# Compliance with Enhanced Recovery After Surgery (ERAS) protocol in elective colorectal surgery

Dr Noopur Mehta, Dr Kiran Sooknandan, Dr Joshua Lun, Dr Andrew Marriott
Department of Anaesthesia, Perioperative Medicine and Pain Management, University Hospital Geelong

## BACKGROUND

- Enhanced Recovery After Surgery (ERAS) is a protocol comprised of a set of perioperative interventions that aim to reduce the physiological stress associated with surgery.[1]
- ERAS was implemented at our institution in 2009 after an initial study looking at feasibility/efficacy undertaken at three Victorian hospitals (including Geelong).[2]
- Its efficacy for the reduction of hospital length of stay (LOS) and postoperative complications is well established[1,3], however its success is largely dictated by the level of compliance[4,5].
- Although the benefits of an ERAS model have been highlighted in numerous studies, there is limited literature evaluating long-term compliance.[4]

## AIMS

Primary aim:

- To determine the overall compliance with ERAS protocols in elective colorectal surgery at University Hospital Geelong (UHG).

Secondary aim:

- To evaluate the long term sustainability of compliance with ERAS and preservation of outcomes.

## METHOD

- A retrospective chart review of 100 sequential patients undergoing elective colorectal surgery via the ERAS protocol in 2015 was conducted.

  Data collection undertaken via 3 means:
  1. Data warehouse information was directly imported onto the online database REDcap;
  2. Medical record coding for each patient;
  3. The remainder of the missing variables were manually collated via a chart review.

- The resulting database was directly compared with results from the 2009 ERAS study.

*Outcome Measures*

- Primary endpoint: compliance with individual ERAS components. (See Figure 1)
  - High compliance defined as >80% compliance with a measure.[2]
- Secondary endpoints: LOS, ICU admission, hospital readmission (within 30 days). (See Table 2)

## RESULTS

**Table 1.** Patient demographics

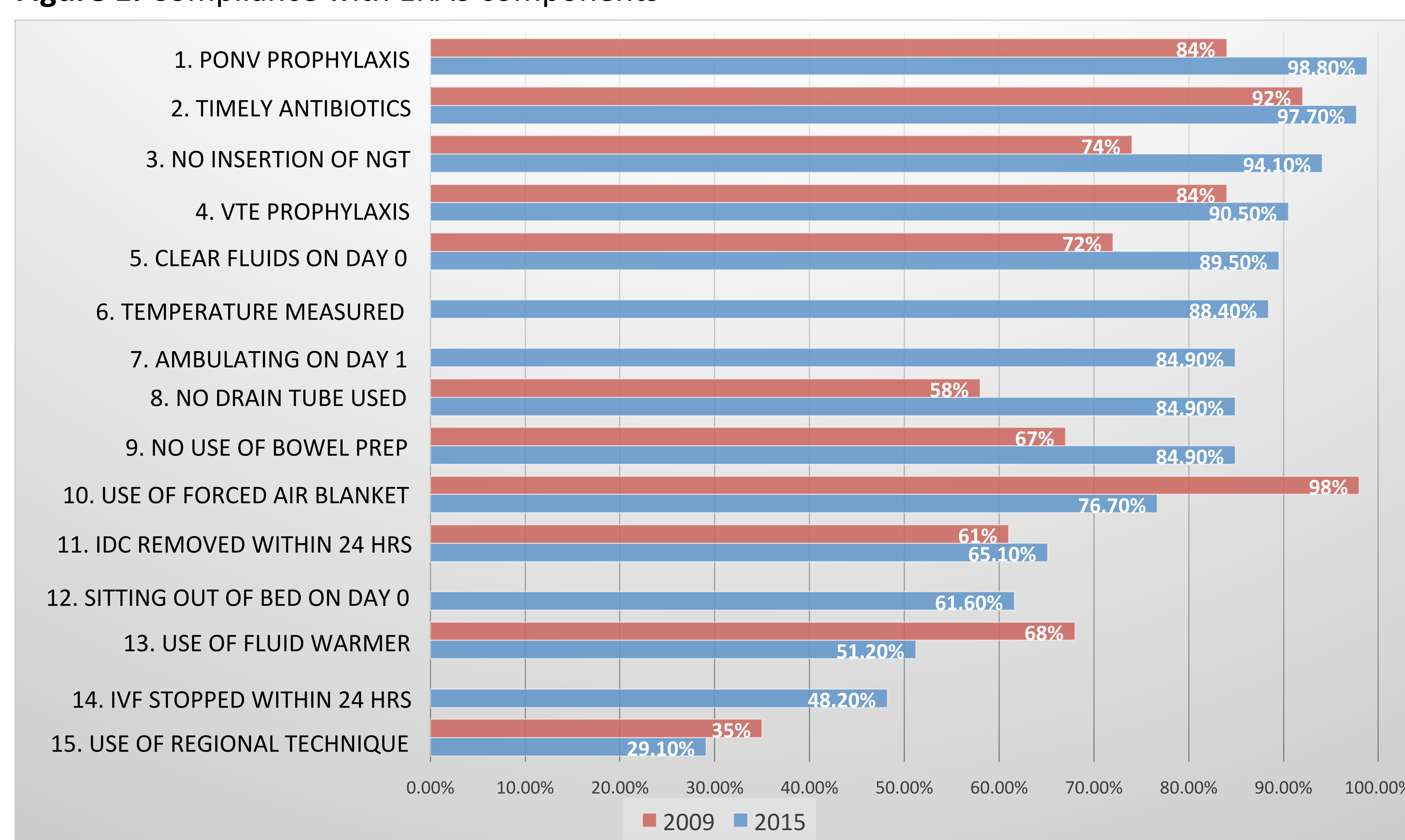
| | 2015 audit (n = 100) | 2009 study (n = 169) |
|---|---|---|
| **Age (years)** | 64.5 (48-77)[a] | 63 (15)[b] |
| **Male gender** | 51.2% | 50% |
| **Female gender** | 48.8% | 50% |
| **BMI (kg/m²)** | 26.6 (5.8)[b] | 27 (5)[b] |
| **Duration of surgery (hours)** | 2.8 (1.5)[b] | 2.3 (1.5-3.5)[a] |
| **Type of surgery** | | |
| Open | 83% | 69% |
| Laparoscopic | 17% | 31% |

