

**THE EFFECT OF AN ALGORITHM BASED SEDATION GUIDELINE ON
THE DURATION OF MECHANICAL VENTILATION FOR INTENSIVE CARE
PATIENTS IN AN AUSTRALIAN INTENSIVE CARE UNIT**

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CERTIFICATE OF AUTHORSHIP/ORIGINALITY

I certify that the work in this thesis has not been previously submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help I have received in my research work and in the preparation of this thesis itself has been acknowledged. In addition, I certify that all the information sources and literature used are indicated in the thesis.

Signature of candidate

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Abstract

Patients who are cared for in intensive care units (ICUs) have life threatening illnesses and require intrusive interventions and monitoring, which may cause discomfort. They often require analgesic medications to relieve pain and sedative medications to reduce anxiety. Agitation and accidental self-harm may result from providing too little medication and the administration of too much may lead to the prolongation of mechanical ventilation. Sedation guidelines offer the potential to reduce these problems.

The aim of this study was to examine the effect of an algorithm based sedation guideline on the duration of mechanical ventilation of patients in an Australian ICU. Secondary aims included the effect of the guideline on the: patients' perspective of their recovery; length of stay in ICU; number of tracheostomies; number of self-extubations and reintubations; and the cost of intravenous sedative medications. The rate of adoption of the guideline and sedation scale was examined.

The intervention was tested in a quasi-experimental preintervention and postintervention study (n= 322). The sample comprised 58% men and the median age was 61.1 years (range 19.7 to 91.8 years). Mean Acute Physiology and Chronic Health Evaluation II score was 21.8 points (range 3 to 45 points). Nineteen percent of patients were admitted post operatively and 81% were admitted for non-operative medical diagnoses. Mechanical ventilation was instigated for 225 (70%) patients prior to admission to the study ICU. There was a 22% mortality rate. The groups were equivalent at baseline.

The mean duration of mechanical ventilation was 4.33 days for the preintervention group and 5.64 days for the postintervention group ($p=0.02$). There was no difference in the patients' perspective of their recovery. There was no difference in length of stay in ICU and the number of tracheostomies. The number of self-extubations and reintubations were similar. The overall cost of intravenous sedative medications increased slightly in the postintervention phase. Sedation scale adoption was poor in the preintervention phase but increased in the postintervention phase. The sedation

guideline was gradually adopted in the postintervention phase. Adoption data suggests that patients were more deeply sedated during the postintervention phase.

In conclusion, the sedation scale and sedation guideline were well adopted by the nurses. Patients were more deeply sedated when the guideline was used and there was a mean increase in duration of ventilation of 1.31 days. Other secondary patient outcomes were not affected. The successful implementation of a clinical guideline was demonstrated but was not associated with improvements in patient outcomes in this setting.