Bilateral middle cerebral artery blood flow velocities (CBFV) were measured using transcranial Doppler ultrasound and arterial BP measured with a Finapres device. Heart rate (HR), transcutaneous (TCO_2) and end-tidal ($ETCO_2$) carbon dioxide concentrations were monitored simultaneously. After 5-minutes supine rest, subjects were subjected to a maximum of 30-minutes 70° HUT. Indices of dynamic CA for periods before, during and after HUT were calculated using impulse response methods.

Results
After HUT, CBFV ($p<0.001$), TCO_2 ($p<0.002$) and $ETCO_2$ ($p<0.03$) levels declined significantly in both groups while resistance-area product, an index of cerebrovascular resistance, fell during the first 15 seconds after HUT in both groups ($p<0.001$) before subsequently recovering to baseline levels. Dynamic ARI values were unchanged initially after HUT in both groups and remained unchanged in controls throughout HUT but declined in patients immediately before ($p<0.001$) and after (2.4 ± 1.9 v 4.5 ± 2.7; difference=2.1, 95% CI (1.1, 3.2); $p<0.001$) syncope.

Conclusions
Dynamic CA, possibly facilitated by physiological hypocapnia, is initially preserved during orthostasis in normal subjects and patients with recurrent VVS, despite falling CBFV. Dynamic CA remains intact in normal subjects during prolonged orthostasis, but is impaired before and after syncope in patients with recurrent VVS.

BETABLOCKERS IN HEART FAILURE - IN THE ELDERLY

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Introduction
Betablockers (BB) have recently been proven to be highly effective in congestive heart failure (CHF) with a dramatic reduction of mortality (31%) over and above that achieved with ACE inhibitors (24%). However, their use in the UK is approximately 2% (European Ht Jn 1999). The mean age in the studies was 63 and the mean age of CHF patients in the UK is 77. We aimed to determine: 1) What proportion of CHF patients in secondary care would qualify for betablockers and 2) How well elderly patients would tolerate it.

Methodology
We prospectively screened consecutive patients with CHF. Patients were deemed suitable for BB if they had: 1) left ventricular systolic dysfunction; 2) NYHA II or III CH; or 3) no contraindications to BB. Suitable patients were then commenced on treatment using low doses of either Carvedilol or Bisoprolol and closely monitored.

Results
Of the 72 patients with CHF screened, only 21 (29%) were suitable for BB. The mean age was 77 years. 3 were already on BB for another indication. 1 refused BB, 2 were unstable and 6 (28%) were intolerant of BB. 12 (57%) received treatment with a BB and achieved variable doses and were stable. 2 reported an improvement in symptoms and 4 were intolerant of higher doses. BB were stopped in 1 due to an unrelated complication.

Conclusion
29% of our patients with CHF attending secondary care qualified for BB (similar to published trials). The majority tolerated them with few side effects except when doses were increased. 28% were intolerant of BB - double that in published trials. We hope that this study will encourage a wider implementation of good trial evidence.

CAROTID SINUS SYNDROME: PATIENTS PRESENTING WITH DROP ATTACKS ARE DIFFERENT FROM THOSE WITH SYNCOPE. IMPLICATIONS FOR MANAGEMENT OF ATYPICAL PRESENTATIONS OF SYNCOPE

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Introduction
Although the clinical characteristics of syncopal subjects with carotid sinus hypersensitivity (CSH) are well described, those of patients presenting with drop attacks are not.

Methodology
Objective: To compare prospectively clinical characteristics of patients with cardioinhibitory (CI)CSH and syncope versus those with drop attacks who deny loss of consciousness (LOC).

Patients: 68 consecutive patients >55 years, referred to our syncope facility with drop attacks [n=34] or syncope [n=34] & CICSH as sole cause of symptoms.

Results

	Drop attacks	Syncope	p=
Mean age (sd)	76.8 (9.02)	74.7 (9.1)	0.26
Sex	27 (79%) female	16 (47%) female	0.006*
Mean no. episodes 6/12 (sd)	7 (6.7) [Median 6]	3 (8.2)[Median 3]	0.03*
Mean symptom duration	13 months	28 months	0.009*
Initial CSM +ve upright	20 (59%)	9 (26%)	0.009*
Mean max asystole (sec)(sd)	5.06 (1.54)	5.39 (1.83)	0.42
Mean max VD (mmHg)(sd)	6.7 (35.2)	77.5 (32.1)	0.91
LOC during CSM	22 (55%)	15 (44%)	0.09
Amnesia for LOC	21 (95% of LOC)	4 (27% of LOC)	0.0006*
Laterality of initial +ve CSM	24 (71%) Right	29 (85%) Right	0.17

No significant differences in comorbidity, fractures, hospitalisations, A&E attendances. Soft tissue injuries requiring medical attention: drops 9(26%) v syncope 19(56%) [p=0.02].

Conclusion
Patients with drop attacks and CSH are more likely to be female, with more frequent symptoms over a shorter time course. Nearly all the drop attack group demonstrated amnesia for CSM-induced LOC, versus a minority of the syncopal group. Subjects with drop attacks and CSH appear to recall their drops, but not the “micro-syncopal” events precipitating them. Cardiovascular assessment is vital in assessing these symptoms.

THE EFFECT OF SPIRONOLACTONE ON POTASSIUM HOMEOSTASIS IN ELDERLY PATIENTS WITH CONGESTIVE CARDIAC FAILURE

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Introduction
Low dose spironolactone reduces the risk of death from heart failure (Pitt et al NEJM 1999: 341:709-17). Physiological changes associated with increasing age predispose elderly patients to hyperkalaemia. We examined the effects of spironolactone on potassium homeostasis in a cohort of elderly patients with congestive cardiac failure (CCF).

Methodology
Eighteen patients > 70 years, mean 80.5 (sd 6.3) with New York Heart Association CCF Grade II to IV were enrolled. All patients were commenced on 25mg spironolactone daily. The dose was reduced to 12.5mg daily when hyperkalaemia (potassium > 5.0) occurred. A serum creatinine of > 150µmol/L was defined as indicating renal impairment (RI). Blood pressure (BP), pulse rate PR, urea, creatinine, Na^+ and K^+ were measured at baseline, day 2 – 5, day 28 and more often if clinically indicated.

Results
Nine of those recruited had RI. There was no difference between the groups in other anti-failure treatment. Baseline serum K^+ was significantly higher in those with RI, mean 4.56 (sd 0.30) vs. 4.04 (sd 0.30) mmol/L ($p < 0.01$). There was no significant change in PR, BP, urea or creatinine during the study period. Six patients with RI developed hyperkalaemia compared with one of those with serum creatinine < 150µmol/L ($p < 0.05$). Serum K^+ returned to normal in all patients when the dose of spironolactone was reduced to 12.5mg daily.

Conclusion
When spironolactone is prescribed to older patients with CCF, hyperkalaemia appears more likely in those with RI. Halving the dose to 12.5mg daily results in normalisation of serum K^+. Older patients commencing spironolactone therapy should have serum K^+ monitored frequently, particularly in the presence of RI.

DISEASE AWARENESS AMONG HYPERTENSIVES PRESENTING WITH FIRST EVER STROKE OR MYOCARDIAL INFARCTION: A CASE CONTROL STUDY

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Introduction
Hypertension is one of the most important risk factors for vascular disease. In order to reduce complications of hypertension, it is important to ensure that patients are aware of the need for optimal blood pressure control and modification of other risk factors. We investigated disease awareness in treated hypertensives presenting with first ever stroke or myocardial infarction (MI) compared with hypertensive controls with no history of stroke or MI.

Methods
Ninety-five consecutive patients with treated hypertension (mean age 70 years), presenting to a district general hospital with first ever stroke or MI, were recruited over a 10 month period. For each case we identified an age and sex matched hypertensive control, with no history of stroke or MI, from their GP's hypertension register. All participants were interviewed by one of two investigators (SH, AJH). Questionnaires were administered regarding hypertension and its management.

Results
Of 95 cases identified, 60 were able to complete the interview. Ninety-two controls were interviewed. Only 28% of cases and 18% of controls could recall having been educated about hypertension at diagnosis. However, controls were able to name significantly more complications ($p<0.001$) and appropriate lifestyle modifications ($p=0.013$) than cases. A similar proportion of cases and controls believed that hypertension caused symptoms, but significantly more controls were aware that it could be asymptomatic ($p<0.001$).

Conclusions
Disease awareness was generally poor but was better in controls than cases. It is possible that the controls' greater awareness of complications and lifestyle modifications, and a better appreciation of hypertension as an asymptomatic disease favourably affected compliance and blood pressure control, reducing their vascular risk.

BASELINE CEREBRAL AUTOREGULATION IN PATIENTS WITH RECURRENT VASOVAGAL SYNCOPE

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Introduction
We and others have previously demonstrated that cerebral autoregulation (CA) is impaired during presyncope, but it is unclear whether abnormalities of CA are the cause or result of the syncopal process. This study assessed the integrity of baseline static and dynamic CA at rest in patients with recurrent vasovagal syncope (VVS).

Methods
17 patients with recurrent VVS and 17 normal control subjects were pair-matched for age, sex and systolic blood pressure (BP). Bilateral middle cerebral artery blood flow velocities (CBFV) were measured using transcranial Doppler ultrasound and BP measured by non-invasive beat-to-beat monitoring. Static and dynamic autoregulatory index (ARI) values were calculated for each subject using spontaneous BP changes at rest and pressor and depressor BP changes induced by thigh-cuff inflation and release. Frequency domain analysis of rest recordings was also used to investigate dynamic CA.

Results
No differences were demonstrated in static ARI values between the patient (56±39%) and control (59±37%) groups ($p=0.7$). Dynamic ARI values derived from mean values for both thigh-cuff release and spontaneous BP changes were similar for both patient (5.6±1.7) and control (5.8±1.5) groups (difference 0.2; 95% CI –0.7 to 0.5; $p=0.56$) and frequency domain analysis also failed to find any differences between groups.

Conclusions
Baseline static and dynamic CA are preserved at rest in patients with recurrent VVS and cannot be used to predict the development of VVS.

DOES AGE AFFECT THE ABILITY TO SELF-MONITOR BLOOD PRESSURE?

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Introduction
In order to monitor hypertension frequent blood pressure (BP) readings are required. It would save professional time if patients could measure their BP. It is not well known if age affects the ability to self-monitor BP. The aim of this study was to find out if age affects how nurse and patient readings of BP compare.

Methods
Patients over 20 years of age attending a general practice surgery over 2 weeks were invited to take their BP in the surgery using a wrist oscillometric sphygomanometer (Omron RX). The nurse recorded the BP with a mercury sphygmomanoneter on the same occasion blind to the patient results. Patients were asked to re-attend the surgery when the nurse in addition recorded oscillometric BP.

Results
180 patients agreed to take part. 7 patients were excluded because of an irregular pulse. There were 78 males and 95 females. The ages of patients were:

20-34	35-44	45-54	55-64	65-74	>75 years
17	21	30	36	45	24

Patients recorded higher than the nurse (Systolic: Patient 146.7+/-24.3, Nurse 144.1+/-24.3); Diastolic: 87.4+/-11.8 vs 84.7+/-11.9 (both p<0.0001 Wilcoxon Signed Ranks Test)). There was no difference between nurse mercury and oscillometric readings (Systolic: mercury 138.7+/-21.9, oscillometric 138.3+/-20.1 (p=0.36); Diastolic: 83.8+/-11.0 vs 82.6+/-10.8 (p=0.11). There was no correlation between age and the difference between nurse and patient readings for systolic (p=0.22) or diastolic (p=0.26) (Kendalls Rank Correlation). The findings were not significant when patients were divided into those under and over 65 years (Systolic: Old 12.7+/-10.9, Young 9.1+/-7.4 (p=0.07); Diastolic: 7.3+/-5.6 vs 7.5+/-6.5 (p=0.89) (Mann-Whitney Tests)).

Conclusions
Patients in the surgery on average self-record their BP higher than a nurse. Age appears not to affect the degree of difference.

POSTURAL CHANGES IN CEREBRAL OXYGENATION IN ELDERLY PATIENTS WITH DIASTOLIC HEART FAILURE

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Introduction
With increasing age, standing can induce orthostatic hypotension (OH) and symptoms such as dizziness and lightheadedness. In healthy elderly subjects, standing induces cerebral cortical oxygenation declines (Mehagnoul et al. Stroke 2000; in press). Elderly patients with diastolic heart failure (DHF) may be at higher risk of OH and subsequent cerebral oxygenation changes because of their higher dependency on cardiac preload.

Methods
Twenty-one DHF patients (70-83 years) NYHA class I-III with LVEF >40% in stable condition after 2 weeks of diuretics withdrawal and 18 healthy (HEA) subjects (70-84 years) participated. Changes in systolic blood pressure (SBP), diastolic blood pressure (DBP), heart rate (HR), and stroke volume (SV) were continuously monitored by Finapres and changes in cerebral oxyhemoglobin [O_2Hb] and deoxyhemoglobin [HHb] concentrations by Near-InfraRed Spectroscopy before and during 10 minutes of standing.

Results
OH (SBP-decline >20 mmHg) was present in one DHF patient and two HEA subjects. [O_2Hb] decreased in the HEA subjects, but not in the DHF patients, while [HHb] rose similarly in both groups. [O_2Hb]-decreases were related to SBP-increases (r=0.42, p<0.01) and DBP-increases (r=0.38, p<0.05). [HHb]-increases were inversely related to SV-declines (r=-0.33, p<0.05). Maximum postural changes are presented in Table 1.

	ΔSBP (mmHg)	ΔDBP (mmHg)	ΔHR (bpm)	ΔSV (mL)	Δ[O_2Hb] (μmol/L)	Δ[HHb] (μmol/L)
DHF	16±27#	10±11#	8±5#*	-8±9#	-1.8±4.2*	1.7±2.3#
HEA	8±19	9±8#	11±4#*	-10±9#	-4.9±2.4#*	2.1±2.9#

Table 1. #p<0.05 versus supine, *p<0.05 between groups, two-way ANOVA, mean±SD.