**Table 2.** Outcome Measures

| | 2015 audit (n = 100) | 2009 study (n = 169) |
|---|---|---|
| **ICU admission** | 9.3% | 8.4% |
| **LOS (days)** | 4.5 (1-8)[a] | 6.2 (4-10)[a] |
| **Sepsis incidence** | 1.2% | |
| **Readmission** | 11.4% | 11% |

KEY:
a – median (Q1-Q3); b – mean (SD);
BMI – body mass index
PONV – post operative nausea and vomiting
NGT – nasogastric tube
VTE – venous thromboembolism
IDC – indwelling urinary catheter
IVF intravenous fluids

**Figure 1.** Compliance with ERAS components




## DISCUSSION/CONCLUSION

- There was **high compliance with 9 out of 15 measured components**, and a high overall compliance with ERAS compared to 2009. This suggests that **compliance with ERAS protocols is sustainable long term**.
- 3 measures showed decreased compliance compared to 2009:
  - **Use of regional analgesia techniques** (epidural/spinal/tap blocks)
    - ➢ This is despite reviews suggesting it is associated with dramatic improvements in postoperative analgesia.[1] → *Area for further investigation*
  - **Use of a forced air blanket** and **fluid warmers**
    - ➢ There is limited evidence to support prewarming with fluid warmers.[1] → *May be worthwhile removing this measure to simplify protocol use.*
- Compliance with early cessation of IVF was very low → *fluid prescription and acute kidney injury is being assessed as part of a broader evaluation of this audit.*
- There were more open surgeries in our audit compared to the 2009 study (see Table 1). Despite this, **outcomes were preserved**, and there was a **reduction in hospital LOS**.
- There are some concerns that reduced LOS may be associated with increased readmission rates (as high as 22% reported in some studies[4]), however **readmission rates remained lower than expected** at 11.4%.
- Limitation: 2009 ERAS study combined data from 3 hospitals → *Raw data from the 2009 study is being further evaluated for comparison and statistical analysis.*

**Contact**

Dr Noopur Mehta (HMO)
University Hospital Geelong, Barwon Health
Email: noopur.mehta@uq.net.au

**References**

1. Gustafsson UO et al. Guidelines for perioperative care in elective colorectal surgery: Enhanced Recovery After Surgery (ERAS) society recommendations: 2018. World J Surg. 2019 Mar;43:659-95.
2. Thompson EG et al. Enhanced Recovery After Surgery program for elective abdominal surgery at three Victorian hospitals. Anaesth Intensive Care. 2012 Jan;40(3): 450-9.
3. Muller S et al. A fast-track program reduces complications and length of hospital stay after open colonic surgery. Gastroenterology. 2009 Mar;136(3): 842-7.
4. Ahmed et al. Enhanced Recovery After Surgery protocols – compliance and variations in practice during routine colorectal surgery. Colorectal Disease. 2012 Sep;14(9):1045-51.
5. Gustafsson UO et al. Adherence to the Enhanced Recovery After Surgery protocol and outcomes after colorectal cancer surgery. Arch Surg. 2011 May; 146(5):571-7.