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Citation: Aitken, L. M., Kydonaki, K., Blackwood, B., Trahair, L. G., Purssell, E., Sekhon, M. & Walsh, T. (2020). The inconsistent relationship between depth of sedation and outcome: a systematic review and meta-analysis. *Australian Critical Care*, 33(1), S13-S14. doi: 10.1016/j.aucc.2020.04.040

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Link to published version: <https://doi.org/10.1016/j.aucc.2020.04.040>

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THE INCONSISTENT RELATIONSHIP BETWEEN DEPTH OF SEDATION AND OUTCOME: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction: The amount of sedation that ICU patients receive is potentially related to patient outcomes, but deep sedation remains widespread.

Objectives: To examine the effect of depth of sedation on duration of mechanical ventilation, ICU and hospital length of stay, ICU and hospital mortality and post-discharge outcomes.

Methods: Databases searched included MEDLINE, Embase, Cochrane Register of Controlled Trials (CENTRAL), CINAHL and PsycINFO from 2000 to 2018. Screening, selection of articles, data extraction and quality appraisal were conducted by two reviewers independently, with discrepancies reviewed with a third reviewer. Data were pooled and meta-analyses using random effects modelling was conducted in R.

Results: We included 25 studies (n=7865 patients) in the descriptive synthesis with 17 studies (6282 patients) in the meta-analysis. Study heterogeneity was substantial. A reduction in duration of mechanical ventilation was identified with light sedation when all study types were included (mean difference [MD] -1.51 days [95% CI -2.55 to -0.47], $I^2 = 84\%$, 10 studies, 3469 patients). This reduction was observed in cohort studies (MD -1.54 days [95% CI -2.68 to -0.39], $I^2 = 87\%$, 8 studies, 3304 patients), but not randomised trials (MD -1.44 days [95% CI -3.79 to 0.91], $I^2 = 20\%$, 2 studies, 165 patients). Similar patterns were observed with time to extubation, ICU and hospital length of stay. An increase in ventilator free days with light sedation was identified in randomised trials (MD 4.16 days [95% CI 1.13 to 7.19], $I^2 = 0\%$, 3 studies, 210 patients). We found no difference in mortality, delirium or adverse events, but identified a reduction in ventilator associated pneumonia with light sedation. Studies examining post-hospital outcomes were heterogeneous and no evidence of effect was identified descriptively.

Conclusion: Although there is some evidence of benefit of light sedation on duration of mechanical ventilation, effects on other outcomes are inconclusive.