Conclusions
Patients with DHF in stable condition were not at higher risk of OH or cerebral hypoperfusion compared to HEA subjects. These elderly DHF patients showed even significantly smaller [O_2Hb]-declines associated with a tendency towards larger SBP-increases after standing.

NEUROHORMONAL EFFECTS OF FUROSEMIDE WITHDRAWAL IN ELDERLY HEART FAILURE PATIENTS WITH INTACT LEFT VENTRICULAR SYSTOLIC FUNCTION

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Introduction
The effects of chronic diuretic therapy on neuroendocrine regulatory systems in elderly heart failure patients are largely unexplored, although they might have a negative impact on hemodynamics, clinical condition, and prognosis. We aimed to determine the neuroendocrine changes following successful furosemide withdrawal in elderly heart failure patients.

Methodology
We performed clinical assessment and laboratory determinations of atrial natriuretic peptide (ANP), catecholamines, endothelin-1, aldosterone and plasma renin activity (PRA) in 29 heart failure patients (aged 75.1 ± 0.7 [mean ± SEM] years), before and 1 and 3 months after placebo-controlled furosemide withdrawal.

Results
Nineteen patients were randomized to withdrawal, ten to continuation of furosemide. Recurrent congestive heart failure occurred in 2 of 19 patients withdrawn, and in one of 10 patients continuing furosemide. There were no baseline differences in clinical nor neuroendocrine parameters. After one month, successful withdrawal was associated with increases in norepinephrin (2.75 ± 0.29 vs. 3.33 ± 0.34 nmol/L) and ANP (10.0 ± 1.3 vs. 13.5 ± 1.4 pmol/L). Three months after successful furosemide withdrawal, PRA had decreased (3.21 ± 0.80 vs. 1.60 ± 0.30 nmol/L/hr, $p<0.05$). The increases in norepinephrin (2.86 ± 0.29 vs. 2.56 ± 0.22 nmol/L, $p=0.11$) and ANP levels (10.8 ± 1.2 vs. 13.4 ± 1.4 pmol/L, $p=0.074$) did not persist after three months. The 3-month decreases in PRA after withdrawal were correlated to decreases in systolic ($r_s=0.61$, $p=0.020$) and diastolic blood pressure ($r_s=0.80$ $p=0.01$).

Conclusion
Successful furosemide withdrawal in elderly heart failure patients is associated with complex and sometimes temporary changes in neuroendocrine systems, possibly reflecting hemodynamic improvements following diuretic withdrawal.

THE EFFECT OF NOCTURNAL DIPPING ON COGNITIVE FUNCTION IN OLDER HYPERTENSIVES

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Introduction
Hypertension is associated with cognitive impairment. Blunting of the physiological fall in nocturnal blood pressure (non-dipping) is associated with more severe complications of hypertension. We examined whether non-dipping in older hypertensives was associated with worse cognitive performance.

Methods
Subjects aged 70-89 years were recruited from local general practices. Office BP was measured on 3 occasions during a 6 week period. Hypertension was defined as 160–179 and/or 90-99. Subjects with known cognitive impairment were excluded. A computerised cognitive assessment battery (Cognitive Drug Research) comprising 8 tests was administered to subjects after training. Ambulatory blood pressure was measured hourly using the Spacelabs 90207 system. Dippers were defined as 10% or more fall in nocturnal compared to day time BP. Data were analysed using a General Linear Model.

Results
113 hypertensives (mean office BP164±9/88±8, mean ABPM 145±13/78±8, 46% female, mean 75±4 years) were studied, 60 were dippers. Dippers were similar in age and educational status to non-dippers but had higher day time systolic blood pressure (152±13 vs 147±14 $p=0.05$). There was no significant difference in cognitive function between dippers and non dippers when covariates of age, years in education and day time blood pressure were accounted for.

Conclusions
Failure of the normal physiological fall in nocturnal blood pressure is not associated with worsened cognitive impairment in older hypertensives.

RISK FACTORS FOR HOSPITAL READMISSION IN PATIENTS WITH CONGESTIVE HEART FAILURE

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Introduction
Congestive heart failure is a common reason for hospital admission in the elderly. Post-discharge many patients have recurrent symptoms and early readmission often is required. The identification of patient characteristics associated with early readmission would enable targeting of patients for comprehensive management programmes (SIGN Publication 35) designed to reduce the risk of readmissions.

Methods
This was a retrospective case-control study. Thirty patients discharged from in-patient hospital care with a primary diagnosis of heart failure who were readmitted within 90 days were compared with 47 heart failure discharges who were not readmitted within 90 days. We compared age, length of stay, co-morbidity, discharge support, aetiology of heart failure, cardiac medication including use of angiotensin-converting enzyme inhibitors (ACEI) and renal function.

Results
Mean age was 72.3 years (SD 10.3) in the readmission group and 74.1 (SD 9.1) in the controls. The male:female ratio was 13:17 and 24:23 respectively. Serum creatinine was significantly higher in the readmissions compared to the controls (median 142 versus 117 mmol/L, $p<0.05$ Mann Whitney U test). There was a non-significant trend for fewer patients to be discharged on ACEI in the readmission group (18/30, 60%) compared to the controls (36/47, 77%). There were no other clear differences between the two groups.

Conclusion
Impaired renal function, as shown by an elevated serum creatinine, was associated with increased risk of early readmission in elderly patients with congestive heart failure. If confirmed in prospective studies, this could be used as a marker for high-risk patients who are likely to benefit from comprehensive follow-up programmes designed to prevent clinical deterioration and hospital readmission.

PREDICTING OUTCOME FOLLOWING CARDIOPULMONARY RESUSCITATION: A COMPARISON OF GERIATRICIANS AND INTENSIVISTS

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Introduction
Withholding cardiopulmonary resuscitation (CPR) is acceptable in certain situations. We wished to compare the decision-making process for do not resuscitate (DNR) orders between two specialities with a particular interest in this subject. The predictive ability of the clinicians was also compared to morbidity scoring systems.

Methodology
A questionnaire based postal study of Consultant Geriatricians and Intensivists was conducted. Ten scenarios, based upon real cases with known outcomes, were presented. The respondents were asked to make a decision of 'for CPR' or 'not for CPR' using the clinical details provided. They were asked to rank the patient related characteristics of pre-morbid state, age, futility and quality of life in order of importance when making their decision. The decision-making ability of the two consultant groups was compared to two morbidity scoring systems, the Pre-Arrest Morbidity (PAM) index and the Prognosis After Resuscitation (PAR) score.

Results
Completed questionnaires were received from 51 Geriatricians and 44 Intensivists. The overall predictive ability of the Intensivists was superior to the Geriatricians ($p<0.05$). Although both groups identified survivors from non-survivors ($p<0.05$), Intensivists were better than Geriatricians at predicting survivors ($p<0.05$). Both groups identified young patients (less than 66 years) as having a better outcome than elderly patients ($p<0.05$). Intensivists considered age to be of significantly greater importance than Geriatricians ($p<0.007$) in making a DNR order. No consultant had a predictive ability superior to the PAR score.

Conclusion
Clearly, medical decision making must rely upon assessing the patient clinically. However, consultants from different specialities may make DNR decisions using different patient related factors and this may be associated with different predictive abilities.

OUTCOME OF ACUTE RENAL FAILURE IN OVER 75 YEARS AND UNDER 75 YEARS OF AGE: A HOSPITAL BASED PROSPECTIVE STUDY

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Introduction
Previous reports suggest outcome in patients with acute renal failure (ARF) is significantly influenced by age and presence of co morbidity at presentation[1,2]. There is a tendency to treat older people with ARF less aggressively because of the presumed less acceptable end results. This has not been proved.

Methodology
Prospective data were collected on all patients with ARF in the East Kent Health Authority area between March 1997 and February 1998. A total of 291 patients presented with ARF as defined by the Renal Association and were divided into 2 groups. Group 1 = over 75 years, n=158, mean age 82.2. Group 2 = under 75 years, n=133, mean age 62). Outcome in the 2 groups was compared using the chi squared test.

Results
The mean creatinine at referral, group 1 and group 2 was 527.7 and 519.6 umol/l respectively.

	Over 75	Under 75	p-value
Survival to discharge	58%	62%	0.26
Survival 3 months	38%	51%	0.01
Survival 1 years	24%	42%	0.00003
Renal outcome in survivors			
Full recovery	70%	69%	0.43
Chronic renal failure	28%	25%	0.34
Renal replacement therapy	2%	6%	0.09

Conclusion
Although there was an increased mortality at three and twelve months in the over 75 years age group as would be expected, there was no significant difference in the survival outcome and renal outcome of the two groups during the acute illness.

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A LYMPHOTOXIN ALPHA PROMOTOR POLYMORPHISM IS PREDICTIVE OF SEVERITY OF DISEASE IN INDIVIDUALS WITH LATE ONSET AIRFLOW OBSTRUCTION

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Introduction
There is evidence that genetic factors are important in the development of late onset airway obstruction. Polymorphisms of the TNF gene complex have been linked to a range of juvenile onset asthmatic phenotypes. We have examined the role of one of these polymorphisms in subjects with late onset disease.

Methods
All cases had airflow obstruction with symptom onset after 40 years of age. Control subjects were recruited via General Practitioner lists and were matched for age and sex. All subjects underwent spirometry to American Thoracic Society standards. Blood was taken for genotyping.

Results
202 subjects (111 male, mean age 67.6 (range 45-85)) were genotyped for the LTα NcoI polymorphism. There was no difference in gene frequency between the cases and controls. All the following data relates to cases (n=108). Mean FEV1 as % predicted (SEM) by genotype; LTα NcoI 1/1 50.6(4.46), LTα NcoI 1/2 45.8 (2.37), LTα NcoI 2/2 38.7 (2.29) (analysis of variance, p=0.03). Age and LTα NcoI genotype were correlated to FEV1 % predicted (p=0.023 and p=0.006 respectively). Smoking history recorded as 'pack-years' was not (p=0.063). Regression analysis showed that pack-year history, sex and beta-2-agonist use were not significant predictors of FEV1 % predicted, but that age, presence of symptoms and LTα NcoI genotype were. The strongest effect was due to LTα NcoI genotype.

Conclusion
The LTα NcoI polymorphism is predictive of disease severity but not disease susceptibility in a group of subjects with late-onset airway obstruction. The observed differences in respiratory function, measured as FEV1 as % predicted value, cannot be explained by differences in smoking history.

EARLY MOBILISATION WITH WALKING AIDS FOLLOWING HOSPITAL ADMISSION FOR ACUTE EXACERBATION OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE (AECOPD)

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Introduction
Exercising with gutter frame (GF) improves exercise capacity and oxygen saturation in elderly COPD outpatients. We hypothesised early ambulation with GF in elderly patients hospitalised for AECOPD may produce improvements in exercise capacity and earlier discharge.

Methods
110 (59 men) AECOPD inpatients aged 60-93 (mean 76) years were recruited 2 days after admission and randomly allocated to four groups: GF with supplemental oxygen (GFSO), GF with supplemental air (GFSA), rollator with supplemental air (RSA) and rollator with supplemental oxygen (RSO) [air/oxygen was double-blinded]. Patients exercised three times daily (maximum 15 minutes per session) with a physiotherapist or nurse. Physical disability was measured by Barthel Index and perceived respiratory effort by Borg scale pre-and post-programme. Exclusions: acute/chronic confusion, limitation of exercise by non-respiratory disability, psychosis.

Results
Mean (SD) one second forced expiratory volume was GFSO = 0.72 (0.3); GFSA= 0.81 (0.3); RSA= 0.74 (0.3); RSO = 0.84 (0.3).

Group (mean)	Duration of exercise (minutes)	Length of stay	Pre Borg score	Post Borg score	Pre Barthel score	Post Barthel score
GFSO, n=28	44	11.7	14.2	13.4	16.2	17.4
GFSA, n =26	54	10.04	14.1	12.6	16.3	17.9
RSA, n = 28	48	9.96	13.7	12.1	17.9	19
RSO, n = 28	48	8.89	12.2	13.0	18.4	18.5
ANOVA	F = 0.14 P= 0.93	F= 0.78 p = 0.50	F= 2.71 p= 0.05	F = 0.90 p = 0.44	F= 7.73 p < 0.001	F= 3.88 p = 0.01

Conclusion
Short term exercise therapy with gutter frame ± oxygen after AECOPD admission has no benefit in improving physical activity or reducing length of stay in older patients.

A SURVEY OF COMMUNITY TRAINING FOR SPECIALIST REGISTRARS

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Introduction
There is a well established health care policy that recognises the importance of community care for older people. However the extent of current Specialist Registrar (SpR) training in this field is unclear. We therefore conducted a survey to ascertain training experience in community care.

Methods
A postal questionnaire was designed, piloted and sent to the 268 SpRs who are listed British Geriatrics Society members. Questions related to community care experience already achieved and to its future priority.

Results
194 replies were received (response rate 72.3%). With the exception of domicilary visits and day hospitals, generally low participation in community care was reported in both absolute terms and in the number of sessions performed (Table). Day hospital clinics and visits to residential and nursing homes were rated as high priorities for future training. 66% of respondents considered that a period with a general practice trainer would be beneficial. Only 3% of respondents did not envisage time working in the community as a consultant.

	No experience	Experience obtained	Median no. of sessions (interquartile range)
Domicilary visits	50	144	5 (2-10)
Post-discharge home visits	174	20	5 (1-8)
General practice clinics	177	17	5 (2-20)
Day hospital clinics	65	129	40 (20-75)
Home assessment visits with therapist	142	52	2 (1-3)
Assessments in residential or nursing homes	85	109	3 (2-6)

Conclusion
There are currently inadequacies in the content of community training for SpRs in Elderly Care. A more considered curriculum should be developed which provides trainees with specific targets. The notion of a period spent with a general practitioner appears popular and should be explored further.

