# Risks associated with procedural sedation


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**Introduction**

Gastrointestinal endoscopy is performed in a range of settings and by a variety of health professionals. Specialist anaesthetists commonly administer sedation for endoscopy in Australia, but there is limited literature on the safety of this service model. Sedation practice in other comparable nations varies widely, with non-medical, non-specialist, specialist and hybrid models in place. In this talk I will use a recent study conducted in Victoria, Australia, to illustrate the risks associated with sedation. The aim of the study was to determine the risk profile of presenting patients and the incidence of significant unplanned events in patients having endoscopy at the nine public hospitals affiliated with the University of Melbourne that provide endoscopy services for adult patients.

**Methods**

The study included all adult elective and emergency patients who presented for upper or lower GI endoscopy (including enteroscopy and ERCP) at the nine University of Melbourne-affiliated hospitals that provide endoscopy services for adult patients. Data were collected during a 28-day period between March and August 2015. Sedation was administered by specialist anaesthetists or supervised ANZCA trainees. Outcome measures were incidence of significant unplanned events including airway obstruction, cardiovascular deterioration, abandoned procedure, unplanned intubation, advance life support and death within 30 days.

**Results**

2,182 procedures in 2,132 patients were included. Patients were aged 60 (range: 18-95) years and 42% were ASA physical status 3-5. The most common procedures were gastroscopy alone (33%), colonoscopy alone (41%) and combined gastroscopy and colonoscopy (18%). Patients were managed by a specialist anaesthetist without the participation of a trainee anaesthetist in 80% of cases. Oxygen saturation, blood pressure, ECG and capnography were monitored in 100%, 99%, 64% and 64% of patients respectively. Most (92%) patients were managed without an airway device. Propofol was used in 98% of cases at a median dose of 200 (IQR: 130-300) mg. Most (82%) patients were discharged home after the procedure with a median post-procedure admission time of 60 (IQR 33-82) minutes. Forty-seven patients (2.2%) had at least one subsequent procedure during the study period.

Emergency patients were older (63 $\pm$ 18 vs. 60 $\pm$ 16 years; $P$ <0.0001) and had more co-morbidities than elective patients (Charlson co-morbidity score: 5 [IQR 3-7] vs. 3 [2-5]; $P$ <0.0001). They were more likely to have gastroscopy alone (53% vs. 29%; $P$ <0001), were more likely to have ECG monitoring (76% vs. 62%; $P$ <0.0001), and were more likely to be managed with an airway device than elective patients (20% vs. 6%; $P$ <0.0001). Emergency patients were more likely to receive neuromuscular blocking drugs (16% vs. 1.5%; $P$ <0.0001) and intravenous fluids (68% vs. 47%; $P$ <0.0001) than elective patients and they were more likely to have another endoscopy during the study period (7% vs. 1%; $P$ <0.0001).

Significant hypotension was the most common significant unplanned event (11.8%). Seven patients (0.3%) required unplanned endotracheal intubation and two patients (0.1%) required advanced life support. The overall 30-day mortality rate was 1.2% (95% confidence interval: 0.8 to 1.8) with a median time to death of 11 (range: 0-28) days. Emergency patients suffered more intra-operative events (20.6% vs. 14.4%) and 30-day mortality (6.0% vs. 0.2%; $P$ <0.0001) than elective patients.

**Conclusion**

This study demonstrated that many patients presenting for endoscopy at University of Melbourne-affiliated hospitals have high pre-procedure risk status. Intra-procedure significant unplanned events were common, especially in emergency patients. The current specialist anaesthetist-based service model provides the greatest flexibility with respect to sedation services for endoscopy at our hospitals. This study was noted for its high rate of significant unplanned events, which was attributed by one commentator to the patient population treated in our hospitals and the apparent preference for moderately-deep propofol-based sedation.

**References**


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