Service evaluation: the use of oxycodone/naloxone (*Targinact*®) as part of an Enhanced Recovery Programme in GI surgery

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BACKGROUND

- Post-operative pain following colorectal surgery is generally severe and strong opioids are often required.
- Traditional pain management for patients undergoing colorectal surgery involves no pre-medication, conventional anaesthetics with large amounts of peri-operative morphine, and either fentanyl infusion by patient-controlled epidural analgesia or intravenous (IV) morphine by patient-controlled analgesia.
- This method of pain management can cause opioid-related problems, such as the development of ileus, nausea, vomiting, sedation and lethargy. In turn, this leads to a tendency to avoid further use of opioids, which may negatively impact upon post-operative recovery, patient mobility and satisfaction, and length of hospital stay.
- A new Enhanced Recovery Programme (Table 1) was developed at West Cumberland Hospital (Whitehaven, UK) to address these issues. The programme uses post-operative oxycodone/naloxone (*Targinact*®, Napp Pharmaceuticals Limited, Cambridge, UK); oxycodone provides the benefits of an opioid to control severe pain, while naloxone counteracts the development of opioid-induced constipation and bowel dysfunction.[1] The programme also includes gabapentin pre-medication, and avoids the use of intrathecal opiates and epidural analgesia in order to maintain patient mobility.

OBJECTIVES

- To investigate the impact of using oxycodone/naloxone as part of the Enhanced Recovery Programme on patient satisfaction, patient mobility, the need for rescue analgesics, opioid-related side effects (particularly gastrointestinal) and length of hospital stay in patients undergoing colorectal surgery.

METHODS

- Use of the Enhanced Recovery Programme was advocated for all patients admitted for laparoscopic colorectal surgery at West Cumberland Hospital between January 2012 and January 2013. Thirty patients (laparoscopic surgery, 29 patients; open surgery, 1 patient), selected at random, were included in this audit.
  - Patient records were anonymized before analysis.
- As part of the Enhanced Recovery Programme (Table 1), patients were given oxycodone/naloxone (10 mg/5 mg) when they were in recovery where possible, or at the earliest opportunity after surgery. The dose could be reduced to 5 mg/2.5 mg or increased to 15 mg/7.5 mg, as appropriate.
- At discharge, patients were asked to rate their comfort and surgical experience as 'not satisfactory', 'satisfactory' or 'completely satisfactory'.
- In addition, the following parameters were assessed using data recorded in patient charts and notes by pain nurses:
  - opioid-related problems (development of ileus or constipation, and patient-reported sedation, lethargy or nausea/vomiting)
  - patient compliance with physiotherapy (the ability to mobilize, breathe deeply, cough and take part in physiotherapy sessions without experiencing unacceptable pain levels)
  - length of hospital stay (number of days between admission and discharge)
  - use of rescue analgesia (morphine or IV oxycodone) during the period between recovery and discharge.
- Patients with a pain score of 1 or less on a scale of 0–3 (0, no pain; 3, severe pain) were considered suitable for discharge, as determined by a consultant physician.

Table 1. Oxycodone/naloxone as part of a new, combined Enhanced Recovery Programme in patients undergoing colorectal surgery.