AGE AND GENDER BIAS IN STATIN TRIALS

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Introduction
Cardiovascular disease is strongly age-related and is the leading cause of death in older people. Several well-publicised trials have recently reported that statin drugs (HMG-CoA reductase inhibitors) are effective in lowering cholesterol and in reducing the risk of myocardial infarction and stroke. In order to determine whether the results of these trials are relevant to our ageing population, we examined the presentation of older people and women in randomised controlled trials of statin drugs.

Methods
A computerised search of the MEDLINE database from 1990-1999 was done to identify randomised placebo controlled trials of statin drugs which evaluated clinical end points - myocardial infarction, stroke and death. The trials were then scrutinised to identify the mean age, age range and gender of the participants.

Results
19 trials were identified - 15 secondary prevention and 4 primary prevention. The total number of patients randomised in 15 secondary prevention trials was 31,683. The mean age of the combined study population was 58.1 years with 24,447 male participants (77%). None of the secondary prevention trials enrolled anyone beyond the age of 75 years.

In the 4 primary prevention trials the total number randomised was 14,557 with a combined study population mean age of 56.9 years. There were 13,129 male participants (90%). The major trials enrolled patients up to 73 years.

Conclusions
Statin drug trials suffer from age and gender bias, having been mainly conducted in middle-aged male populations. The extrapolation of evidence from these trials to older populations and women needs further evaluation.

PLASMA HOMOCYSTEINE IN ELDERLY PATIENTS – IMPLICATIONS FOR SETTING A REFERENCE RANGE

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Introduction
There may be no threshold plasma homocysteine concentration defining cardiovascular risk[1]. However, the elderly reference range has been based on standard distribution around a population mean concentration regardless of cardiovascular risk[2]. We question the validity of this statistical range for elderly patients in relation to absolute cardiovascular risk. Therefore our objectives were to establish:
1 the distribution of plasma homocysteine amongst elderly out patients; and
2 the association between plasma homocysteine and folate.

Methods
Plasma homocysteine, creatinine, folate, B12, haemoglobin and cardiovascular morbidity were determined for all new patients (n=61) over the age of 70 attending consecutively a medical out patient clinic.

Results
Hyperhomocysteinaemia in an elderly population was common: 40 out of 60 patients (66%) using the local adult reference range(5-15mmol/L). In contrast, only 17 patients (28%) had hyperhomocysteinaemia using an elderly range (8-21mmol/L)[2]. The mean plasma homocysteine was 18.7mmol/L (SD 7.0mmol/L). Plasma homocysteine and folate showed a negative correlation (r=-0.33,p< 0.01).

Conclusions
An elderly reference range should reflect pathological effects and clinical risks of hyperhomocysteinaemia. This risk begins as low as 12mmol/L[1] and there may be no threshold defining risk. Many in this study (54.1%), had a plasma homocysteine above 12mmol/L but below the proposed "elderly upper normal limit" of 21mmol/L. This represents a large proportion whose cardiovascular risk is not being addressed. In the absence of convincing data to support a higher reference range in elderly patients, such ranges should not be used.

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SIT-TO-STAND: A NOVEL TEST OF PHYSICAL PERFORMANCE

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Introduction
The ability to rise and stand out of a chair is a key functional activity. We studied a novel method of quantifying sit-stand ability and compared results with lower limb skeletal muscle function (leg extensor power, LEP) and an established measure of physical endurance (6-minute walk test).

Methodology
We studied a convenience sample of 27 female patients (13 physically independent outpatients, 14 elderly rehabilitation subjects). Mean age was 75.7 years (SD 9.8). Two sets of measurements were taken 2-6 days apart. The number of times a patient could stand up from a standard chair (height 0.43m) without using their arms was recorded over 30 seconds. LEP was measured using the Nottingham Power Rig. The 6 minute walk distance was recorded.

Results
The median number of sit-to-stands in 30 seconds was 9 (0-17). Nine patients (33%) were unable to stand-up without using their arms. The number of sit-stands correlated with LEP (Pearson r=0.53, p=0.004) and 6 minute walk distance (r=0.84, p<0.001). Patients who were unable to stand up without using their arms had significantly lower LEP (median 0.39watts/Kg body weight) and 6-minute walk distance (median 120m) than those who could stand up at least once in 30 seconds (0.68 and 383metres, p=0.024 and 0.001 respectively, Mann Whitney U test). With repeat measurement the median change in number of sit-stands over 30 seconds was 0 (IQR –1,1).

Conclusions
The sit-stand test is a quick and simple measure of physical performance that correlates well with 6 minute walk distance, and to a lesser degree with LEP. It has good test-retest (intra-observer) reproducibility. However, the test has a marked 'floor effect' with many elderly patients scoring zero.

A COMPARISON OF TWO WARFARIN INDUCTION REGIEMES ON LEVELS OF COAGULATION FACTORS II, VII AND PROTEIN C

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Introduction
It has previously been shown by ourselves and other groups that warfarin induction using 5mg rather than 10mg loading dose results in smoother and more predictable onset of anticoagulation in the elderly. We have compared the effect of induction by 5mg or 10mg on coagulation factor II and VII and protein C levels.

Methods
Thirty consecutive patients >70 years old having warfarin anticoagulation initiated were randomised to the study. 18 patients received 10mg warfarin doses according to the Fennerty regime, while 12 received 5mg warfarin. Blood for assay of Factor II, factor VII and Protein C activity (ProC) was taken on days 1, 2, the day the INR reached 2 and day 7. Statistical analysis was by Kruskal Wallis ANOVA and Mann-Whitney tests.

Results
Day 1 INR, FII, FVII and ProC levels were similar in the two groups. By day 2 the FVII and ProC were less depressed in the 5mg group, ($p<0.01$ and <0.05 respectively). On the day INR=2, the FII and ProC were higher in the 5mg group ($p<0.001$ and 0.05) despite similar FVII and INR. Day 7 results were similar of all assays.

Conclusions
5mg warfarin induction results in fewer INRs >4 during induction. For patients staying within the target range 2-4, 5mg dosing resulted in a slower more controlled induction that 10mg, as shown by laboratory evidence of less suppression of the coagulation and natural anticoagulant pathways in the early phase of induction. Final factor levels and INR were similar. The preferable pattern seen with the 5mg dose may be associated with less adverse clinical events.

NEPHROTOXICITY ASSOCIATED WITH CONCOMITANT ANGIOTENSIN CONVERTING ENZYME INHIBITORS (ACEI) AND NONSTEROIDAL ANTI-INFLAMMATORY DRUGS (NSAID) THERAPY IN THE ELDERLY

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Introduction
ACEI and NSAID can be nephrotoxic and may synergistically compromise renal function when used in combination. The aim of this study was to assess the effects of this combination therapy on renal function in elderly patients.

Methods
We identified elderly patients (> 75 years), who were prescribed an ACEI in addition to a NSAID or vice versa from the discharge prescriptions. The renal function before the initiation of this therapy was extracted from the notes and was monitored at regular intervals. Reasons for stopping any of these drugs were noted.

Results
During a one-year period 12 patients (6 males, 6 females) out of 1500 were prescribed this combined therapy. The mean age was 81. All had normal renal function before the initiation of the therapy. Two patients developed acute renal failure at six weeks and at three months respectively and both drugs were stopped immediately. One of them recovered completely. In the other, renal function did not improve and renal support was not considered due to associated co-morbid conditions and the patient died. NSAID were stopped in three patients and ACEI in one patient within three months due to deteriorating renal function (mean increase in serum creatinine - 156 mmol/l). Renal function remained stable in six patients at 6 months.

Conclusions
Our results indicate that combined therapy with ACEI and NSAID carries a significant risk of nephrotoxicity. The small number in this study reflects the low prevalence of use of this combination. Concomitant prescription of ACEI and NSAID should be avoided in elderly patients and if not, they should be carefully monitored.

ANTICOAGULATION IN ATRIAL FIBRILLATION IN CLINICAL PRACTICE

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Introduction
Randomized trials of anticoagulation in atrial fibrillation demonstrated a reduction in the risk of stroke by two-thirds. In these trials, the safety of anticoagulation appeared good, probably due to patient selection. Exclusion rates of 93% were reported. Participants may have had fewer complications than might be expected among less selected patients in clinical practice.

Methods
Retrospective study involving all patients with atrial fibrillation on long-term anticoagulation who have been admitted to the hospital over one year. Patients were interviewed and their medical records reviewed regarding bleeding complications.

Results
We studied 139 patients. Mean (SD) INR was 2.5 (0.36), and the mean frequency (SD) of INR check was 2.7 (1.1) weeks. The target range of 2.0-3.0 was achieved 54% of the time. Bleeding occurred in 21 patients, with incidence of 7.2% per patient-year for minor bleeding, 2.4% per patient-year for major bleeding and 0.2% for fatal bleeding. There was no consistent temporal trend for bleeding. No significant difference was found between patients who had bleeding complications and those who did not as regards age, sex, mean INR, frequency of INR checks or medical co-morbidities. Variability of INR against a target value of 2.5 was significantly higher in the group who bled. The cost of warfarin treatment was £14.60 per patient-year, but was estimated at £262.60 per patient-year after considering monitoring and bleeding complication costs. The cost per stroke prevented was estimated at £8,141.

Conclusion
Anticoagulation appeared safe in clinical practice but control was not as good as in clinical trials. Older people (≥75 years) appeared to tolerate anticoagulation as well as younger people. Variability of INR around the target was a risk factor for bleeding rather than the mean INR.

THE RELATIONSHIP BETWEEN DEPENDENCY LEVELS AND MULTIPLE MEDICAL PROBLEMS, NEUROLEPTIC/HYPNOTIC PRESCRIPTION AND FAECAL INCONTINENCE IN CARE HOMES

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Introduction
Elderly people in nursing and residential homes tend to have multiple medical problems leading to both polypharmacy and dependency. Some drugs, such as neuroleptics can also increase dependency and may increase faecal incontinence which is distressing.The aim of the study was to try and establish the relationship between dependency levels and multiplicity of medical problems, neuroleptic/hypnotic prescriptions and faecal incontinence.

Methodology
The head of home, a visiting consultant Geriatrician, and the GP completed the required details on a standardised proforma.

Results
Ninety forms were completed. The average Barthel score (BS) of the study group was 9.8 (range 0-20). Twenty-seven (30%) residents had less than three medical problems and their mean BS was 12.3. Sixty-three (70%) residents had three or more medical problems and their mean BS was 8.7. Thirteen (14.4%) residents were on a neuroleptic or hypnotic agents and their mean BS was 8.2. Seventy-seven (85.6%) residents were not on neuroleptic or hypnotic drugs and their mean BS was 10.1. Twenty-five (27.8%) residents had faecal incontinence and their mean BS was 4.5. Sixty-five (72.2%) residents did not have faecal incontinence and their mean BS was 11.8. Using a multiple regression analysis model, the number of medical problems and continence of faeces were strongly associated with BS (with faecal incontinence component removed) ($t = -2.4$, $p = 0.01$ and $t = 4.9$, $p = <0.001$ respectively). Neuroleptic/hypnotic usage was not associated with dependency levels.

Conclusions
Level of dependency is strongly associated with increasing number of medical problems, and faecal incontinence but not with neuroleptic/hypnotic prescription.

END-OF-LIFE CARE DECISIONS

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Introduction
End-of-life care decisions are an important part of medical inpatient care. In June 1999 the BMA guidelines "Withholding and withdrawing life prolonging medical treatment" were published. This study was designed to compare practice prior to June 1999 with these guidelines and to determine whether elderly care, and other medical specialities had different approaches to these decisions.

Method
Retrospective observational study. Case-notes of patients under the care of medical and elderly care firms at one district general hospital (with no formal guidelines in this area) who died in hospital during April and May 1999 were examined independently by two doctors. Patients who died unexpectedly or who were receiving active treatment and investigation at the time of death were excluded.

Results
Sixty-nine patients who died in the study period received end-of-life care, 31 under elderly care and 38 under other medical specialities. Their median age was 83. In 57 (83%) case-notes it was clearly documented that end-of-life care was planned and in 23 (40%) of these reasons for this decision were documented. Documented decisions about cardiopulmonary resuscitation (CPR), fluids, nutrition and antibiotic therapy were present in 67 (97%), 51 (74%), 18 (26%) and 45 (78%) case-notes respectively. Seventeen (25%) case-notes contained no evidence that the patient or relatives had been involved in the decision process. Elderly care consultants made more decisions than consultants in medical specialities with respect to use of antibiotics (16/20 vs 6/25 decisions, 80% vs 24%; difference 56%, 95% CI 32%-80%, p=0.0007) and CPR (19/31 vs 5/36, 61% vs 14%; difference 47%, CI 27%-68%, p=0.0001).

Conclusions
In the absence of formal guidelines, end-of-life decisions were reasonably well documented, although doctors rarely made decisions concerning feeding. Unlike elderly care teams, consultants in medical specialities devolved many of these decisions to their juniors.

END OF LIFE DECISION MAKING: A SURVEY OF POLICIES IN PLACE IN THE NORTHWEST REGION

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Introduction
There is increasing public awareness and media interest in end-of-life decision-making in the United Kingdom. National guidelines recommend local policy making in cardio pulmonary resuscitation (BMA, 1999), withholding and withdrawing potentially life-prolonging treatments (BMA, 1999) and indirectly in the drafting and interpretation of advance statements about medical care (BMA, 1999). Guidelines also make recommendations on record keeping. The aim of this study was to establish the prevalence of local policies on these issues and the use of proformas in the medical notes to aid documentation and policy implementation.

Methods
A structured questionnaire was administered to consultant physicians by post, telephone or in person. It was conducted between March and May 2000 covering all 23 hospitals in the Northwest Region that admit acute medical emergencies.

Results
The survey was returned by 95.7% (22/23) of hospitals approached. A consultant physician completed the survey in 100% (22/22) of cases of which 45.5% (10/22) were completed by the Clinical Director for Medicine.

