value of 1.95 ng/dl, was 0.68 (0.31-1.48; p=0.3). Although the cases had lower mean values than controls (2.27 ng/dl versus 3.08 ng/dl) this difference was not statistically significant (p=0.2).

These findings suggest that dehydroepiandrosterone is not a risk factor for ischaemic stroke, in contrast to its effect seen in ischaemic heart disease.

THE ATTITUDES AND EXPERIENCES OF ELDERLY VOLUNTEERS PARTICIPATING IN DRUG DEVELOPMENT STUDIES 54

P. CROME AND C.G. SWIFT
Department of Health Care of the Elderly, King's College School of Medicine and Dentistry, London.

Elderly volunteers play an important part in the development of potential therapeutic agents. They also allow us to gain further insight into the nature of the ageing process. The routine use of elderly volunteers has however been criticised from those who believe that population strategies are more appropriate and from those who are concerned that a vulnerable group may be exploited. These concerns have led us to conduct a scientific evaluation of the role of elderly volunteers in drug development of which this review of their attitudes and experiences forms part.

Fifty five elderly volunteers were asked to complete an anonymous questionnaire at the same time they were attending for debrisoquine hydroxylation status determination. There was also an opportunity for them to make additional comments. The subjects had taken part in between 1 and 7 studies (mean 3.7). 27.7% of volunteers had experienced one or more adverse events of which headache and hypotension were the commonest. 93% of volunteers agreed that they had received comprehensive written information about the studies. 83.5% agreed that they received comprehensive information about adverse events. Helping other people and scientific interest were the highest ranked reasons for taking part in studies whilst financial reasons and keeping oneself busy ranked lowest. Four subjects disagreed that volunteers should be paid and eight said that they gave all their fees to outside organisations. Suggesting that volunteers should receive only expenses or a nominal fee received only minority support. Spontaneous comments covered a number of areas such as transport, attitude of staff, feed back of results, health checks, concerns from family and the extra income from participating in studies.

These results indicate that most volunteers are satisfied with the way in which the studies are conducted. It would appear that the studies are conducted according to the ethical principles of justice, beneficence, non-maleficence and respect for autonomy. A good rapport with volunteers is essential for the success of clinical pharmacology research in the elderly.

ELDERLY PATIENTS WITH UNEXPLAINED ANAEMIA HAVE LOW ERYTHROPOIETIN TITRES 55

MA CARPENTER, RG KENDALL, PW BELFIELD and DR NORFOLK

Departments of Medicine for the Elderly and Haematology, United Leeds Teaching Hospitals Trust

Serum erythropoietin (Epo) titre has an inverse logarithmic relationship with haemoglobin (Hb). We have previously described a regression equation for Epo and Hb in iron deficiency anaemia (IDA) and found reduced Epo levels in elderly patients with normocytic anaemia (NA) (Carpenter et al, Eur J Haematol 1992; 49: 119-121). This study aims to identify the possible causes of low Epo in NA.
We screened 164 consecutive admissions to elderly wards with an Hb <11g/dl. 66 were excluded and 46 were unable, or refused, to give consent. Morning blood samples were taken for Hb and Epo estimation, haematinics, serum urea, creatinine and albumin. To correct for differences in Hb, the 'Epo ratio' was calculated from the measured Epo titre and the titre expected from the regression equation previously described for IDA. Results are available for 40 patients.
Six patients with IDA were used as controls. One patient had vitamin B12 deficiency and two had folate deficiency. 4 patients had microcytic anaemia with normal ferritin. 27 patients with NA were subgrouped by the most likely cause of their anaemia. These comprised 4 patients with chronic infection/inflammation, 4 with carcinoma, 8 with renal impairment, 6 with hypoalbuminaemia and/or weight loss and 5 with no obvious cause. Patients with NA (mean Hb=10.0) had a lower Epo ratio (mean=0.66) than those with IDA (mean Hb=10.0, Epo ratio 1.26)(p<0.01, students t test). Patients with unexplained NA (mean Hb=10.5) also had a lower mean Epo ratio (0.66) than IDA (p<0.01).
A cause can be found for anaemia in 81% of our elderly patients with NA. The presence of low Epo titres in unexplained NA needs further study.

ASSESSING CHANGE IN COGNITIVE FUNCTION WITH THE ABBREVIATED MENTAL TEST: USE OF PREDICTION INTERVALS 56

R VALACIO and S O'KEEFFE

University Department of Geriatric Medicine, Royal Liverpool University Hospital, Liverpool

Serial testing using the Abbreviated Mental Test (AMT) may be helpful for detecting delirium in the elderly (Jitapunkel et al. 1992, Q J Med 300,307-314). However, the normal limits of variability of the AMT in elderly subjects have not been defined sufficiently to allow estimation of the magnitude of change that can be considered excessive and, thus, suggestive of a change in cognitive function. The aim of this study was to derive prediction intervals, i.e. confidence intervals for the future measurements of a single individual, for the AMT.

82 medically and cognitively stable patients, aged 72 to 92 years (mean 83), were recruited from nursing-homes (51) and a rehabilitation unit (31). The AMT was administered twice within 3 weeks (mean interval 13 days) by the same investigator. Ninety percent (two-tailed) prediction intervals for measures on the AMT, as a function of the baseline