Pre-operative treatment • Gabapentin 300 mg (avoid if eGFR < 15 mL/min/1.73 m^2)
Intra-operative* • Paracetamol IV 1 g • Dexamethasone IV 4–8 mg • Ondansetron IV 4–8 mg • Parecoxib IV 40 mg (if not contraindicated) • Short-acting strong opioids (if necessary, consider oxycodone; will be offset with naloxone in oxycodone/naloxone (*Targinact*®) • Levobupivacaine 0.125% up to 100 mL (or levobupivacaine 0.25% up to 50 mL) into the layers before closure and wound soaker to be inserted
Post-operative pain management • Local anaesthetic wound soaker 5 mL/h 0.25 % bupivacaine • Oxycodone/naloxone 10 mg/5 mg b.d. (optimum first dose in recovery with drink and biscuit) three doses then APS review • Oxycodone (*Oxynorm*®) 5–10 mg p.r.n. • Paracetamol IV 1 g q.d.s. • Naproxen 250–500 mg b.d. for 5 days (if not contraindicated, add a PPI if patient is > 65 years old) • Gabapentin 300 mg b.d. for 5 days (if eGFR < 30 mL/min/1.73 m^2 reduce dose to 200 mg) • Tramadol (50–100 mg q.d.s. p.r.n.) as step-down from oxycodone/naloxone (if necessary)
Rescue analgesia • If PCEA: bupivacaine only wean at 24 h or when GI tract is functioning appropriately, oxycodone 5–10 mg, if necessary • If PCA: oxycodone wean at 24 h or when GI tract is functioning appropriately

*The use of short-acting opiates, e.g. fentanyl or oxycodone, is allowed for intra-operative use in minimal doses. Although the programme is recommended for all patients, there may be minor variations depending on surgeon and anaesthetist preference.
APS, Acute Pain Service; b.d., twice daily; eGFR, estimated glomerular filtration rate; GI, gastrointestinal; IV, intravenous, PCA, patient-controlled analgesia; PCEA, patient-controlled epidural analgesia; PPI, proton pump inhibitor; p.r.n., as needed; q.d.s., four-times daily

RESULTS

Patient demographics

- Of the 30 patients included in the audit, 18 were male, and the mean age was 69.5 years (range, 54–85 years).

Oxycodone/naloxone doses

- Overall, 83% (25/30) of patients received four doses or fewer of oxycodone/naloxone (Figure 1).
  - One patient was discharged with three extra oxycodone/naloxone doses, but did not need to take them.
- The mean total oxycodone/naloxone dose received by patients was 34 mg/17 mg (i.e. 34 mg oxycodone), and the mean daily dose was 12 mg/6 mg (i.e. 12 mg oxycodone).
- The majority of patients (87%; 26/30) did not require a change of dose (Figure 2).

Rescue medication

- In total, 13% (4/30) of patients required rescue medication (Figure 3); 3 patients had a single dose of oxycodone (*OxyNorm*®, Napp Pharmaceuticals Limited) 10 mg and 1 patient had four doses of oxycodone 10 mg.

Patient satisfaction and tolerability

- Overall, 90% (27/30) of patients stated that their experience was 'satisfactory' or 'completely satisfactory' (Figure 4).
- The three patients who reported their experience as 'unsatisfactory' had received epidural or intrathecal analgesia during the intra-operative period, contrary to the programme. These patients stated that they did not like the sensations and mobility issues associated with these methods of analgesia.
- The majority of patients (93%; 28/30) did not report opioid-related problems; the two patients who reported problems had received higher intra-operative doses of morphine than the other patients. Importantly, development of ileus was not seen in any patients.

Figure 1. The number of oxycodone/naloxone doses taken by patients.

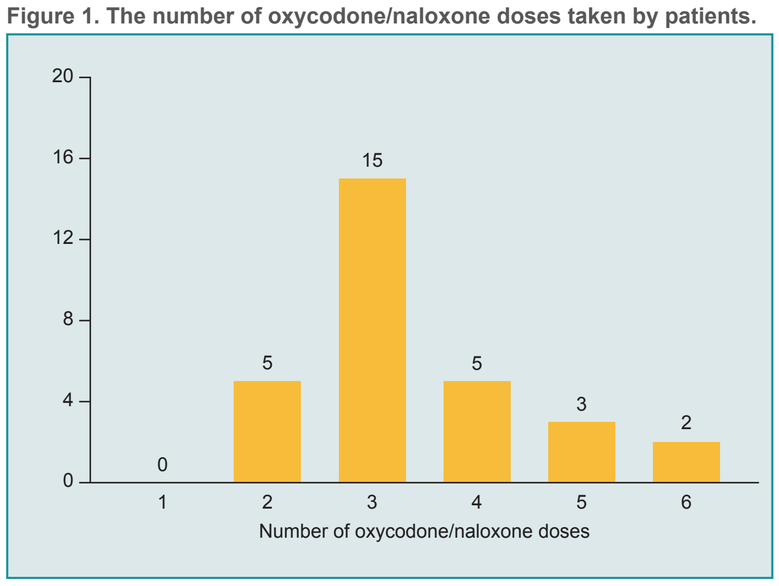


Figure 2. Proportion of patients who required a change of oxycodone/naloxone dose.