Total N = 22	Policy in place (% of total)	Policy in development (% of total)	Proforma insert in notes (% of total)
Resuscitation	17 (77%)	2 (9%)	4 (18%)
Withholding and withdrawing treatment	1 (5%)	6 (27%)	0
Advance directive	0	5 (23%)	0

Conclusion
Although national guidelines are available, recommending the drafting of local policies to aid end-of-life decision-making and advising how this may be achieved, there is limited implementation of such policies in the Northwest Region. This has particular importance for the practice of elderly care, given the increasing emphasis on promoting quality, furthering patient autonomy and a climate of media and public mistrust of medical decision-making at the end-of-life.

ELDERLY PATIENTS' VIEWS ABOUT LIFE-SUSTAINING TREATMENTS: A QUALITATIVE STUDY

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Introduction
Quantitative studies have shown that around 75% of elderly patients request cardiopulmonary resuscitation (CPR) but there is little information about the process of their decision-making. Variables such as age, sex and disability correlate poorly with patients' wishes. We designed this qualitative study to improve understanding of patients' attitudes and thought processes.

Methods
A subsection of patients who had been enrolled in a quantative study of CPR wishes following stroke were selected and interviewed in their own homes. An unstructured, open-ended interview guide was used which covered patients' wishes for CPR in current and possible future situations, reasons behind their decision, who should decide about CPR and attitudes to advance directives. Interviews were conducted until no new concepts were being introduced. All interviews were tape recorded, transcribed and then analysed for themes using NUDIST (software for qualitative analysis).

Results
Eight patients aged 55 - 81 (mean 65) were seen 10 - 21 (mean 15) weeks post stroke. Patients generally wanted CPR for themselves but most would want CPR withheld in the event of poor quality of life, burden on family or society and excessive resource utilisation. 'Medical' factors such as chance of success, risks and indignity of CPR were not major factors. Opinion was divided about who should decide about CPR with the majority favouring the doctor, some themselves and some their family. Most patients were positive about advance directives in principle but were reluctant to commit their own views to writing.

Conclusions
This is a complex and contextual issue with opinions being diverse and unpredictable. Guidelines for CPR decisions should be flexible enough to satisfy individual patient attitudes and opinions.

LONG TERM SURVIVAL FOLLOWING CARDIOPULMONARY RESUSCITATION (CPR)

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Introduction
We have followed up survivors of CPR in 2 separate studies at our hospitals to determine the pattern of survival.

Method
Our study populations have been described previously (Resuscitation 1999;40:89-95, Age/Ageing May 1999; 28:S1). Data were collected from computerised records, case notes and from General Practitioners on all CPR survivors to determine if and when they died. We also had available baseline demographic and clinical characteristics and pre arrest morbidity scores.

Results
24 of 168 (14%) patients in the Newham General study and 28 of 264 (11%) in Winchester survived. Mean period of follow up was 34 months (range 1 to 59). Long-term survival showed a bimodal distribution; 13 patients (25%) died within a year but 30 of the other 39 (77%) were still alive at the time of follow up. Those who survived long term were more likely to arrest in the first few days after hospital admission than those who died within a year ($p=0.038$); most patients who had an arrest in the presence of myocardial infarction (MI) survived long term but we could not demonstrate that MI was a statistically significant predictor of survival. Pre arrest morbidity scores were unhelpful; some patients with the highest scores survived long term.

Conclusions
A subgroup of patients who survive to discharge after CPR die within the first year; most others survive long term. It would be difficult to identify this group in advance; arrest early after hospital admission predicts long-term survival but other pre arrest factors do not.

CLOSTRIDIUM DIFFICILE DIARRHOEA: MUST WE WAIT FOR TOXIN TEST RESULTS?

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Introduction
Clostridial diarrhoea can be devastating for frail, elderly patients. Isolation and loss of dignity compound the physical effects of diarrhoea, and mortality can reach 30% in severely affected individuals. Early diagnosis and treatment is important, but laboratory results can take 2-4 days to come back. Nurses are often confident of the diagnosis without laboratory confirmation. This prospective study examines the accuracy of their predictions.

Methodology
Over three months we registered all stool samples received in the microbiology laboratory. We identified all Clostridium difficle toxin tests requested by the medical, trauma and rehabilitation wards of a teaching hospital. Before the toxin test was performed we visited the referring ward and interviewed nursing staff. We defined the patients' preceding clinical history and treatment, the nature of their diarrhoeal illness, and nurses' prediction of the laboratory test result.

Results
72 stool samples were received in the laboratory. 14 stool samples were not tested. Of the remaining 58 samples, 29 (50%) were positive for Clostridium toxin. Nursing staff commonly cited a peculiar odour or the appearance of stools as indicative of Clostridial infection. Nurses correctly predicted the laboratory diagnosis in 49 out of 58 cases (84%); a sensitivity of 86% and specificity of 83% ($p<0.05$, Chi2 test).

Conclusions
Nursing staffs identify the presence of Clostridium difficile with very considerable accuracy. Oral metronidazole is well tolerated by elderly patients and it appears justifiable to start treatment on the basis of nurses' clinical diagnosis. This will avoid therapeutic delay and may reduce morbidity, mortality, length of stay, and the cost of managing this disease.

ECONOMIC IMPACT OF LOW DOSE POLYETHYLENE GLYCOL 3350 PLUS ELECTROLYTES (PEG+E) COMPARED TO LACTULOSE IN THE TREATMENT OF IDIOPATHIC CHRONIC CONSTIPATION

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Introduction
A study of PEG+E (Movicol) compared to lactulose was used as the clinical basis to estimate the economic impact of using PEG+E compared to lactulose in managing constipation in adults, including the elderly, from the perspective of the National Health Service (NHS).

Methodology
A decision tree modelling the management of idiopathic constipation with PEG+E and lactulose over three months was constructed using clinical and resource utilisation outcomes obtained from published literature, supplemented with information derived from interviews with 6 general practitioners (GP) and 4 nurses who manage idiopathic constipation.

Results
The expected mean NHS cost of managing idiopathic constipation with PEG+E and lactulose over 3 months is £105 and £98 respectively. However, after 3 months' treatment, 53% and 24% of patients would be successfully treated with PEG+E and lactulose respectively ($p<0.001$). The results are sensitive to changes in number of GP consultations, efficacy and daily dose of PEG+E, and probability of senna being co-prescribed with lactulose. However, the results are robust to changes in any other parameter. GP consultations account for 45% (2.9 visits) and 71% (4.4 visits) of the cost of managing PEG+E-treated and lactulose-treated patients. Hence, PEG+E's higher acquisition cost compared to that of lactulose is offset by reductions in primary care resource use, particularly GP consultations.

Conclusion
The cost of managing idiopathic constipation with PEG+E is comparable to that of managing it with lactulose, although using PEG+E increases the probability of being successfully treated from 24% to 53%. Therefore, the decision to use either laxative should be based on efficacy and patient preferences and not drug acquisition costs.

FACTORS ASSOCIATED WITH INADEQUATE FOOD INTAKE IN ELDERLY INPATIENTS

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Introduction
The aims of this longitudinal study of elderly inpatients were to determine: 1) the frequency of different factors causing inadequate food intake; 2) whether these factors varied during hospital stay and according to nutritional status; and 3) whether nutritional status changes in patients with inadequate intake whose stay was <10days.

Method
100 inpatients on an elderly care unit (ages 64-98, mean 81.7 years; 27 male, 73 female) were observed twice weekly, from admission to discharge/maximum of 4wks. Anthropometric assessments of nutritional status were made on admission and discharge. Standard diet in the unit delivers a mean 1274kCAL and 91% of recommended protein intake. Therefore, incomplete consumption generally constitutes inadequate intake. At each visit, adequacy of intake in the preceding 24-hour period was determined using nurse observations, food-charts, case-notes, and unstructured interviews of patients/carers. Reasons for inadequate intake were categorised in those incompletely consuming their standard diet +/- prescribed food supplements.

Results
Twenty-one patients were malnourished on admission [below the 10th percentile for demiquet (weight/demispan2) for males or mindex (weight/demispan) for females]. Three patients became malnourished during their stay. On 289/430 visits(67%), patients were eating inadequately. Reasons during three periods of hospital-stay from 0-7 days, 8-18days, >18days showed acute illness (57%,36%,37%), anorexia (39%,17%,14%), catering issues (24%,18%,11%) and oral problems (15%,12%,0%) were more prevalent initially; confusion (25%,34%,23%), mood (19%, 29%, 32%) and dysphagia (10%,14%, 9%) remained throughout. Compared to well-nourished patients (n=67), malnourished patients (n=24) had higher frequencies of oral problems (22%v6%; $p<0.001$), mood issues(33%v19%;$p=0.02$), anorexia (38% v23%; $p=0.015$) and catering issues(34%v12%; $p<0.001$), but lesser dysphagia(4%v13%,$p=0.015$). 36/51 patients in hospital for <10days were eating inadequately; of these, none of 25 initially well-nourished became malnourished.

Conclusion
Inadequate intake early after admission is mainly due to reversible factors associated with acute illness, and for patients staying <10 days, may not merit intervention.

EVALUATION OF A NUTRITION SCREENING TOOL IN ELDERLY PATIENTS

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Introduction
Under-nutrition remains prevalent in British hospitals. It contributes to poor outcomes. Although nutritional supplementation improves the recovery of some patients, the problem is often unrecognised and untreated. Dietician assessment is time consuming and should be focused on those most at risk. The aim of this study was to establish whether a nutrition screening tool (NST), completed by nurses, could reliably identify patients at nutritional risk, as judged by a detailed dietician's assessment (NADiet).

Methodology
NST was based on the four questions recommended by BAPEN (recent unintentional weight loss or reduced food intake, usual weight and height), combined with measured weight, calculated body mass index (BMI) and mid arm circumference. Total scores were from 1 to 5, 3-5 indicating some risk. 54 patients over 60 years (mean 72.4, range 62 - 90) were recruited from consecutive admissions to the acute medical and elderly care wards. The dietician was blinded to the NST score.

Results
Fifty (92%) patients underwent both NST and NADiet within 72 hours of hospital admission (4 excluded due to severity of clinical condition). Mean BMI was 25.3 ($\pm$5.5) kg/m^2. 27 (54 %) patients were identified as at risk by NST (3-5) and 24 (48 %) by NADiet. The Kappa score, a chance-corrected measure of agreement, indicated good inter-rater agreement, $\kappa = 0.80$. Sensitivity was 0.96, specificity 0.85; positive predictive value 0.85; negative predictive value 0.96. There were 4 (8 %) false positives and 1 false negative.

Conclusion
The NST was not discriminating enough to grade severity but a dichotomous threshold score (1-2 / 3-5) correctly identified the majority of patients with nutritional problems requiring a dietician's assessment.

WHAT TYPE OF LARGE BOWEL INVESTIGATION FOR THE ELDERLY? A COMPARISON OF TWO TYPES OF CT COLON WITH BARIUM ENEMA AND COLONOSCOPY

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Introduction
Computed Tomography of the colon (CTC) is a new method by which the large bowel can be imaged. Two protocols have been suggested for CTC; CT pneumocolon (CTP) a CT of the abdomen after full bowel preparation, iv contrast and busopan and air insufflation of the colon; and a CT of the abdomen without bowel preparation or iv contrast and neither buscopan or air insufflation (CTA). This is a pilot study designed to compare these two CTC methods with barium enema and colonoscopy in the elderly.

Method
Sixty-four patients aged 66-95, referred for a colonoscopy or barium enema by their physician were randomised to also have either a CTP or a CTA. Fifty-four patients attended for both investigations and these were reported blind of one another. Follow-up was for up to 23 months by review of hospital notes.

Results

Detection rate of polyps and colonic cancers

	CTA vs Colonoscopy n=14	CTA vs Barium enema n=13	CTP vs Colonoscopy n=13	CTP vs Barium enema n=14
Detected by both investigations	1 polyp	0	1 polyp	1 cancer
Missed by both investigations	0	1 cancer	0	0
Missed by CT	1 polyp	1 polyp	1 polyp	0
Missed by traditional investigation	0	0	1 caecal cancer	1 cancer 2 polyps

Conclusion
CTA missed significant abnormalities therefore it is not appropriate for this population of patients. CTP missed 1 polyp in comparison to colonoscopy and no lesion in comparison with barium enemas. CTP can be used as a first line investigation of the large bowel in the elderly.

EFFECT OF CELLULAR AGE ON FERRITIN EXPRESSION IN THE HUMAN SMALL INTESTINE

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Introduction
The small intestinal epithelium is in constant renewal with cells of different cellular age; 'young' crypt and 'old' villus cells. Ferritin expression correlates with iron status (direct relationship) but there are few data on its expression in these cells under different iron states.

Method
Intestinal ferritin mRNA expression was examined using endoscopic biopsies from subjects with iron deficiency (n=5), replete (n=5) and primary iron overload (n=3). Intestinal epithelial cells were separated as described previously (Chua et al Clin Sc 1998; 95:171-177).

Results
(arbitrary units, mean ± S.D.)
Ferritin expression was no different between crypt and villus cells in the three iron states: (Crypt vs. Villus: Replete 0.85 ± 0.03 vs. 0.95 ± 0.09 $p>0.05$, Deficiency 0.34 ± 0. 04 vs. 0.42 ± 0.01, $p>0.05$; Overload 0.40 ± 0.04 vs. 0.55 ± 0.03, $p>0.05$). In iron replete subjects, ferritin expression was greater compared to iron deficiency and overload: (Crypt: 0.85 ± 0.03 vs. 0.34 ± 0.04 vs. 0.40 ± 0.04, $p<0.01$; Villus: 0.95 ± 0.09 vs. 0.42 ± 0.01 vs. 0.55 ± 0.03, $p<0.01$) but not between iron overload and iron deficiency: (Crypt: 0.40 ± 0.04 vs. 0.34 ± 0.04, $p>0.05$; Villus: 0.55 ± 0.03 vs. 0.42 ± 0.01, $p>0.05$).

