

## Audit of epidural use of patients attending with rib fractures at the Royal Derby Hospital

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### Introduction

Increasing age and increasing number of ribs fractured are both risk factors for mortality and are associated with increased length of stay in hospital<sup>1</sup>.

Early effective analgesia has been shown to reduce morbidity and mortality in older patients with rib fractures<sup>2</sup>.

Use of epidural analgesia may be better than other analgesic regimens and is associated with decreased mortality, especially in those patients with a high number of rib fractures<sup>3</sup>.

### Methods

We reviewed the clinical notes and the imaging of all patients admitted to the Royal Derby Hospital within a one year period (October 2013 - October 2014) with a diagnosis of at least one rib fracture.

We collected the following data:

- demographics
- number of ribs fractured
- mechanism of injury and associated injuries
- comorbidities
- route of admission and admitting specialty
- referral to acute pain team (APT) or critical care outreach team (CCOT)
- method of analgesia
- length of stay
- morbidity and mortality

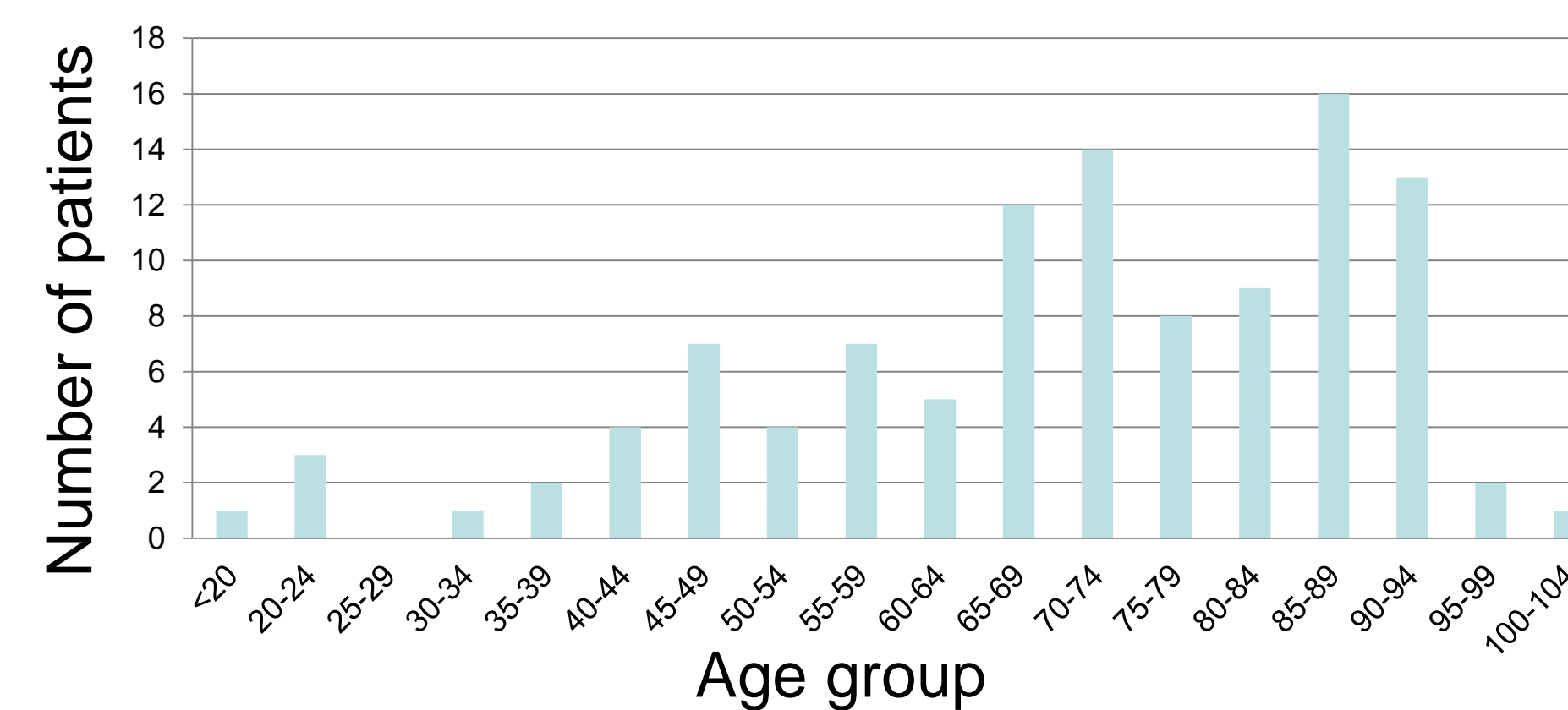
### Results

A total of 109 patients were included in the analysis.

