

# Opioid-induced constipation in intensive care – how big is the problem, and can we solve it?

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## Aims

Opioids are commonly used on the intensive care unit (ICU) but are associated with a high incidence of constipation, often resistant to conventional laxative treatment. Recently developed peripheral mu-opioid receptor antagonists (naloxegol, methylnaltrexone, alvimopan) are new in the treatment of laxative-refractory opioid-induced constipation (OIC). We aimed to identify the prevalence of OIC within a large cardiothoracic ICU, its impact on circulatory and ventilator support, the cost of laxatives currently used in the treatment of OIC, and potential cost savings from the targeted use of naloxegol.

## Methods

Retrospective single-centre observational study looking at all ICU admissions from October 2015 to September 2016. Patient demographics, ICU length of stay (LoS), duration of organ support, 1-year mortality, frequency of bowel movement, ventilator and circulatory support and laxative use were collected from an electronic database. OIC was defined as bowels not open (BNO) for 4 or more consecutive days in patients on regular opioids. The vasoactive-inotropic score (VIS) was used as a measure of circulatory support. The laxative treatment cost per patient was calculated using laxative costs from the hospital's pharmacy department multiplied by the number of laxative doses administered per patient until bowel opening (BO).

## Results

827 ICU admissions (61±17 years, 68% male), of which 18% (n=151) had OIC with an average BNO duration of 5.4 days (range 4–15 days). LoS, duration of organ support and 1-year mortality rates were higher in the OIC group vs all ICU admissions (Table 1). Circulatory and ventilator support decreased following BO in OIC patients with BNO duration ≥7 days (Table 2). 75% (n=112) OIC patients required ≥3 laxatives to induce BO. An average of £5.55 was spent on laxatives per OIC patient until BO.

**Table 1. Summary of results for OIC group and all admissions**

	LoS (days)	Duration of organ support (days)	1-year mortality n (%)
OIC group	15.4	73.3	64 (42)
All admissions	6.7	33.5	239 (29)

LoS = length of stay; OIC = opioid-induced constipation.

**Table 2. Summary of results pre- and post-BO**

	24 hours pre-BO	24 hours post-BO	% decrease
Average VIS	56.4	40.8	29
Average peak inspiratory pressure (cmH <sup>2</sup> O)	24.2	19.8	18

BO = bowel opening; VIS = vasoactive-inotropic score.

## Conclusion

Almost one in 20 ICU patients suffer from OIC, associated with longer LoS, increased organ support and higher mortality rates. The targeted use of naloxegol in addressing laxative-resistant OIC could reduce the prevalence of OIC, reduce ICU LoS, increase ICU patient throughput, reduce time on ventilator support and therefore associated risk of ventilator-associated pneumonia and multi-resistant infection and reduce mortality rates. The predicted cost saving of reducing ICU LoS is £1,800 per day, and will have significant implications for pharmacy and ICU budgets. ■

## Conflict of interest statement

None.

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