Conclusions
Cellular age had no significant effect on ferritin expression under different iron states. Depleted iron stores demonstrated reduced ferritin expression in both crypt and villus cells. Enhanced ferritin expression was not observed in primary iron overload. Whether this is due to enhance mucosal iron transport to portal blood or a defect in ferritin synthesis requires further evaluation.

AETIOLOGY AND INTERVENTIONS IN ACUTE RENAL FAILURE IN OVER 75 YEARS AND UNDER 75 YEARS OF AGE: A HOSPITAL BASED PROSPECTIVE SDUDY

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Introduction

[1]Outcome of acute renal failure (ARF) is dependent on co morbidity, cause and severity of ARF. Evidence also suggests that ARF may in itself predict outcome independently of the underlying cause.

Methodology

Prospective data was collected on all patients presenting with ARF in the East Kent Health Authority area between March 1997 and February 1998. A total of 291 patients were divided into group 1 above 75 years (n=158, mean age 82.2) and group 2 below 75 years of age (n=133, mean age 62.25). We compared the aetiology and interventions in two groups. The chi square test was used for statistical analysis.

Results

The mean creatinine at referral group 1 and group 2 was 527.7 and 519.6umol/l respectively.

Causes	Over 75	Under 75	p-value
Iatrogenic	55(34%)	44(33%)	NS
Preventable	28(17%)	20(15%)	NS
Investigations			
Renal Biopsy	1(0.6%)	9(6%)	<0.01
Ultrasound	64(40%)	73(54%)	<0.01
Swan Ganz catheter	3(1.8%)	16(12%)	<0.01
Arterial Blood Gases	33(20%)	53(39%)	<0.01
Interventions			
Critical care	8(5%)	41(30%)	<0.01
Central line	34(21%)	59(44%)	<0.01
Renal Replacement Therapy	8(5%)	38(28%)	<0.01

Conclusions

There is no significant difference between iatrogenic and preventable causes in both groups. Patients over 75 years age group received significantly less investigations as well as interventions.

References

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A RCT OF HEALTH VISITOR (HV) INTERVENTION IN FALLS

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Introduction
Although different types of intervention have been shown to reduce falls there is no consensus on the optimum approach. We investigated the impact of a specialist domiciliary HV intervention on subsequent falls and self-reported physical function in older women fallers.

Methods
Women aged 65-79 discharged home from an A&E Department were randomly allocated to HV intervention or control. The HV intervention, five days after the fall focussed on pain control and medication, how to get up after a fall, education about risk factors for falls and advice on diet, and exercise. They were also care-managed by the HV during the trial. The control group received standard care. An independent researcher assessed patients on day 4 after the fall and at week 12.

Results
49 control and 60 intervention patients (both mean age 71.9) were recruited. There were no differences between the two groups in the two primary outcome measures. The percentage of patients who subsequently fell was 4% in the intervention group and 5% in the control group. Physical function determined by the SF36 improved to a similar degree in both groups. (1.6 intervention, 3.1 control) Patients who fell again had lower scores on the SF36 domains of physical function (31.4 vs 48.1) and general health (31.8 vs 48.1) at 4 days.

Conclusions
This study suggests that routine HV intervention in all fallers is ineffective in reducing subsequent falls and improving physical function. However, a proportion of fallers experience persistent disability following a fall. Self-reported health status might form part of the assessment of patients at risk of a poor recovery from a fall.

PERCEPTIONS OF INFLUENZA VACCINATION IN THE CONTEXT OF A RANDOMISED CONTROLLED TRIAL

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Introduction
Fear of side effects remains a major barrier to increasing influenza vaccination uptake in 'at risk' individuals (Findlay et al. Postgrad Med J 2000;76:215-217). As part of a randomised trial to assess the cost benefits of routine influenza vaccination in healthy 65-74 year olds, reasons given for non-participation were recorded.

Methodology
6058 people were invited to enter the study and of these, 2583 (42.6%) individuals (1014 males/1569 females, median age 69.6 years at 1/10/99) returned cards indicating that they did not wish to be involved. These individuals were sent a further postal questionnaire asking for reasons why they felt unable to participate.

Results
1177 (45.6%) questionnaires returned.

Reason	Number	(%)
Concerned about side effects	402	(34.2)
Unable to attend any of the sessions	52	(4.4)
Unable to get to GP surgery	47	(4.0)
Health is good, therefore do not require the vaccine	374	(31.8)
Already received the vaccine this year	202	(17.2)
If required, would rather the GP gave the vaccine	338	(28.7)
Illness exclusion criteria for study	161	(13.7)
Previous bad reaction to the vaccine	75	(6.4)
Already involved in a clinical trial	29	(2.5)
Objection to name "Geriatric Medicine"	298	(25.3)
Don't want to be involved in a research project	622	(52.8)

Conclusion
There remains a widespread belief in the community, propagated by myths from friends and family, that influenza vaccination is associated with adverse effects. Additionally, a third of this subject group felt that their good health was a reason for not having the vaccine and if government policy includes such people in the future this belief must be overcome.

EVALUATION OF NURSE-LED CASE MANAGEMENT OF OLDER PATIENTS

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Introduction
Limited previous research, from North America, suggests case management can improve patient outcomes without extra costs. The COPE Trial is evaluating the effectiveness of nurse-led case management of older adults in primary care using developed practice guidelines and agreed care pathways, in terms of patient quality of life, satisfaction, mortality, hospital stay, consultation rates and overall cost effectiveness.

Methodology
The randomised, controlled trial compares approximately 5000 patients aged over 75 in five intervention and five control practices in Hertfordshire and London. Baseline data on consultations and hospital admissions have been collected, with prospective data following shortly. Questionnaires (incorporating EuroQol and the Geriatric Depression Scale) have been analysed for a baseline 20% sample and trial midpoint follow-up 30% sample (both 70% response rate). Interviews with nurses, doctors and patients, and case management meeting observations are being conducted.

Results
The follow-up questionnaire has found a statistically significant difference in favour of patients attending intervention practices, which was not present in the baseline questionnaire, in reported health status, some measures of satisfaction with practice care, and some measures of quality of life (self-perceived problems with self-care and preparing meals). The percentage difference between intervention and control practice patients placing themselves in the top half of the EuroQol scale measuring health state rose from 2% (n.s.) to 6% ($p<0.05$). A rise in patients attending intervention practices believing their medical problems (11%) and their medicines (7%) were always explained to them was found, but there was no difference in the levels of satisfaction of the control practice patients.

Conclusion
Nurse-led case management appears to have a positive impact on patients' self-perceived health, quality of life, and satisfaction with practice care.

FACTORS INFLUENCING OUTCOME OF INPATIENT REHABILITATION

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Introduction
East Kent Health Authority commissioned a study to determine why more people were discharged to institutional care from geriatric wards in one of two district general hospitals (Hospitals A and B) and to examine whether use of comprehensive standardised assessment influenced discharge destination. One study ward in each hospital used the Minimum Data Set/Resident Assessment Instrument (MDS/RAI) for admission assessment. The control wards used usual assessment procedures.

Methodology
Data including age, sex, living alone, Barthel, Abbreviated Mental Test (AMT), and MDS/RAI scales for physical functioning (mds adl), cognitive performance scale (cps), bladder continence, bowel continence, pressure sores and mood were collected at admission and discharge. The main outcome measure was discharge to home or institution (residential or nursing home). Binary logistic regression analysis was performed using variables found to be significant on univariate analysis.

Results
423 patients were included in the study (mean age 84, 38% male). More patients were discharged to institutions from Hospital B, chi. sq. $p=0.04$. There was no difference in discharge destination between study and control wards nor in change in physical or cognitive function from admission between the hospitals. Reduced risk of discharge to institution was associated with being male (OR 0.41, 95% CI 0.23-0.72), AMT (OR 0.86, 95% CI 0.78-0.96 for each point increase) and Barthel (OR 0.80, 95% CI 0.75-0.85 for each point increase). In the regression model, age and hospital were not related to discharge destination. The mds adl and cps had the same predictive power as the AMT and Barthel.

Conclusion
These results show the importance of measuring physical and cognitive function at discharge when examining discharge destination of hospital patients. Use of the MDS/RAI did not affect discharge destination in this study.

ANXIETY LEVELS IN HEALTHY OLDER PEOPLE PARTICIPATING IN A RANDOMISED CONTROLLED TRIAL

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Introduction
In a randomised, controlled trial assessing the cost-benefits of routine influenza immunisation in healthy 65-74 year olds, we examined the hypothesis that participation in the study was responsible for a rise in a person's anxiety levels in the days preceding entry into the trial.

Methods
The Hospital Anxiety and Depression scale (HAD) was used to assess levels of anxiety in all subjects (n=729) participating in the study. Scales were completed at the vaccination session and repeated after 2 months. The scale consists of 14 items on two sub-scales (7 anxiety and 7 depression) and was self-administered. Ratings are made on 4-point scales representing the degree of distress experienced in the past week: none=0, a little=1, a lot=2, unbearably=3. The two scales are then scored separately. A score of 7 or less indicates non-cases, 8-10 doubtful cases, 11+ definite cases.

Results
707/729 (97%) scales were completed correctly (i.e. no missing responses) on entry into the trial. 669/729 (92%) scales were returned after 2 months, 654/669 (98%) completed correctly.

Anxiety sub-scale

	Score 0-7 (none)	8-10 (doubtful)	11+ (definite)
0 months (n=707)	628 (88.8%)	50 (7.1%)	29 (4.1%)
2 months (n=654)	567 (86.7%)	49 (7.5%)	38 (5.8%)

16/29 participants with definite anxiety at 0 months also had a score of 11 or more at 2 months.

Conclusion
Whilst people who took part in the trial were self-selected and therefore may have been less likely to suffer from anxiety, entry into this study was not associated with a disproportionate rise in anxiety compared to levels seen at 2 months.

OBSERVATIONAL STUDY OF POTENTIAL MARKERS TO PREDICT SURVIVAL IN NURSING HOME RESIDENTS

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Introduction
Survival patterns of nursing home patients have previously been studied. However, markers to predict survival in the first critical months of nursing home placement have not been fully investigated. The aim of this study was to ascertain whether commonly used assessment tools might predict length of survival after admission.

Methodology
All patients admitted over a one-year period to a nursing home specialising in the care of highly dependent patients were studied. 27 patients (17 females) were entered into the study and there were no exclusion criteria. Parameters assessed on admission were: body mass index (BMI); Barthel index; Waterlow score; Hodkinson abbreviated mental test score; Geriatric depression scale; and a nutritional risk assessment.

Results
14 patients (8 females) had died after 6 months. The 13 patients that survived after 6 months had a median Waterlow score of 15 compared to 17 in non-survivors. This difference was shown to be highly significant ($p<0.01$ using Mann-Whitney test). The median Barthel score was 7 in both groups ($p<0.3$). The median nutritional risk assessment in survivors was 11 and 11.5 in non-survivors and the median BMI in surviving patients was 22.9 and 24.3 in non-survivors. These differences were not significant using the same statistical analysis. Accurate data of mental test scores and depression scales could not be collected due to communication difficulties in many of the patients.

Conclusion
The Waterlow score may be a predictor of survival at 6 months in highly dependent elderly patients admitted to nursing homes. Further studies are indicated to evaluate this parameter as a potential prognostic marker in nursing home residents.

CORRELATES OF SELF-RATED HEALTH IN A GERIATRIC DAY-CARE CENTRE

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Introduction
Older people and physicians perceive health in old age differently. Self-rated health is a strong predictor of mortality, independent of objective measures of health, and can be more predictive than a physician's assessment. Poorer self-rated health is a risk factor for nursing-home admission. We studied correlates of self-rated health in a geriatric day-care centre, whose role in facilitating and prolonging independent living involves reducing mortality and admission to long-term care.

Methodology
Seventy-six patients attending day-care in a rural district hospital participated in structured interviews. A single researcher, using a piloted interview schedule adapted from the Irish national health and lifestyle survey, assessed self-rated health on a standard 5-point Likert scale. Depression, functional independence and cognition were assessed by the 15-point Geriatric Depression Score, 20-point Barthel Index and Abbreviated Mental Test Score respectively. Quality of life was assessed using the EuroQoL.

Results
Of those assessed, 54.1%(n=40) rated their health as "good" or better. Age, gender and cognition did not affect health-ratings. Depression, pain, a history of hypertension and poor quality of life were significantly related to poorer self-rated health at $p<0.001$ and ischaemic heart disease, dependency and incontinence at $p<0.05$. Significant associations with depression, pain and hypertension were found on logistic regression analysis, accounting for 42.7% of variance in self-rated health.

Conclusions
Depression, hypertension and pain are associated with poorer self-rated health, a powerful predictor of mortality and admission to long-term care. Geriatric day-care centres may benefit from focusing on these factors to best achieve the goal of promoting quality of life and independent living for older people.

COMPARISON OF PATIENTS STAYING MORE THAN AND LESS THAN 28 DAYS IN A NEEDS RELATED ELDERLY CARE UNIT

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Introduction
Rehabilitation has been the cornerstone of Elderly Care Medicine for fifty years. Recent health planning has focused much attention on reducing length of stay (LOS) in attempt to free up beds on the acute hospital site and eliminate "bed blocking". Reduced LOS has become a surrogate measure of quality of service delivery. We examined the differences in patient characteristics and outcomes in short stay (SS ≤28 days) and longer stay (LS>28 days).

Method
Patients admitted from October 1999 to April 2000 were studied. Demographics including age, sex, marital status, social services and residence were collected on admission. During hospitalisation we recorded admission and discharge Abbreviated Mental Test (AMT), Waterlow score and active and inactive diagnoses. Short term outcome measures were mortality, length of stay (LOS) and transfer to continuing care (nursing or residential home).

Results
359 patients (median age 85 years) were admitted over the study period. 261 patients (72%) stayed ≤28 days and 98 patients (22%) stayed >28 days. The median age for both groups was 85 years. Mean AMTs were SS 6.8 and LS 5.9 ($p=0.005$). Mean Waterlow scores were SS 16 and LS 17.5 ($p=0.008$).