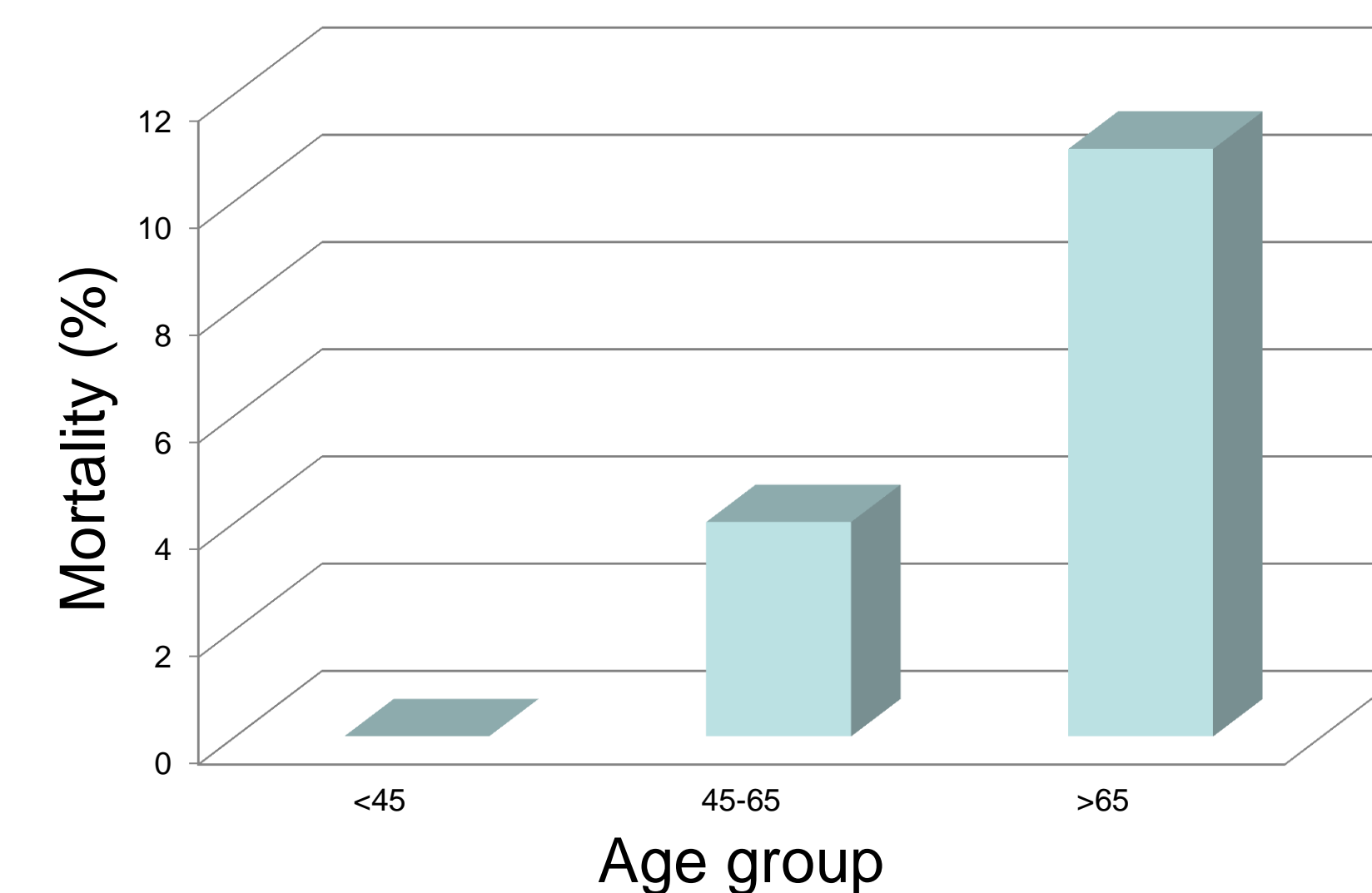
- The mean age of patients was 70.2 years.
- The mortality rate was 8.3% (9 patients)
- The overall rate of epidural use was 20.2% (22 patients)
- The overall rate of referral to APT or CCOT was 52.3% (57 patients)
- 50.5% of patients had 3 or more ribs fractured (55 patients)
- 8.3% of patients sustained bilateral rib fractures (9 patients)
- Mean length of stay was 10.1 days



