**Comparing opioid exposure and associated risk factors in adult patients admitted to ICU or HDU following right hemicolectomy**

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**Introduction**

Following right hemicolectomy, patients at University Hospital Southampton (UHS) NHS Foundation Trust are often admitted to the intensive care unit (ICU) or high dependency unit (HDU). This decision is based on patients’ underlying co-morbidities and surgical complexity. Pain management here consistently features strong opioids (fentanyl, morphine, oxycodone) and adjuvant agents (paracetamol, regional anaesthesia) [1]. Postoperative opioid exposure and its associated risk factors are important to establish given opioids’ safety profile. There is a potential risk of relative overdose in intensive care where mechanical ventilation precludes titration to effect, though this has not yet been examined rigorously.

**Objectives**

To compare patients’ opioid consumption within 24 hours of admission to an ICU or HDU following right hemicolectomy and identify clinically relevant factors associated with this opioid use.

**Methods**

This retrospective cohort study was registered and approved by the University of Southampton’s ethics service (ERGO reference 88350.A1). It included adult patients admitted to the ICU or HDU at UHS (between 2017 and 2024) following right hemicolectomy that received opioids within 24 hours of admission. Clinical data was manually extracted from a local clinical information system (MetaVision®) and opioid doses were converted into IV morphine milligram equivalents (MMEs) [2]. Multiple linear regression (MLR) analysis was then conducted. The dependent variable was log-transformed opioid consumption in IV MMEs within 24 hours of admission and the independent variables were demographic characteristics (gender, age, weight), history of substance dependence (alcohol, smoking, pre-hospital opioids), unit admitted to (ICU or HDU), mechanical ventilation and sequential organ failure assessment (SOFA) score.

**Results**

A total of 254 patients were included: 57 were admitted to the ICU and 197 to the HDU. Median (IQR) opioid consumption in IV MMEs within 24 hours of admission was 68 (32-124) in ICU and 39 (20-70) in HDU patients (*p*=0.002). The MLR model explained 24% of the variance in opioid consumption (adjusted R2=0.24) and was statistically significant (*p*=<0.001). Age (B=0.97, *p*=<0.001) and history of alcohol dependence (B=1.98, *p*=0.038) were significant predictors of opioid consumption, while pre-hospital opioid exposure (B=1.50, *p*=0.054) was marginally significant. In contrast, gender, weight, history of smoking, unit admitted to, mechanical ventilation and SOFA score did not reach statistical significance.

**Conclusions**

Opioid consumption was significantly greater in patients admitted to the ICU compared to the HDU following right hemicolectomy. Younger age and history of alcohol dependence (>14 units per week) both positively predicted opioid consumption. Adequately powered research is needed to confirm these findings and should assess the clinical impact of greater opioid consumption in ICU patients.

**Reference(s)**

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2. Nielsen S, Degenhardt L, Hoban B, Gisev N. A synthesis of oral morphine equivalents (OME) for opioid utilisation studies. Pharmacoepidemiology and drug safety. 2016;25(6):733-7.

**Acknowledgements**

* Catherine McKenzie receives the NIHR Senior Clinical Practitioner Research Award (SCPRA).