	>28 days	≤28 days	p value
Returned to residence	44/98	209/261	<0.0001
Died	28/98	46/261	=0.03
Continuing care	26/98	6/261	<0.0001

Conclusion
Elderly patients admitted to a needs related unit staying longer than 28 days have lower AMT and higher Waterlow score on admission. They are more likely to die in hospital and ultimately require continuing care. However 45% return to pre admission residence and merit the investment of time in rehabilitation.

RECRUITMENT OF OLDER SUBJECTS TO A HYPERTENSION TRIAL FROM PRIMARY CARE

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Introduction
The applicability of trial results to clinical practice is dependent upon recruiting subjects representative of the patient population. Many studies describe difficulties in recruiting older people. Consequently the generalisability of many hypertension trials to routine clinical care of older people has been questioned. We describe experience in recruiting older subjects from primary care into a placebo-controlled trial examining blood pressure lowering effects on cardiovascular events and cognitive function.

Methods
The Study for Cognition and Prognosis in the Elderly recruited subjects 70-89 yrs, BP 160-179/90-99 mmHg, untreated or thiazide treated, without pre-existing cognitive impairment. Ten local general practices participated. Research staff screened primary care notes to identify potentially eligible untreated or thiazide treated subjects. Subjects were invited to participate by a letter from their general practitioner.

Results
8593 patient records were screened. 2378 potentially eligible subjects were identified; 969 (41%) were not interested in entering the study, 611 (25%) did not reply. 798 (34%) were screened in a research clinic, 420 (18%) were excluded, primarily because BP entry criteria were not met, 378 (16%) enrolled in the study, 121 (5%) withdrew during the run-in phase leaving 257 (11% screened) randomised. Characteristics of randomised subjects were; mean age 76 yrs, BP 165/88 mmHg, 54% female, previous stroke 8%, previous myocardial infarction 4%, atrial fibrillation 4%, diabetes 2%, peripheral vascular disease 7%. Recruitment was helped by initial general practitioner approach, research staff screening notes, and provision of transport to subjects.

Conclusions
Recruitment of large numbers of older people, reasonably representative of the general population, into intervention trials is feasible from primary care with research team support.

SCREENING FOR VISUAL IMPAIRMENT IN ELDERLY PEOPLE: VALIDATION OF THE CARDIFF ACUITY TEST

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Introduction
Poor visual acuity (VA) is a risk factor for falls, and a common impediment to rehabilitation, but conventional VA testing is difficult in dysphasic, deaf or confused patients. In the Cardiff Acuity Test (CAT) observation of the subject's eye movements (preferential looking) indicates if they can see a vanishing optotype on a card. The test is quick, and requires no speech or understanding on the part of the subject. We consider its usefulness in frail, elderly patients.

Methods
42 rehabilitation patients (16 recovering from a stroke) aged 47-90 (mean 78) years, were tested in good lighting, wearing glasses if available. Cards ordered 'A' to 'K' with increasingly faint targets were sequentially presented at 1 metre, until the subject's eye movements indicated the target to be invisible. A conventional Snellen test was performed where possible.

Results
24 subjects were retested on another day. 23 were retested by a second observer. We used correlation coefficients to confirm test-retest ($r=0.97$, $p<0.01$), and inter-observer ($r=0.95$, $p<0.01$) reliability. Snellen chart measurements of VA were possible in 37 patients, and the results correlated significantly with the CAT result ($r=0.53$, $p<0.05$). We defined significant impairment as a Snellen test acuity below 6/18. Using the 'I' card as a threshold we were able to detect this degree of impairment with a sensitivity of 83.3%, and a specificity of 80.6%.

Conclusion
The Cardiff Acuity Test is reliable, valid, and highly acceptable to elderly patients. We have subsequently assessed 57 continuing-care patients in a single morning; the test rapidly identified 32 (56%) in whom visual impairment appeared to be clinically significant.

VENLAFAXINE AND DOTHIEPIN IN ELDERLY DEPRESSED PATIENTS: A COMPARISON OF EFFICACY AND EFFECTS ON COGNITION AND SUBJECTIVE SLEEP

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Introduction
Any compound, which has the potential to disrupt cognitive and psychomotor performance, will exacerbate the impairments which are a feature of depressive illness. A study was conducted to compare venlafaxine and dothiepin for efficacy and effects on cognitive function in 86 depressed elderly patients in general practice.

Methods
In a randomised, parallel group, double blind study, patients (mean age 71) received either venlafaxine (37.5mg bd.) or dothiepin 75 mg (25mg mane 50mg nocte) for 26 weeks. Prior to treatment and then at weeks 1, 2, 3, 4, 8, 12, 16, 20 and 26, patients were assessed on the Montgomery-Asberg Depression Rating Scale (MADRS) and validated tests of cognitive function, memory, sleep and daytime sedation. Patients were also scored according to the Hamilton Depression Rating Scale (HAM-D) before and after treatment.

Results
Both venlafaxine and dothiepin caused a significant reduction in the MADRS ($p<0.01$). Critical Flicker Fusion scores were significantly higher with venlafaxine ($p<0.05$) than dothiepin at the majority of test points. There were significant differences in ratings of sedation with patients on venlafaxine feeling much less likely to fall asleep during the day. Venlafaxine also significantly increased the subjective ease of awakening from sleep ($p<0.05$).

Conclusions
Patients taking venlafaxine performed significantly better on objective cognitive tests, felt better on awakening and were less likely to fall asleep during the day than those taking dothiepin. This was reflected by a lower rate of minor accidents with venlafaxine (29%) compared to dothiepin (40%). These factors are important in the management of depression in ambulatory elderly patients.

COGNITIVE CHANGE IS A POOR PREDICTOR OF CHANGE IN MORE CLINICALLY RELEVANT OUTCOMES IN ALZHEIMER'S DISEASE

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Introduction
Donepezil, and other cholinesterase inhibitors, improve performance of Alzheimer's disease (AD) patients on cognitive tests but worthwhile improvements in day-to-day functioning, behavioural symptoms, and/or the well-being of carers are not yet reliably established. We investigated whether improvements in cognition equate to improvements in these other more socially relevant outcomes.

Methods
Patients in the NHS-funded national AD2000 trial are randomised between donepezil (5mg) and placebo. Mini-Mental State Examination (MMSE), Neuropsychiatric Inventory (NPI), Bristol Activities of Daily Living Scale (BADLS), and General Health Questionnaire (GHQ-30) are administered at baseline and again after 12 weeks of treatment.

Results
271 patients have so far completed all 4 questionnaires at both baseline and 12-week assessments. At baseline, MMSE was strongly correlated with BADLS, weakly correlated with NPI, and not correlated with GHQ. But, change in MMSE at 12 weeks was only weakly correlated with change in BADLS and was not correlated with change in NPI or GHQ.

Conclusions
Cognitive and functional ability are correlated in AD, but cognitive change is a poor predictor of change in functional ability, behavioural symptoms and carer psychopathology suggesting that these may be associated but unrelated aspects of the disease process. Cognitive change should therefore not be used as the sole criterion for deciding 'response' to cholinesterase inhibitors. It cannot be assumed from the improvements in cognition seen in previous studies of cholinesterase inhibitors that more clinically relevant outcomes will also be improved with these drugs. Better evidence of worthwhile benefit, from studies such as AD2000, is needed.

INFECTION AND RISK OF STROKE PROGRESSION

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Introduction
Using an internationally agreed definition of Stroke Progression (SP), we previously demonstrated increased risk of progression with abnormalities of heart rate, rhythm and body temperature. We now assess the possible contribution of infection (as indicated by antibiotic prescription) on the risk of SP within the first 3 days following admission with ischaemic stroke.

Methods
Patients admitted to 11 European centres within 24 hours of stroke onset had standardised neurological assessments on days 1,2,3 and 7 to determine the occurrence and timing of any deterioration. Stroke severity was estimated using the Scandinavian Stroke Scale (SSS) score on admission.

Results
59 (22%) patients had documented antibiotic treatment during the first 3 days, and SP occurred in 41% of these, compared with 17% of those not receiving antibiotics ($p<0.001$). The excess risk was similar in all severity groups but patients aged over 75 with mild or moderate strokes (SSS>18) had a risk of SP of 46% with antibiotic treatment, compared with 8% without ($p<0.001$). 63% of patients receiving antibiotics who deteriorated did so after the first day and, of these cases, antibiotic therapy preceded the deterioration in 62%. In multiple logistic regression adjusting for the effect of body temperature significantly weakened the strength of the association between antibiotic therapy and deterioration on days 2 and 3.

Conclusions
Antibiotic use (as a marker of infection) is a significant predictor of Stroke Progression, particularly in elderly patients with mild or moderate strokes, and the infection often seems to precede the deterioration. Much of this effect may be mediated by associated pyrexia, which might be amenable to treatment.

POSTURAL AWARENESS AND FALLS IN PARKINSON'S DISEASE

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Introduction
Abnormal posture is common in Parkinson's Disease (PD). This study examines the relationship between abnormal posture, accuracy of perception of posture and the risk of falling in idiopathic PD.

Methodology
Patients were recruited if they had an observable abnormality of posture, could stand unaided and were free from significant coexistent disease. Subjects were photographed standing in front of a grid to allow measurement of antero-posterior (AP) and lateral deviations. Perceived posture was determined by showing line drawings with varying degrees of stoop and lateral deviation. The history of previous falls (6 months) was obtained and subjects kept a falls diary with telephone reminders over the next 4 months.

Results
40 patients (22 male) were studied (mean age 78, range 68-89; median disease duration 6 years, range 1-40; median Hoehn &Yahr 3, range 2-5). Falls were common (history of falls - 80%; follow-up falls - 58%). Subsequent falls did not correlate with years since diagnosis, Hoehn & Yahr, age or the UPDRS motor score but were significantly correlated with the severity of lateral deviation ($r=0.371$, $p=0.018$), with a similar trend for AP. Perception was inaccurate in 57% for AP and 55% for lateral deviation. True and perceived posture correlated for lateral deviation only ($r=0.371$, $p=0.018$). Patients were more likely to underestimate than overestimate their problem. Follow-up falls (n=39) were more likely in patients with impaired perception (1 of 9 patients accurate for both, 7/9 inaccurate AP only, 4/8 inaccurate lateral only and 9/14 inaccurate for both).

Conclusion
The potential for therapy focusing on posture and postural awareness to reduce falls in PD warrants further study.

PHARMACOKINETIC-PHARMACODYNAMIC STUDY OF SUBCUTANEOUS APOMORPHINE IN PARKINSON'S DISEASE

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Introduction
Subcutaneous apomorphine is a potent dopamine agonist and a useful agent in Parkinson's Disease for patients experiencing unpredictable 'off' periods. High interpatient variability in apomorphine pharmacokinetics and pharmacodynamics indicates the need for dose optimisation to be based on individual handling of the drug. A pilot pharmacokinetic study involving patients on optimised apomorphine therapy identified a consistency in post-distributional pharmacokinetics. The significance of this relationship was explored.

Methods
Nine patients optimised on intermittent subcutaneous apomorphine had antiparkinsonian medication withheld overnight and were given a single subcutaneous apomorphine bolus. Two patients optimised on 24 hour subcutaneous apomorphine infusions were also recruited and their infusions stopped. During the following six hours blood samples were taken for apomorphine assay from both groups. The tools used for pharmacodynamic monitoring were (1) the tapping test and (2) individualised qualitative markers of response.

Results
An apomorphine bolus following overnight wash-out produced atypical 'on' periods in four out of seven patients, i.e. three exhibited a sub-optimal response, one experienced adverse effects. The pharmacodynamic effect was best described by the sigmoid E_{max} model. The quality of the "on" period was not related to post-distributional pharmacokinetics or to EC_{50} (drug concentration required to produce 50% of maximal effect).

Conclusions
Apomorphine post-distributional pharmacokinetics were not correlated to antiparkinsonian response. No other significant pharmacokinetic predictors of pharmacodynamic effects could be identified.

LONG-TERM EFFICACY OF OLANZAPINE IN THE CONTROL OF PSYCHOTIC AND BEHAVIORAL SYMPTOMS IN PATIENTS WITH ALZHEIMER'S DEMENTIA

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Introduction
A multicenter study was conducted to determine long-term efficacy and safety of olanzapine in treating psychotic symptoms and behavioral disturbances associated with Alzheimer's disease.

Methods
Elderly nursing home patients (mean age: 83.1 years) with dementia (n = 137) who successfully completed a 6-week double-blind study entered an open-label phase of up to 18 weeks during which they received olanzapine (dose range: 5, 10, or 15 mg/day). Mean change in the sum of the Agitation/Aggression, Delusions, and Hallucinations items of the NPI/NH (Neuropsychiatric Inventory - nursing home version) was used as the primary efficacy measure (Core Total).

Results
Following treatment with olanzapine, patients' scores improved significantly on the Core Total (mean, -7.55; SD = 8.53; $p < .001$), Total (mean, -17.85; SD = 23.72; $p < .001$), and 10 of the 13 individual item scores of the NPI/NH, including Occupational Disruptiveness (mean, -2.84; SD = 3.24; $p < .001$). Barnes Akathisia scores improved significantly from baseline (mean, -0.22; SD = 0.80; $p = .002$). Simpson-Angus and AIMS scores were not significantly changed. No significant changes occurred in patient ECGs, including QTc interval, nor in any other vital sign or in weight. Treatment-emergent symptoms included somnolence (26%), accidental injury (25%), and rash (22%).

Conclusion
Results from an 18-week open-label study suggest that olanzapine is effective in reducing symptoms of psychosis and agitation, but many patients experience side effects during treatment.

