and bisphosphonate (4). DEXA scan referral was not indicated in 14 patients as 4 of them were already on bisphosphonates and 10 patients had there abbreviated mental score was less than 7. Among the remaining 23 patients, 9 patients (40%) were referred for DEXA scan. This improvement is statistically significant ( $p = 0.03$, chi square test).

*Discussion and conclusion*: The re-audit shows that, although there is an improvement in the situation, we are still below the standards of secondary prevention of fragility fractures with 60% of femoral fragility fracture patients not being referred for DEXA scan. A pathway lead by a fracture liaison nurse dedicated to osteoporotic fracture patients should improve the situation.

doi: 10.1016/j.injury.2006.06.103

**The economic impact of regional complex trauma and limb reconstruction service provision**

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*Introduction*: Publication of guidelines from various bodies pertaining to the care of the seriously injured has lead to widespread changes in clinical practice. The 'hub and spoke' model of trauma care means increasing numbers of patients with complex problems are concentrated into regional centres. Though this approach can provide the highest standard of treatment, it has cost implications for the receiving unit, particularly given the department of health's move towards a 'Payment by Results' model of health provision. It is therefore necessary to estimate a cost-per case for such patients. National tariffs exist for various treatments, including pelvic reconstruction, but such guidelines are not available for other aspects of trauma care. We undertook an economic evaluation of complex limb reconstruction within our tertiary referral unit.

*Methods*: Patients referred to the complex trauma service were identified. Patients were assigned to either a 'complicated' or 'straight-forward' group by two consultant surgeons based on the nature of their treatment. Five cases from each group were randomly selected for further analysis. Data pertaining to the direct healthcare costs for these patients was analysed. Costs per investigation/intervention were obtained relating to hospital stay, outpatient care, operative interventions and radiological investigations. Data relating to the costs of physiotherapy, occupational therapy, patient transport, haematological investigations and medications is also considered (data not shown).

*Results*: Overall 26 patients were referred to our complex trauma service over 6 months. A summary of overall costs per case is shown in the table below.

*Conclusion*: Those planning a service treating complex trauma must allow for the considerable costs involved and make provisions to recoup this from the referring primary care trust.

doi: 10.1016/j.injury.2006.06.104

**Application of monolateral fixators as definitive treatment for tarsometatarsal joint injuries with lateral column shortening**

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Injuries to the tarsometatarsal joint complex lead to significant morbidity if anatomical reduction is not achieved. Restoring and maintaining the length of the lateral column should be part of this reduction. We present the use of monolateral fixators as definitive treatment for tarsometatarsal injuries with lateral column shortening.

Although use of external fixation techniques have been described as an intra-operative aid to reduction of the lateral column, there is sparse literature acknowledging their use in maintaining this reduction until union. Traditionally, fusion of the lateral column or k-wire fixation has been advocated, but these methods are associated with stiffness and instability, respectively.

Four patients presented with closed, isolated injuries to the tarsometatarsal joint complex, all with lateral column shortening owing to comminution of the cuboid, with midfoot abduction instability. Three patients also had medial column instability. In each case, a monolateral fixator was applied to the lateral column with pins in the os calcis and fourth and fifth metatarsals. Medial column instability was treated with screw fixation. All patients remained non-weight bearing for 6 weeks, and the external fixator was removed between 6 and 8 weeks.

All patients were walking unaided at latest follow-up, ranging from 7 to 22 months (mean 16.5 months). Modified AOFAS score ranged from 58 to 100 (mean score 75). Three patients had normal or near normal gaits at latest follow-up.

The monolateral external fixator allows quick and accurate reduction of the lateral column using

fluoroscopy. The soft tissues are preserved and appropriate stability is provided. It can be removed without general anaesthetic.

We conclude that the use of lateral column monolateral fixators as an adjunct to internal fixation in tarsometatarsal injuries with lateral column instability is a convenient, safe and reliable treatment method.

doi: 10.1016/j.injury.2006.06.105

**Ankle fractures in the geriatric population: Operative or non-operative treatment**

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*Introduction*: The optimal management of ankle fractures in the elderly is controversial, with wide variation in the complication rates reported in the literature. Achieving a satisfactory outcome is essential as reduced mobility exacerbates pre-existing morbidity and diminishes the likelihood of independent living. However, in elderly patients surgery carries increased risks due to osteoporosis, poor skin condition and decreased vascularity.

*Methods*: We performed a retrospective review of outcome and complications in patients over 70 years of age with ankle fractures. Patients were admitted for manipulation under anaesthetic and application of cast (MUA) or open reduction and internal fixation (ORIF). Data were retrieved from medical and nursing notes relating to pre-operative functioning, type of injury, operative procedure and outcome. All X-rays were also reviewed to confirm fracture grade and union.

*Results*: A total of 134 patients over the age of 70 were admitted for management of ankle fractures during January 1995 and December 2003 and 117 of these were included in the study. Eighty-four were operatively treated for ankle fractures and a further 27 patients underwent MUA. The mean age in both groups was 76 and there was a female predominance in both groups (89% in MUA, 79% in ORIF). 14.8% of the conservatively managed group were nursing home residents compared to 2.4% of the operatively treated group. The groups were similar with respect to ASA grade and co-morbidities. The median length of stay was shorter for the conservatively managed group (4 versus 6 days). 7.5% of the MUA group required a second intervention compared to 4.5% of the operatively managed group. There were two below knee amputations in the operatively managed group, both related to open fractures, and one arthrodesis in each group. There were three wound complications in the operatively managed group. The rate of postoperative medical complications was the same in both cohorts. 7.4% of patients treated with MUA and 1.1% of patients treated operatively had reduced mobility at final follow-up.

*Conclusion*: The decision-making process for treatment of ankle fractures in the geriatric population is challenging. We observed significantly better functional results in the ORIF group than the MUA group. These results indicate that open reduction and internal fixation of ankle fractures in geriatric patients is efficacious and safe in selected patients.

doi: 10.1016/j.injury.2006.06.106

**Resuscitating the blunt trauma cardiac arrest patient: Survival rates and outcome predictors in England and Wales**

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To determine the mortality and the factors predicting final outcome in blunt trauma patients who arrive at the emergency department in cardiac arrest.

*Background*: Conventional wisdom suggests that resuscitation of patients in cardiac arrest following blunt trauma is futile. Certain patients however survive despite the odds. Previous studies looking at outcomes of patients in cardiac arrest following blunt trauma have had limited numbers.

*Setting*: Trauma Audit Research Group's Database which covers 104 hospitals.

*Participants*: All patients who presented in cardiac arrest following blunt trauma between 1989 and 2004.

*Methods*: Blunt trauma cases of any age, were selected from the TARN Database cases were studied in terms of characteristics and patterns of care.

*Results*: During the period, 183,061 patients presented following blunt trauma, of which 847 (0.5%) were in cardiac arrest. Patients in cardiac arrest were younger (median age 35.0 years versus 47.0 years), more commonly male (72.6% versus 58.8%) and had a higher injury severity score (34 versus 9) than those not in cardiac arrest (all significant $p < 0.05$). In the subgroup of patients presenting in cardiac arrest 24 (3%) survived to discharge. Their characteristics are summarised as follows: