

## **[2003 Fall A25] Thoracic epidural analgesia: Influences on time to first experience of pain relief and pain following epidural rescue bolus**

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**Background:** The impact of epidural quality, anaesthetic interventions or patient characteristics has never been examined with regard to the response to epidural rescue bolus for pain during thoracic epidural analgesia. Quality is defined for this study as time of initial pain relief following surgery (Time to first pain score 1, 2 or 3) and time to initial pain relief (Time to pain score 0)

**Methods:** Epidural data was recorded for 1359 continuous patients over 72,000 epidural hours detailing worst hourly pain score. From this, the number of patients requiring epidural rescue, time to first epidural rescue bolus, time to first experience of pain following surgery (Time to pain score 1,2 or 3) and time to first pain relief following surgery (Time to pain score 0) was measured. In addition, the response to epidural bolus was measured according to time to first pain relief (pain score 0 after bolus) and first pain experienced (pain score 1,2 or 3 after the bolus). Survival regression analysis (Cox regression) was used for data analysis (NCSS, Utah). Censored data include technical failure and those not achieving either pain relief, or pain before the next rescue bolus or before the end of the epidural infusion. Multivariate survival regression modelling was then used to identify the principal influences on the response to bolus. Data are presented as the regression coefficients (95% CI:) and Relative risk (95%CI: where Relative Risk =  $e^{\beta}$  (NCSS, Utah)

**Results:** There was no relationship between age, ASA, gender, year of insertion, type of abdominal procedure, duration of anaesthesia or surgery, use of opioid, type of solution, start time or mode of infusion with the response to epidural bolus rescue. A two fold increase in the initial pain free period following surgery doubled the chance of achieving pain relief following an epidural rescue bolus 20hr RR 1.50 (95%CI: 1.15 to 1.95), 40hr RR 2.25 (95%CI: 1.33 to 3.81). A halving of the time to first pain relief (first pain score 0) increased by a third the chance of achieving pain relief following a bolus, 5hr RR 0.75 (95%CI: 0.67 to 0.84), 10hr RR 0.56 (95%CI: 0.44 to 0.70). Patients requiring an initial infusion rate of 5ml/hr were twice as likely to achieve pain relief following a first epidural bolus RR 0.79 (95% CI: 0.68 to 0.91) compared to those requiring 20mls/hr, RR 0.38 (95%CI: 0.21 to 0.68).

A two fold increase in the initial pain free time following surgery (Time to first pain score 1,2,3) halved the risk of experiencing pain following a bolus RR 0.57 (95% 0.43 to 0.74) to RR 0.32 (95%CI: 0.19 to 0.55) whereas a two fold increase in the time to bolus reduced by one third the risk of re-experiencing pain 20hr RR 0.75 (95%CI: 0.66 to 0.87), 40hr RR 0.57 (95%CI: 0.43 to 0.75). An initial pain score of 0 reduced by one quarter the risk of pain following epidural bolus RR 0.74 (95%CI: 0.62 to 0.89).

**Conclusion:** Ensuring an initial pain free state after surgery and extending this status well into the post-operative period significantly improves the ability to maintain long term pain relief. The inability to provide a pain free state immediately after surgery significantly reduces the possibility of ever achieving pain relief