OLANZAPINE IN THE PREVENTION OF PSYCHOSIS AMONG NURSING HOME PATIENTS WITH BEHAVIORAL DISTURBANCES ASSOCIATED WITH ALZHEIMER'S DISEASE

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Introduction
A multicenter study was conducted to determine the efficacy and safety of olanzapine in treating psychotic symptoms and behavioral disturbances associated with Alzheimer's disease. This analysis was performed post hoc among nursing home patients who did not yet have delusions or hallucinations to assess the appearance of such psychotic symptoms.

Methods
Onset of psychotic symptoms was determined with the NPI/NH during treatment with either placebo or a fixed dose of 5, 10, or 15 mg/day of olanzapine for up to 6 weeks of therapy.

Results
Among patients entering the study with neither hallucinations nor delusions (n = 76), there was a significantly greater increase in development of these psychotic symptoms among placebo patients compared to olanzapine patients (p = .006). For the larger subset of patients without hallucinations at baseline (n=155), fewer olanzapine-treated patients (9/121) developed hallucinations compared to placebo (3/32). Olanzapine had an acceptable safety profile in each symptom-subgroup of patients. Changes in extrapyramidal symptoms, labs, and vital signs were not statistically or clinically significantly different for patients treated with olanzapine compared to placebo.

Conclusion
Post-hoc analysis of data from a double blind placebo controlled trial indicated that, among patients without hallucinations or delusions at trial entry, fewer patients treated with olanzapine than with placebo developed them.

PREVALENCE AND CORRELATES OF DEPRESSION IN A GERIATRIC DAY-CARE CENTRE

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Introduction
There is a high prevalence of under-diagnosed and under-treated depression in community and institutional settings. Depression can affect motivation, cognitive and functional abilities necessary for independence. We studied depression in a geriatric day-care centre, which seeks to facilitate independent living and preserve quality of life.

Methodology
Seventy-six patients attending day-care in a rural district hospital participated. A single researcher used a piloted interview schedule to record depressive symptoms with the 15-point Geriatric Depression Score (GDS). Functional independence and cognition were assessed by the 20-point Barthel Index and the Abbreviated Mental Test Score respectively. Participants self-reported a past diagnosis of anxiety/depression and rated feelings of anxiety/depression on a 3 point Likert scale. Quality of life was assessed using the EuroQoL.

Results
Thirty percent of patients (23/74) were depressed using the GDS. Median GDS = 3; range = 0 – 11. Sixty one percent (14/23) of depressed and 13.3% (9/53) of normothymic patients rated themselves as moderately anxious or depressed ($p<0.001$). Twelve patients had a past diagnosis of depression but only 34.8% (8/23) of depressed patients had been diagnosed. Depression was not associated with age, gender, cognitive impairment or living alone. Depression was significantly related to dependency, incontinence and poor quality of life at $p<0.001$. Depression was significantly related to being married ($p=0.04$) but not after controlling for dependency.

Conclusions
There may be a high prevalence of undetected depression in older people attending day-care centres, particularly among dependent and incontinent patients. One third of depressed patients may not rate themselves as depressed.

EFFICACY OF VENLAFAXINE ER IN LATE LIFE GENERALISED ANXIETY DISORDER

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Introduction
Generalized anxiety disorder (GAD) is a common psychiatric disorder in the elderly, under-diagnosed and under-treated. The information that guides treatment is often based on uncontrolled clinical observations or extrapolations from efficacy data obtained in younger adults. The efficacy of extended release venlafaxine (venlafaxine ER) in older (≥60 yrs) and in younger adults with GAD was compared.

Methodology
Data from five, multicentre, double-blind, placebo-controlled trials were analysed. Outpatients were aged at least 18 years with a DSM-IV diagnosis of GAD and a total score of at least 18 on the Hamilton Rating Scale for Anxiety (HAMA). Exclusion criteria included DSM-IV Major Depressive Disorder within 6 months of study entry. Fixed or flexible doses of venlafaxine ER in the range 37.5-225 mg daily were given for 8-weeks in all studies and for 24 weeks in two studies.

Results
The older group and the younger group included 48 and 496 patients (in the placebo group), and 136 and 1159 patients (in the venlafaxine XR group), respectively. Analysis of variance showed a main effect of treatment, but no main effects for age, and no age by treatment interactions for any of the primary or secondary efficacy outcome measures for either the 8-week or 24 week analyses. There were no significant effects of age as a covariate on treatment responses. Post hoc analyses demonstrated efficacy in the older subsample on a number of key outcomes.

Conclusion
Venlafaxine ER shows similar efficacy in the treatment of GAD in younger and older adult patients.

CURRENT MANAGEMENT OF L- DOPA INDUCED HALLUCINOSIS IN PARKINSON'S DISEASE

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Introduction
L- Dopa induced hallucinosis occurs in 25-30% of patient's with Parkinson's Disease. Treatment is difficult; reducing L- Dopa worsens motor symptoms and 'typical' antipsychotics cause extrapyramidal side effects. Newer 'atypical' antipsychotics may improve hallucinosis with less detriment to motor function. We conducted a survey of current management strategies.

Methods
350, 4- item questionnaires were posted to geriatricians across the UK.

Results
220/350 (62.8%) questionnaires were returned. 205/215 (93.1%) doctors reduced L- Dopa at some stage in their management of hallucinosis, 167 (75.9%) as their first line therapy.140/215 (65 %) spread out the dose of L- Dopa. 61 (27.7%) used olanzapine and 17 (7.7%) used clozapine, usually as third or fourth line stategies. There were a further 25 different approaches indicated in the 'other' section of the questionnaire including use of; reassurance, typical antipsychotics and changing to alternative L- Dopa preparations.

Conclusion
L-Dopa induced hallucinosis is common. It increases with age, polypharmacy, comorbidity and a family or personal history of psychiatric illness. It is associated with increased morbidity and is an independent risk factor for Nursing Home admission.

Treatment is not without difficulties, reduction in L-Dopa is the commonest form of treatment despite inevitable deterioration in motor function. Newer 'atypical' antipsychotics are used uncommonly despite evidence to suggest that they successfully relieve hallucinations without detriment to other symptoms. Responders indicated that this was often due to cost, lack of availability of such drugs on hospital formularies or the need to refer patients to neurologists or psychiatrists for the introduction of such medication.

FREQUENCY AND IMPLICATIONS OF DEHYDRATION IN ACUTE STROKE

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Introduction
Dehydration has been proposed to be an adverse factor contributing to neurological deterioration after stroke. In two recent trials of effective stroke units, intravenous saline was used routinely in the belief it would rehydrate patients, improve blood pressure control and cerebral perfusion and therefore neurological outcome. We aimed to establish the prevalence of dehydration among stroke patients, and its relation to outcome.

Methodology
We studied 131 consecutive acute stroke admissions. Baseline data, including clinical stroke classification and neurological impairment (Scandinavian Stroke Scale score, SSS) were recorded on day of admission (day 0). Dehydration was defined as a calculated serum osmolarity of >300 mOsm/kg. Follow up incorporated measures of neurological impairment (SSS) and dependency (Barthel Index) on day 3, and (Rankin score) on day 7.

Results
Thirty six (28%) had a serum osmolarity of >300 mOsm/kg on admission. Of the 36 dehydrated patients, 10 were observed to normalise (osmolarity <300 mOsm/kg) within the first 3 days ('transient dehydration') and 26 were not ('sustained dehydration'). Three days after stroke there were significant differences in neurological impairment and dependency with relatively better outcomes in those with no dehydration or only transient dehydration. In a multivariate analysis pre-stroke dependency (P<0.0001), stroke classification (P=0.038), initial stroke severity (P<0.0001), and dehydration group (P=0.025) were all significantly correlated with the Barthel index on day 3. Similar results were obtained when dependency was measured using the Rankin score on day 7.

Conclusion
Dehydration is common after stroke and is associated with poor early functional and neurological recovery.

THE EFFECT OF ACUTE GLYCAEMIC INDEX ON CLINICAL OUTCOME AFTER STROKE

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Introduction
Studies have shown that hyperglycaemia acutely after stroke independently predicts poorer survival and independence. Whether the change in glycaemic index in the acute phase of stroke has any effect on stroke outcome is unclear. Glycated serum proteins (GSP) reflect blood glucose concentration during the preceding 2 weeks. The aim of this study is to measure the association between the change in GSP in the first 2 weeks after stroke and outcome.

Methods
GSP and total protein were measured within 24 hours of stroke onset (day 0) and at 2 weeks (day 14) on consecutive patients. Plasma glucose and HbA_1C were measured on admission. Baseline characteristics such as age, sex, stroke severity, co-morbidity and stroke subtype were recorded. Survival was recorded at 3 months. Logistic regression was performed to estimate whether the change in GSP (day 14 – day 0) influenced survival after adjusting for confounding factors.

Results
167 patients were included. 117 (70%) patients were alive at 3 months. Admission glucose was higher in dead patients (7.8mmol/l) compared to survivors (6.6mmol/l) (P<0.01). GSP at day 14 and the change in GSP also was significantly higher in dead patients (P<0.0001). After adjusting for age, sex, stroke severity, diabetes, change in total protein and stroke subtype, the change in GSP was associated with stroke mortality (P=0.05). For every 1% increase in change between GSP day 14 and GSP day 0, the odds ratio was 1.5 (95% CI: 1.1 to 2.0).

Conclusion
Increases in glycaemic index as determined by GSP are associated with excess in stroke mortality after adjusting for case mix. This emphasises the importance of glycaemic control after stroke.

SLEEP APNEA FOLLOWING STROKE: THE INFLUENCE OF AGE AND DISABILITY

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Introduction
Several studies demonstrate a high prevalence of sleep apnea (SA) in stroke patients but in most the populations have been relatively young (mean age <65 years) with few severely disabled patients. In the general population, prevalence of SA tends to be higher in the elderly. The purpose of our study was to determine the relationship between SA following stroke and patient age and disability.

Methods
Sleep studies were performed using a ResMed Autoset system at week 2 and week 6-8 following stroke. Results were expressed in terms of Apnea Hypopnoea Index (AHI). The results for young patients (aged ≤65 yrs) were compared with those for older patients (>65 yrs). AHIs from both studies were compared with patient's Barthel Disability index (BDI) and Scandinavian Neurological Stroke Scores (SNSS).

Results
60 patients, 46 of them >65 years, underwent initial study. Mean AHI was significantly less in the younger patients (22 vs. 32. $p<0.05$). 39 patients, 30 >65 yrs underwent a second study. AHI improved in both groups but was again significantly less in the young group when restudied (14.1 vs. 26.3. $p<0.05$). Nine patients died or had a recurrent stroke prior to second study. There was no difference in AHI between these patients and survivors. Significant sleep apnea (AHI >10) was found more frequently in the older group (94% vs. 77%. ns). No relation was found between AHI and BDI or SNSS measured at either study.

Conclusions
SA in older stroke patients is more frequent and severe than in younger patients. Studies of SA in younger patients may underestimate the extent of the problem, accordingly study populations should reflect the age distribution of stroke in the community.

MARKERS OF ENDOTHELIAL CELL ACTIVATION AND DAMAGE OCCUR AFTER ACUTE ISCHAEMIC STROKE

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Introduction
There is evidence to support an inflammatory role following ischaemic stroke. Expression of mediators of endothelial cell activation (ECA) after stroke, such as intercellular adhesion molecule 1 (ICAM-1), vascular cell adhesion molecules 1 (VCAM-1), E-selectin and von Willebrand factor (vWF) have been identified. Few studies have measured mediators of endothelial cell damage (ECD) such as tissue factor (TF) and thrombomodulin (TM) after cerebral ischaemia. The aim of this study is to define the kinetics of markers of endothelial cell activation and damage after acute ischaemic stroke and compare these levels to patients with previous ischaemic stroke. Association of these markers with stroke severity was also determined.

Methods
Plasma samples of soluble (s) ICAM-1, VCAM-1, E-selectin, vWF, TF and TM were determined by ELISA from 16 patients with acute ischaemic stroke within 24 hours of onset, days 1, 5, 10 and 20. Identical samples were determined from age and sex matched patients with previous stroke.

Results
There was no difference in initial markers of ECA and ECD between acute ischaemic and previous ischaemic stroke apart from higher levels of vWF in acute ischaemic stroke ($P<0.001$). There was a significant rise in sVCAM levels from day 1 to 5 ($P<0.05$). sE-selectin significantly decreased within 24 hours of stroke onset to day 5 ($P<0.05$). sTM significantly rose within 24 hours of stroke onset to day 5 ($P<0.001$). Only initial sTM was associated with initial stroke severity ($P=0.05$).

Conclusion
There is evidence of ECA and ECD after acute ischaemic stroke as demonstrated by significant changes in levels of sVCAM, sE-selectin and sTM. sTM levels may be a potential marker of stroke severity.

COBALAMIN SUPPLEMENTATION IMPROVES COGNITIVE AND CEREBRAL FUNCTION IN OLDER COBALAMIN DEFICIENT PERSONS

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Introduction
Mild cobalamin (Cbl) deficiency is frequently found in older persons. These deficiencies are associated with cognitive and neuro-electrophysiologic abnormalities. However, the effects of Cbl supplementation on these abnormalities in older Cbl deficient subjects are largely unknown.

Methods
In a single blind, placebo controlled, intervention study we investigated the effect of Cbl supplementation in 16 healthy community-dwelling older persons (64-89 yr) with low plasma Cbl concentration and free of cognitive impairments. The received 1 month treatment with placebo, followed by 5 months treatment with intramuscular injections with hydroxycobalamin, 1000µg/week (1 month) and 1000µg/month (4 months). Before and after supplementation plasma Cbl, total homocysteine (tHcy), methylmalonic acid (MMA) were measured and quantitative electroencephalography (qEEG) and cognitive function tests were performed.

Results
After Cbl supplementation, plasma Cbl concentrations increased and plasma MMA and tHcy concentrations decreased significantly. The performance on 3 cognitive tests, i.e. Verbal Word Learning Test, Verbal Fluency and Similarities improved significantly. qEEG showed significantly more fast activity and less slow activity. Lower plasma tHcy concentrations were related to increased fast activity on qEEG on the one hand and improved performance on the Verbal Word Learning Test on the other. Improved performance on the Verbal Word Learning Test was related to increased fast activity on qEEG.

