

Sedation by non-anaesthesiologists in gastrointestinal endoscopy

Dear Editor,

We read with interest the paper by Ang et al.¹ on Singapore guidelines in the use of sedation by non-anaesthesiologists during gastrointestinal endoscopy in the hospital setting. We are especially intrigued by Statement 6, stating that propofol sedation for endoscopy can be safely and effectively administered by trained non-anaesthesiologists. The sentence from the discussion that resonated most with us was this: “The critical issue for endoscopic procedures is not the administration of propofol by an anaesthesiologist versus an endoscopist, but rather the monitoring of the patient to detect complications, the ability of the physician to recognise and manage the complications, and the availability of resources to manage these complications.”

We note the high-quality evidence from their GRADE methodology for this statement and agree with their recommendations. Reflecting on these statements has convinced us to evaluate how we train our gastroenterology endoscopy trainees regarding sedation principles, and we are certain that training is crucial if we are to effect this change throughout the nation in allowing endoscopists to administer propofol.

Why is it important that endoscopists are trained in using propofol? Propofol sedation is efficacious and has advantages in terms of recovery profile, especially in common populations we see (e.g. cirrhotic patients). Therefore we need to have the flexibility of knowing how to use all the options available for sedation.² We understand that this topic may be controversial as the European National Societies of Anaesthesia issued a consensus statement that non-anaesthesiologists should not administer propofol.³ However, dedicated anaesthesia providers for all types of endoscopies may not be a prudent use of resources. In a cost-effectiveness model, Hassan et al.⁴ showed that endoscopist-directed propofol sedation was more cost-effective than anaesthesiologist-administered propofol sedation, and this is especially important in settings with large numbers of low-risk patients and limited anaesthesiology services. Multiple large studies^{5,6} have also shown that non-anaesthesiologist-administered propofol (NAAP) was just as safe compared to it being given by our anaesthesiology colleagues.

Statement 16 from the same paper by Ang et al.¹ states that non-anaesthesiologists using propofol for sedation should have additional training with respect to propofol,

including resuscitation with emphasis on airway management. In view of the potential hazards in using propofol with its narrow therapeutic range, it is fair that we use this opportunity to relook at our sedation training, to make it more structured and robust than it currently is, perhaps with certification involved. Specifically, to ensure patient safety, our training has to include (1) airway management and advanced cardiac life support (ACLS) training; (2) pharmacology; (3) intra- and post-procedural monitoring; and (4) peri-procedure assessment and identifying high-risk patients. We agree with the guidelines that high-risk patients should still require anaesthesiologist-administered sedation. At the moment, all 3 sponsoring institutions involved in training gastroenterology endoscopists in Singapore have an annual structured sedation course incorporating the above, mostly combining theory and simulation-driven training. Our trainees also thereafter have to undergo on-the-job training, with regular direct observation using validated formative and summative assessments,⁷ of which administering and monitoring of sedation are included in these assessments.

All gastroenterology trainees in Singapore have undergone training in Internal Medicine, of which part of the requirements includes rotations within the Intensive Care Unit (ICU) and Emergency Department, both providing ample opportunities to learn airway management and ACLS. Logging a minimum number of airway intubations is also part of the requirements before these residents are allowed to exit the Internal Medicine residency programme. Furthermore, all our gastroenterology trainees are ACLS-certified, while administering propofol and monitoring patient's parameters of adequacy and complications of sedation are also already part of the training of an Internal Medicine resident rotating into the ICU. Overall, our residents would have the necessary prerequisite knowledge to be trained further in using propofol

Moving forward, we can revise our sedation training to include propofol on top of benzodiazepines and opioids, which we are familiar with, in line with the balanced propofol sedation method. A formal structured course on the use of propofol would be needed for endoscopists intending to provide NAAP if they do not have prior experience in its usage. We can also include additional web-based teaching and simulation case

scenarios guided by anaesthesiologists to incorporate training of propofol use, focusing on enhancing knowledge (e.g. pharmacology of propofol), skills (e.g. peri-procedural monitoring of patient) and attitudes (e.g. discussing sedation options with patient). Such dedicated training courses on propofol use could potentially be organised under the auspices of the Academy of Medicine, Singapore or specific institutions or professional bodies with relevant expertise.

As educators, we feel that credentialing for NAAP is important and should be competency-based and not specialty-based. Factors found to be relevant to optimal patient outcomes include specialised training, patient selection (low risk versus high risk), complexity of endoscopic procedure (simple vs complex), duration of procedure (short vs long), and personnel dedicated to continuous physiologic monitoring.⁸⁻¹⁰ We hope that in time, our trainees can be trained to provide procedural sedation across the sedation continuum safely, and in so doing, improve the quality of care we can deliver to our patients.

REFERENCES

1. Ang TL, Seet E, Goh YC, et al. Academy of Medicine, Singapore clinical guideline on the use of sedation by non-anaesthesiologists during gastrointestinal endoscopy in the hospital setting. *Ann Acad Med Singap* 2022;51:24-39.
2. Watanabe K, Hikichi T, Takagi T, et al. Propofol is a more effective and safer sedative agent than midazolam in endoscopic injection sclerotherapy for esophageal varices in patients with liver cirrhosis: a randomized controlled trial. *Fukushima J Med Sci* 2018;64:133.
3. Perel A. Non-anaesthesiologists should not be allowed to administer propofol for procedural sedation: a Consensus Statement of 21 European National Societies of Anaesthesia. *Eur J Anaesthesiol* 2011;28:580-4.
4. Hassan C, Rex DK, Cooper GS, et al. Endoscopist-directed propofol administration versus anesthesiologist assistance for colorectal cancer screening: a cost-effectiveness analysis. *Endoscopy* 2012;44:456-64.
5. Vargo JJ, Niklewski PJ, Williams JL, et al. Patient safety during sedation by anesthesia professionals during routine upper endoscopy and colonoscopy: an analysis of 1.38 million procedures. *Gastrointest Endosc* 2017;85:101-8.
6. Goudra B, Nuzat A, Singh PM, et al. Association between Type of Sedation and the Adverse Events Associated with Gastrointestinal Endoscopy: An Analysis of 5 Years' Data from a Tertiary Center in the USA. *Clin Endosc* 2017;50:161-9.
7. Siau K, Crossley J, Dunkley P, et al. Direct observation of procedural skills (DOPS) assessment in diagnostic gastroscopy: nationwide evidence of validity and competency development during training. *Surg Endosc* 2020;34:105-14.
8. Daza JF, Tan CM, Fielding RJ, et al. Propofol administration by endoscopists versus anesthesiologists in gastrointestinal endoscopy: a systematic review and meta-analysis of patient safety outcomes. *Can J Surg* 2018;61:226-36.
9. ASGE Standards of Practice Committee, Early DS, Lightdale JR, et al. Guidelines for sedation and anesthesia in GI endoscopy. *Gastrointest Endosc* 2018;87:327-37.
10. Gotoda T, Akamatsu T, Abe S, et al. Guidelines for sedation in gastroenterological endoscopy (second edition). *Dig Endosc* 2021;33:21-53.

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