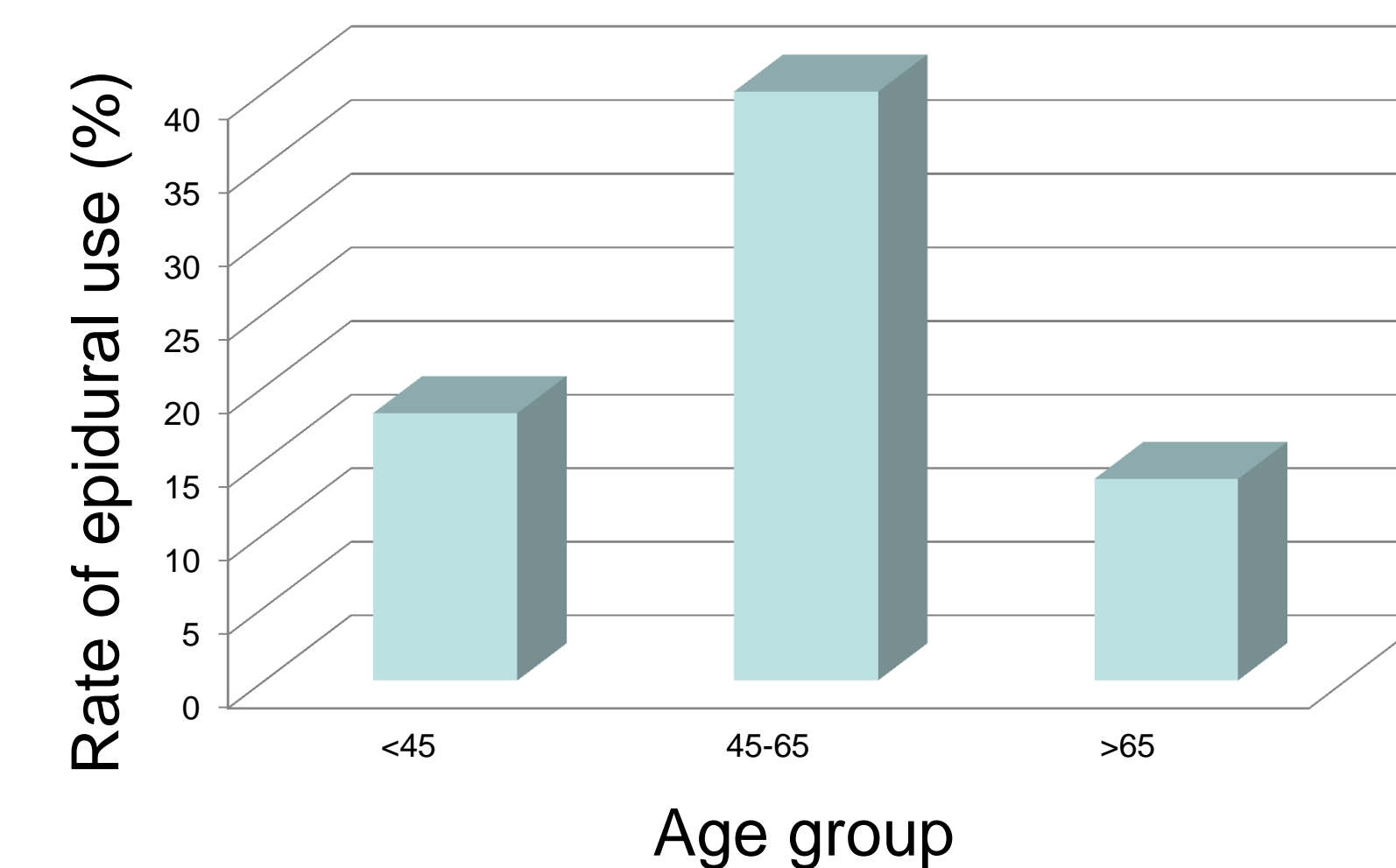
Graph 1: Number of patients by age group