Conclusion
Electrographical signs of improved cerebral function and cognitive cerebral function were found after Cbl supplementation in community-dwelling older persons with low plasma Cbl concentrations who were free of significant cognitive impairment. These improvements were related to reduction of plasma tHcy concentration.

EVALUATION OF A TEST BATTERY FOR HEMINEGLECT IN ELDERLY STROKE PATIENTS

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Introduction
Hemineglect is not a single entity and has a number of sensory and motor manifestations. Formal testing is necessary to identify type and severity of neglect, to decide upon appropriate treatment, and to monitor progress. The purpose of this study was to establish cut-off scores, in normal elderly subjects, and assess performance of elderly stroke patients, using the same battery.

Methodology
Seven tests, selected to identify incidence of hemineglect in visuo-spatial (Star Cancellation and Line Bisection tests, Baking-tray Task, Copy-a-Daisy), representational (Clock-Drawing), pre-motor (Exploratory-Motor Task) and personal modalities (Utilisation of Common Objects). These were administered to 153 elderly stroke patients, admitted consecutively to a rehabilitation stroke unit over a 12-month period, and to 43 age-matched normal controls. Cut-off scores for neglect were based on the worst performance by any of the controls.

Results
46 patients were excluded due to communication problems. Of the remaining 107 (mean age 75.2 years, range 60-91), 61 had right-sided and 46 had left-sided brain damage. They were tested within 9 weeks post-stroke (mean 22.3 days, range 3-61), and 39.2% were identified as 'neglecters', scoring below cut-off in one or more tests (78.6% of these had right-sided brain damage). Star Cancellation and Line Bisection tests showed the highest relative sensitivity for visuo-spatial neglect (76.4%), Copy-a-Daisy and Clock-Drawing (representational neglect) were only 57.5% and 45% sensitive respectively.

Conclusion
Prevalence of hemineglect varies according to which test is used. Hemi-neglect is multi-faceted, and more common in right-sided brain damage. Five of the seven tests presented are useful in the clinical situation, however, we do not believe 'Copy-a-Daisy' and Clock-Drawing are of value, due to low sensitivity and subjectivity in scoring.

WHEELCHAIR SELF-PROPULSION POST-STROKE MIGHT NOT BE HARMFUL

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Introduction
The viewpoint that if stroke patients cannot walk then they should self-propel a wheelchair often meets strong resistance as the result is believed to be immediate increases in abnormal posture and movement. Research to support these viewpoints is limited. This pilot study investigated the immediate effects of self-propulsion on symmetrical sitting.

Methods
Four patients, a maximum of eight weeks post-stroke and six age-matched healthy volunteers participated in this replicated single case study, ABABA. Subjects sat in the wheelchair listening to medium-tempo music during the A phases and self-propelled forwards during the B phases. The Manchester Active Pressure Seat (consists of 68 force transducers which transmit data at 10Hz), measured the magnitude of pressure exerted and the position of peak pressure (PPP) on both sides of the seat and then the symmetry index was calculated. The mean symmetry index and standard deviation for each study phase were graphed for each subject. Interpretation of data was by the standard method for single cases, visual inspection.

Results
Only one stroke patient and one volunteer increased asymmetry of magnitude of pressure following two periods of self-propulsion. The graphs of the symmetry of PPP showed that only one of the four stroke patients had increased asymmetry following two periods of self-propulsion whereas three of the six healthy volunteers did.

Conclusions
These results suggest that self-propulsion in a wheelchair early post-stroke does not produce immediate detrimental effects on seated symmetry and that changes seen are similar to those exhibited by healthy age-matched volunteers. Widespread clinical belief is challenged and we are encouraged to undertake longer-term investigation in a larger group of stroke patients.

WHEN IS IT 'SAFE' TO MANIPULATE BLOOD PRESSURE AFTER STROKE?

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Introduction
Cerebral autoregulation (CA) can be impaired after stroke. Consequently, changes in cerebral blood flow (CBF) becomes passive to changes in blood pressure (BP). If BP is manipulated soon after stroke, there may be significant haemodynamic disturbances within the ischaemic regions, with possible clinical implications. Since there is no study on the timing of CA recovery after stroke, the timing of 'safe' BP manipulation after stroke remains unclear. We used transcranial Doppler (TCD) to examine CA recovery during the first year after ischaemic stroke.

Methods
10 patients with ischaemic stroke in the middle cerebral artery (MCA) territory, and 11 controls, were studied. Bilateral MCA flow velocity was continuously monitored by TCD, and BP by Finapres device. Rhythmic handgrip was performed with a cycle period of 40 seconds (0.025 Hz) to induce periodic BP oscillations. Each patient was examined <7 days, at 6 weeks, 3 and 12 months. Phase shift and gain were calculated from BP and MCA velocity oscillations at 0.025 Hz using Fourier analysis. Increase in phase shift and decrease in gain indicate CA improvement.

Results
We found no difference in phase shift or gain between the affected and unaffected hemispheres. Combining the results of both hemispheres, there are linear trends of increasing phase shift (P=.04) and decreasing gain (P=.24) during the first 3 months. Phase shift and gain at 1 year are not significantly different from those at 3 months or of controls (P>.05).

Conclusions
Results suggest that CA improves during the first 3 months after ischaemic stroke, but this improvement levels out by 1 year. We hypothesise that BP manipulation during the first 3 months of ischaemic stroke may theoretically be associated with clinical risks.

IS THROMBOLYSIS ONLY FEASIBLE FOR A FEW STROKE PATIENTS?

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Introduction
Thrombolysis with recombinant tissue plasminogen activator (rt-PA), when administered <6 hours of onset of ischaemic stroke, may reduce death or dependence, but only few patients are eligible for this treatment. Significant changes to the organisation of stroke services may be necessary to make thrombolysis available to more patients. We sought to estimate the proportion of stroke patients in Edinburgh who might be eligible for thrombolysis.

Methods
We examined the data (1995-8) from the Lothian Stroke Register, which is a prospective register of stroke patients admitted to this hospital. Time of computerised tomography (CT) scanning was prospectively recorded between 1997-8. We extracted the numbers of patients who: were admitted with an acute stroke <6 hours; were scanned <6 hours; had non-haemorrhagic stroke; and had no contraindication to rt-PA.

Results
921 stroke patients were admitted during the study period. 420/921 (46%) patients had onset of symptoms whilst awake, had non-haemorrhagic stroke, and no contraindication. 144/921 (16%) patients were admitted <6 hours of onset, had non-haemorrhagic stroke, and no contraindication. 261 stroke patients were admitted during the period when scanning details were recorded. 10/261 (4%) were admitted and scanned <6 hours, had non-haemorrhagic stroke, and no contraindication.

Conclusions
Only 4% of patients admitted with stroke would have been eligible for thrombolysis. If all patients were scanned immediately, this proportion could be increased to 16%. If all patients were admitted and scanned <6 hours, this could be increased to a maximum of 46%. If further randomised trial evidence (International Stroke Trial – 3) confirms that a larger proportion of patients can benefit from rt-PA, substantial changes to the organisation of stroke care will be needed to deliver the treatment effectively.

KINEMATIC CHARACTERISTICS HAVE POTENTIAL AS OBJECTIVE CLINICAL MEASURES OF QUALITY-OF-MOVEMENT POST-STROKE

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Introduction
Achieving quality of movement post-stroke is an important aim of therapy but clinical measurement is subjective and probably unreliable (Frames et al, Clinical Rehabilitation, Abstract in press). Kinematics provides objective measurement but the volume of information produced is often overwhelming. The aim of this study was to determine which knee kinematic characteristics show the largest differences between stroke patients and healthy volunteers.

Methods
Subjects were ten patients aged 65 to 74 years who were 6 to 12 months post-stroke and ten healthy age-matched volunteers who were able to complete all of the functional tasks. Each subject had reflective markers placed on anatomical landmarks and was video-filmed performing three trials of each of three tasks: sit-to-stand, walking; and stand on step. All tasks had standardised starting positions and were adapted from the Rivermead Motor Assessment. The knee kinematic characteristics measured involved: timing; joint angle; and angular velocity. Comparisons between: paretic and non-paretic limbs of stroke patients; and paretic lower limbs of stroke patients and dominant limbs of volunteers were made using 2-tailed independent samples t-tests.

Results
Significant differences were found between patients and volunteers for all knee angular-velocity characteristics ($p > 0.001$ to $p = 0.030$) but for only some of the timing and range of motion characteristics. The only significant differences found between paretic and non-paretic limbs were for all angular velocity characteristics ($p = 0.012$ to $p = 0.40$)

Conclusions
Angular-velocity of the knee during functional tasks might be a sensitive objective clinical measure of quality of movement. Further research is being undertaken to find if these results are replicated for other joints.

FEASIBILITY AND ACCEPTABLITY OF THE DIVIDED ATTENTION DRIVING TEST (DADT) IN ELDERLY STROKE PATIENTS

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Introduction
Tiredness and poor ability to concentrate are common sequels of a stroke and may affect rehabilitation. Most vigilance tests are difficult to administer in stroke patients because of dysphasia and weakness of the dominant hand. We adapted the DADT (a computer simulated driving test) for use in hemiparetic patients by attaching bilateral controls to the steering wheel. This study was designed to assess whether this adaptation allows elderly stroke patients to perform the test.

Methods
The study was performed on a stroke rehabilitation ward for elderly people. All patients resident on the ward during one month were asked to take part in the study. The test was automatically aborted if the patient veered off the road for more than 15 sec.

Results
20/22 patients agreed to take part. The average age of participants was 74 (sd 8), 50% were male, 80% were drivers or ex-drivers, 85% had hemiparesis, 25% had dysphasia and 55% had hemianopia or hemiinattention. All 20 participants were able to follow the instructions, 14 completed the full 20 min, 4 stopped because of tiredness after 3-7 min and 2 tests were terminated because the patients were off the road for more than 15 sec. In the 14 completers the mean number of off-road events was 345 (sd 131), 50% of visual cues were noticed and the average reaction time was 8 sec (sd 2). 80% of participants enjoyed the test.

Conclusion
The adapted version of the DADT can be performed by the majority of elderly stroke patients in spite of hemiparesis and dysphasia. It can thus be used as a tool in assessing the effect of specific treatments on vigilance.

AD2000 - IS THIS A MORE CLINICALLY REPRESENTATIVE POPULATION?

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Introduction
AD2000 is a large, simple, randomised controlled trial, which aims to determine whether donepezil produces clinically and socially worthwhile benefits for typical patients with Alzheimer's disease (AD).

Methods
The four published donepezil trials were reviewed and key sociodemographic and baseline characteristics elicited for each study population (age and MMSE scores). The eligibility criteria were examined and exclusions on physical, pharmacological and other grounds noted. These data were then compared with that of AD2000 trial patients. The medical records of all patients under the care of a particular clinician within a geographically defined catchment area were also reviewed. Data were recorded on diagnosis according to ICD10 classification. The records of those patients identified as meeting the diagnostic trial entry criteria were marked, and data recorded as to whether these patients differed on important health economic endpoints than those within the trial.

Results
AD2000 patients had a higher mean age (74.7 years) and lower mean MMSE score (18.6) than three of the published studies, respectively. Of 279 medical records reviewed, 103 had an ICD10 classification of AD/mixed dementia, 71 met the AD2000 diagnostic entry criteria. Thirty-five patients met the remaining criteria and 23 were randomised into the trial. Those patients who chose not to take part or who were ineligible did not differ on important health economic endpoints from those entered into AD2000, as only one patient was excluded solely from not having a regular carer.

Conclusions
AD2000 trial patients could be seen as more representative of those within the general populace with AD. This trial is, therefore, more likely to engender results that are generalisable.

BEHAVIOURAL BENEFITS OBSERVED WITH RIVASTIGMINE IN ALZHEIMER'S DISEASE

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Introduction
The cholinesterase inhibitor rivastigmine has been approved for the symptomatic treatment of Alzheimer's disease (AD) with benefits for cognition and ADL. The effects of rivastigmine on behaviour and psychopathology represent an evolving area for clinical research.

Methodology
A retrospective analysis of 71 patient records, collected from three different centres, was performed. All patients had mild-to-moderately severe AD and were treated with rivastigmine. Assessments of behaviour were made at each centre either with the Neuropsychiatric Inventory (NPI), the Behavioural Pathology in AD rating scale (BEHAVE-AD) or the Manchester and Oxford Universities Scale for the Psychopathological Assessment of Dementia (Mini-MOUSEPAD). Cognition was assessed using the Mini-Mental State Examination (MMSE). Results from 49 patients after 6 months of treatment are presented.

Results
Mean scores on all scales improved. Specific symptoms particularly apathy, hallucinations and activity disturbances benefited from rivastigmine.

Conclusion
Overall improvements in behaviour and neuropsychiatric symptoms were seen irrespective of the rating scale used. These naturalistic data provide additional evidence for the potential benefits of rivastigmine in stabilising or even improving the behavioural symptoms of AD.

Table: Change from baseline to 6 months for patients with assessments

Variable	Instrument MMSE* (n=49)	NPI (n=16) (n=20)	BEHAVE-AD (Total score) (n=12)	Mini MOUSEPAD‡
Baseline, mean (SD)	15.2 (6.0)	17.1 (11.5)	4.0 (2.6)	6.8 (3.7)
6 month, mean (SD)	17.7 (6.1)	13.4 (12.1)	1.0 (1.5)	3.3 (5.2)
p**	p<0.0001	p=0.2972	p<0.0001	p=0.0313
Responders†	N/A	56%	75%	N/A

* Not all patients with a MMSE score completed a behaviour instrument.
** Versus baseline (Wilcoxon Signed Rank test). ‡ Psychopathology and behaviour. † Clinically relevant levels of response: NPI ≥4 point total score decrease; BEHAVE-AD ≥1 point total score decrease. N/A=not applicable.