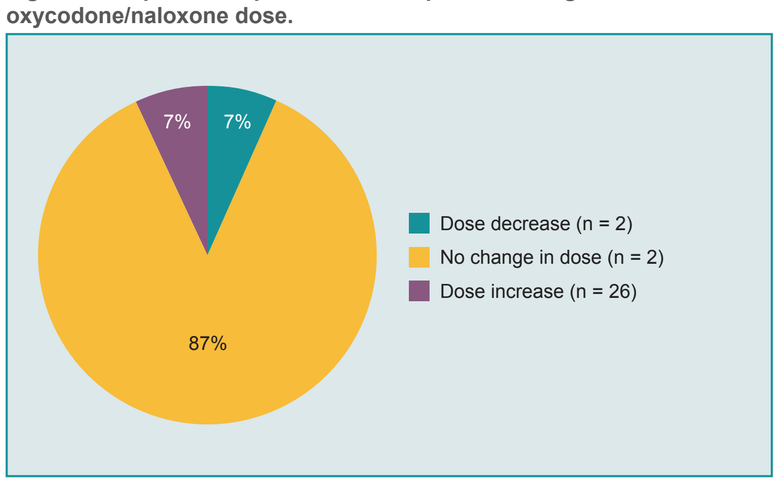


Figure 3. Proportion of patients who required rescue medication.

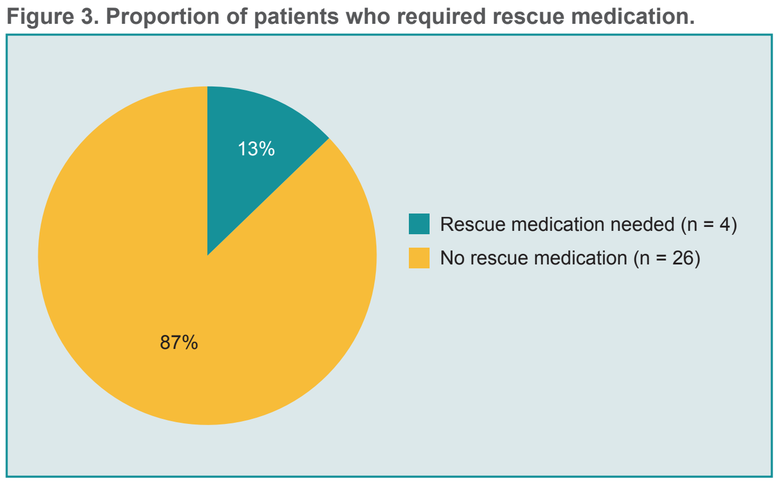


Figure 4. Patients' ratings of their comfort and surgical experience.