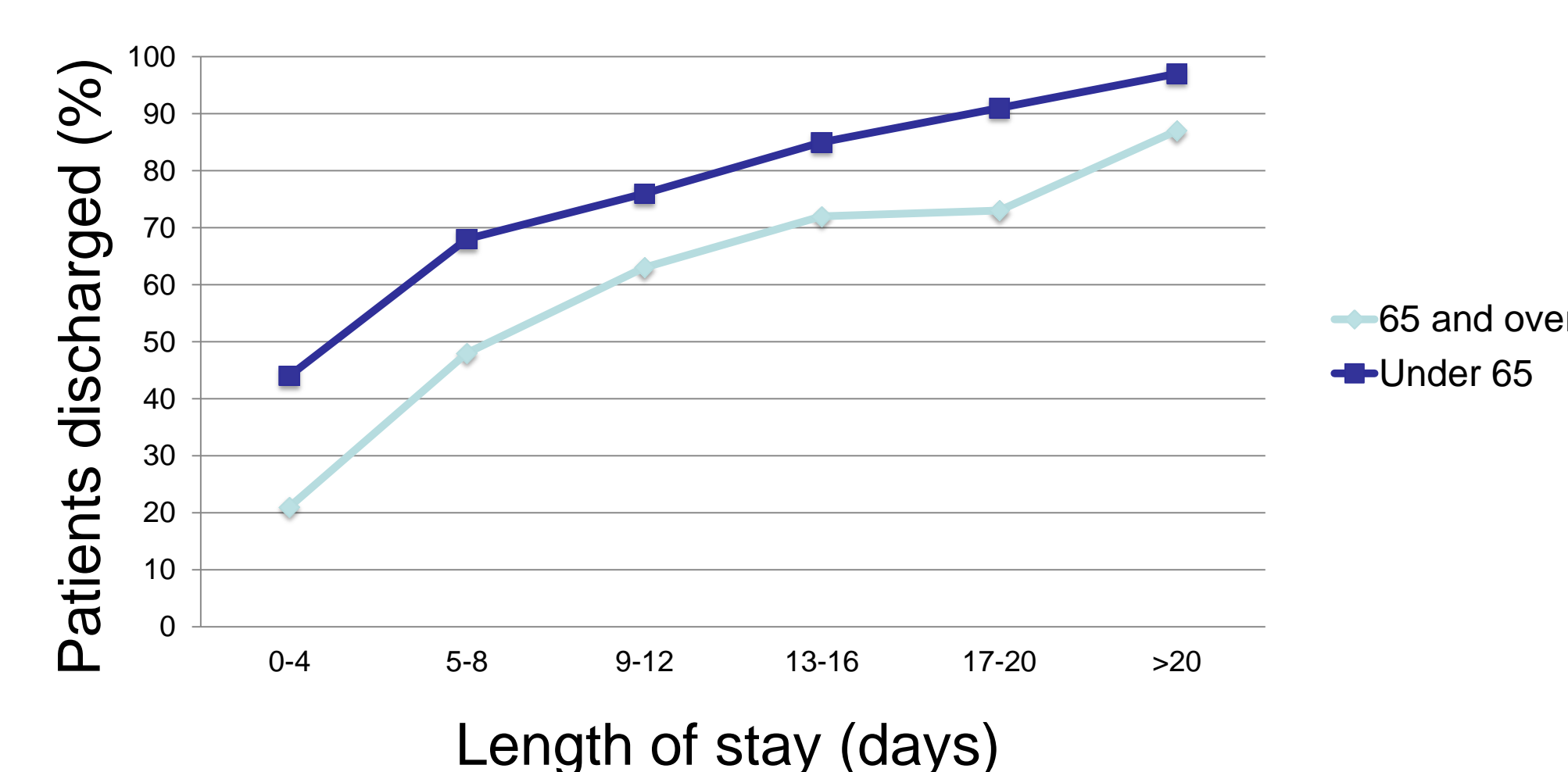
Graph 2: Mortality by age group



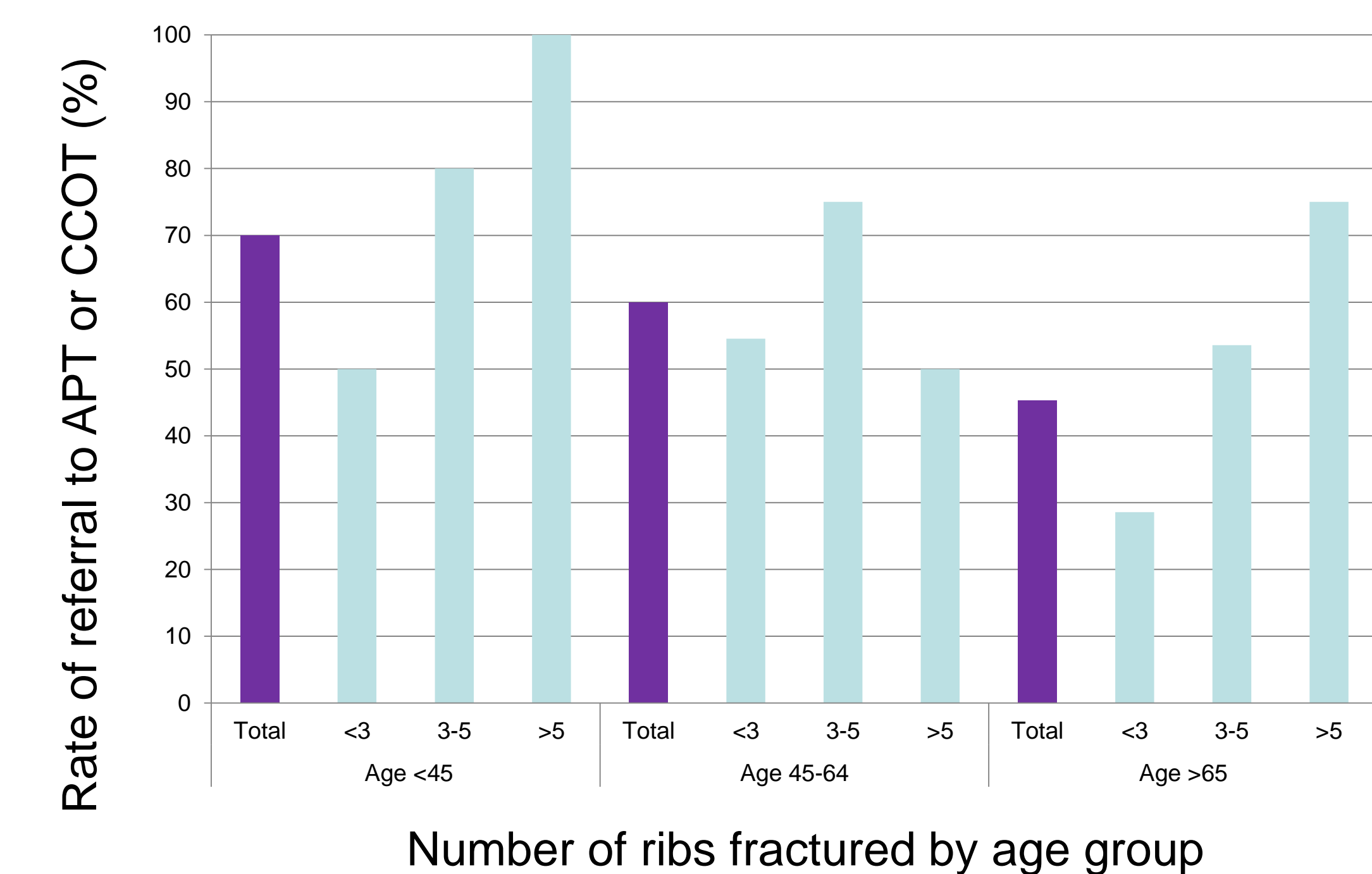
Graph 3: Rate of epidural use by age group



Graph 4: Percentage of patients discharged over time by age



Graph 5: Rate of referral to APT or CCOT by number of ribs fractured and age group



### Conclusions

Rib fractures are more common, have a higher mortality, and are associated with a longer length of stay in the elderly.

Epidural analgesia and referral to APT or CCOT are underutilised in certain patient groups, in particular the elderly.

A guideline has now been implemented for use in all Trust departments to aid with identification of those patients who will benefit from epidural analgesia and to ensure appropriate referral to APT or CCOT. A re-audit is planned to assess the impact of this guideline.

### References

1. Bulger EM, Arneson MA, Mock CN, Jurkovich GJ. Rib fractures in the elderly. *Journal of Trauma*. 2000;48(6):1040-6.
2. Todd SR, McNally MM, Holcomb JB, et al. A multidisciplinary clinical pathway decreases rib fracture-associated infectious morbidity and mortality in high-risk trauma patients. *American Journal of Surgery*. 2006;192:806-11.
3. Fligel BT, Luchette FA, Reed RL, et al. Half-a-dozen ribs: the breakpoint for mortality. *Surgery*. 2005;138(4):717-23.