

## **EFFECTIVENESS OF ANALGESICS IN REDUCING UNPLANNED EXTUBATION IN PATIENTS WITH RESPIRATORY FAILURE VIA A QUALITY IMPROVEMENT PROGRAM**

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**BACKGROUND/AIM:** Unplanned extubation is a major complication of mechanically ventilated patients in intensive care units (ICUs) with significant impact on ventilator-associated pneumonia (VAP), length of ICU stays (LOIS) and medical costs. The aim of this study is to investigate the effectiveness of analgesics in reducing the rate of unplanned extubation in patients with respiratory failure via a quality improvement program.

**METHODS:** Intubated patients in 6 tertiary ICUs during the 3-year study period were enrolled. We established the ICU analgesic protocol via a quality improvement program method. The clinical epidemiological and economic data prior to (one-year observational group), during (one-year interphase group) and after (one-year interventional group) this program were collected. Twelve-month periods were selected to minimise seasonal variation. Other data collected included the rate of unplanned extubation, rate of VAP, LOIS and the costs resulting from unplanned extubation.

**RESULTS:** A total of 11064 patients were enrolled. The rate of unplanned extubation decreased from 1.61±0.34% to 1.13±0.31%, and then to 0.96±0.25% ( $P<0.001$ , comparison between observational and interventional group). Following intervention, there was a statistically significant decrease in the rate of VAP (11.8±4.6 vs 7.7±3.1 episodes per 1,000 patient-days,  $P<0.05$ ) and LOIS (287.6±118.2 vs 42.6±31.7 days per month,  $P<0.001$ ). Consequently, the cost of prolonged ICU stay was significantly reduced from US\$69,265±28,314 to US\$10,190±7,633 ( $P<0.001$ ).

**DISCUSSION/CONCLUSIONS:** This study demonstrates that the use of analgesics via quality improvement program may reduce the rate of unplanned extubation, the rate of VAP, LOIS and associated costs.

**Keywords :** Quality improvement, Unplanned extubation, Ventilator-associated pneumonia