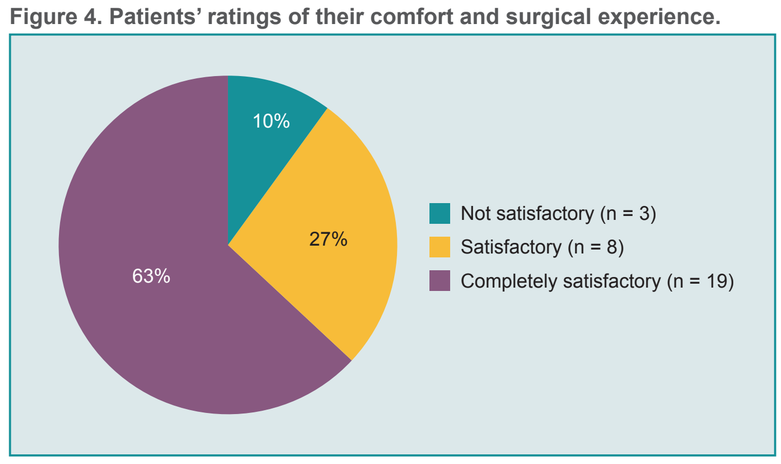
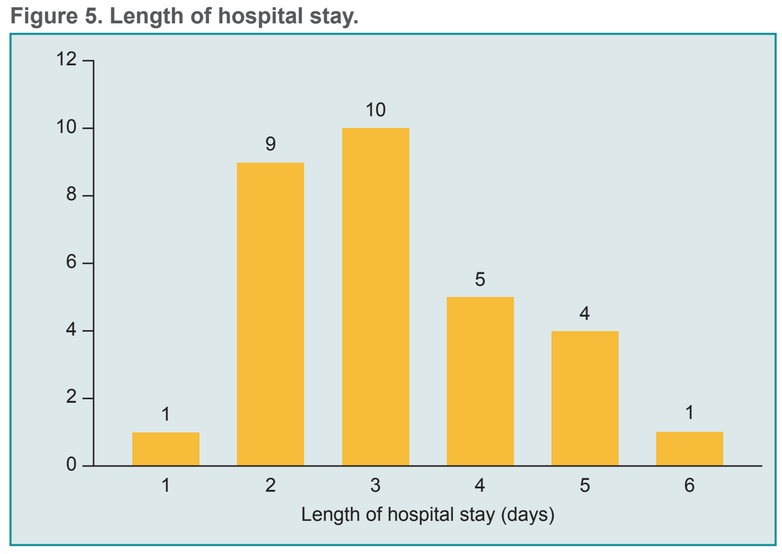


Figure 5. Length of hospital stay.



- The majority of patients (77%; 23/30) easily regained mobility following surgery and were compliant with physiotherapy. More than half of patients (53%; 16/30) were mobile later on the same day as the procedure.

Length of hospital stay (fit for discharge)

- 83% (25/30) of patients were discharged within 4 days, and 67% (20/30) of patients left hospital within 3 days or less (Figure 5).
- Two of the three patients who had reported low satisfaction with treatment had longer hospital stays (6 days and 5 days).
- One patient was discharged only 1 day after surgery, despite being one of the older patients.

DISCUSSION

This audit provides initial evidence to support the post-operative use of oxycodone/naloxone as part of an Enhanced Recovery Programme for patients undergoing laparoscopic colorectal surgery.

- **Oxycodone/naloxone provided adequate pain control, as shown by high patient satisfaction, good mobilization, compliance with physiotherapy, and rapid recovery and discharge of patients, without the side effects associated with other opioids.**
- **This audit also provides evidence that adequate pain control can be obtained without the use of intrathecal or epidural analgesia. We, therefore, continue to advocate the avoidance of these methods of analgesia in preference to the use of IV or oral strong opioids.**
- **The introduction of the Enhanced Recovery Programme has markedly improved patient outcomes and reduced the length of hospital stay (5 days or less in this audit versus 1–2 weeks with a conventional approach[2]). Hence, the Enhanced Recovery Programme may help reduce the overall cost of care and improve the experience for patients requiring colorectal surgery.**
- **The promising benefits seen in this small evaluation need to be further investigated in a larger, randomized, controlled trial.**

References

1. Napp Pharmaceuticals Ltd. Targinact Summary of Product Characteristics 2012. Available from: http://www.medicines.org.uk/EMC/medicine/22908/SPC/Targinact%C2%AE+5+mg+2.5+mg,+10+mg+5+mg,+20+mg+10+mg+and+40+mg+20+mg+prolonged-release+tablets/ Accessed 15 May 2013.
2. Burch J *et al. Nursing Times* 2009;105:28.

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