

Sedation for gastrointestinal endoscopy - Is it time for standardization of services?

Basavana Goudra¹ and Preet Mohinder Singh²

1. Hospital of the University of Pennsylvania and Perleman School of Medicine, USA

2. All India Institute of Medical Sciences, New Delhi, India-110029

EDITORIAL

Please cite this paper as: Goudra B, Singh PM. Sedation for gastrointestinal endoscopy - Is it time for standardization of services? AMJ 2016;9(9):371-374.

<http://doi.org/10.21767/AMJ.2016.2777>

Corresponding Author:

Basavana Goudra MD FRCA FCARCSI

Hospital of the University of Pennsylvania and Perleman School of Medicine

Philadelphia, PA, USA

Email: goudrab@uphs.upenn.edu

With the decline in the number of operating room surgeries, procedures performed outside the operating room have taken a centre stage. In the hospital of the University of Pennsylvania, Philadelphia, USA, such procedures form nearly 40 per cent of all the procedures necessitating anaesthesia services (Figure 1). It is probably a reflection of the global trend. An increase in gastrointestinal (GI) endoscopy procedures is particularly noticeable.

The evolution of sedation services has not moved in tandem with the challenges posed by unexpected and unprecedented expansion of GI endoscopy procedures. The variation in the provision of sedation services is noticeable both across the continents and within the same country.¹⁻³ While, majority of GI endoscopies are performed with no sedation or conscious sedation in Japan, endoscopist supervised and nurse administered propofol seems to be the standard in Europe. The practice is highly variable in the USA. Whereas propofol is used in majority of both upper gastrointestinal (GI) endoscopy and colonoscopy on the east coast, conscious sedation is the dominant practice on the west coast.⁴ Let us explore the reasons for such a variation and their consequences-both in terms of patient safety and healthcare burden.

We have repeatedly documented that propofol is less safe than intravenous conscious sedation.^{5,6} However, research has also demonstrated that the risk of propofol sedation is minimal when administered by registered nurses under the supervision of gastroenterologists. In a recent study involving 177944 GI endoscopic procedures, a total of 332 minor complications were documented (0.2 per cent). There were no major complications or deaths.⁷ Intravenous conscious sedation generally involves administration of a short acting benzodiazepine (typically midazolam) along with a short acting opioid (generally fentanyl). Infrequently, addition of a first generation antihistamine with sedative properties like diphenhydramine is necessary. Propofol is used either on its own or along with a short acting opioid. Although the term moderate sedation is used to describe propofol sedation, often the patient experiences general anaesthesia. In fact, about 46 per cent of the time they were experiencing general anaesthesia and about 6 per cent of the time deep general anaesthesia.⁸ Unfortunately, the level of monitoring used and the backup help available during GI endoscopic procedures is not same as that for general anaesthesia. For example, use of end tidal carbon dioxide (ETCO₂) monitoring is not universal. Even when it is used, its reliability in the setting of a spontaneously breathing patient undergoing endoscopy is questionable.⁹

Patient expectations might be a factor responsible for global variations. At least in the USA, there is an anticipation that the experience will be similar to general anaesthesia.¹⁰ Often patients clearly express a desire to be completely unaware during the entire procedure. Frequently, they have a history of unpleasant experience with previous conscious sedation. The expectation of the endoscopists is no different. Immobility during the entire procedure is preferred and any patient movement is not appreciated. As a result, it was not surprising that, even though the frequency of events like fall in oxygen saturation, hypotension, laryngospasm and cardiac arrest were low in patient's receiving propofol under the

endoscopist supervision, both endoscopist and patient satisfaction were low as well.¹¹

Adding to the above mentioned complexities is the issue of remuneration. In Europe and most developing countries, the health care is nationalized in some form or another. There is no incentive for administering propofol by an anaesthesia provider to patients undergoing GI endoscopy. Job preservation might have been the incentive for the retraction of the approval accorded by the European society of anaesthesiologists to the idea of endoscopist administered/supervised sedation.¹² In the developing world like India and China (where the health services are a mixture of rich and poor countries), the type of sedation administered depends on the affordability as well as the procedure complexity. While most of the endoscopic retrograde cholangiopancreatography (ERCPs) are performed under anaesthesia provider administered sedation, non-advanced procedures are performed either with no sedation or mild sedation, unless the patient can afford to pay for additional anaesthesia services.

With the above in the background, it is important and in fact necessary to standardize the sedation services. Although any such proposal needs to take into account the national/regional factors, sufficient knowledge has accumulated to have agreements in certain areas. Any guidelines formulated, should keep the logistics of implementation in mind. The following are some general considerations.

It is necessary and probably in the interest of the patients to perform all the advanced endoscopic procedures with propofol and under the supervision of an anaesthesiologist. As some of the gastroenterologists are competent in the airway management, provision should exist for such a practice. However, a skilled anaesthesiologist should be available within 30 seconds reach for any eventuality. Considering, valuable time would have been lost while trying to address any desaturation, and keeping in mind the slope of the oxygen haemoglobin saturation curve,¹³ presence of an anaesthesiologist is strongly encouraged.

All existing nurses involved in the provision of endoscopy services should be trained in the administration of propofol. Teaching airway management skills with a particular emphasis on the recognition of impending airway compromise is mandatory. Such nurses should be supervised either by an anaesthesiologist or a gastroenterologist as the case may be. Appropriate monitoring, drugs and resuscitation equipment must be in place and checked before starting any procedure.

At a minimum a Mapleson C breathing system and necessary tools for re-establishing ventilation is necessary. An example of such equipment is in Figure 2.

An option to provide intravenous conscious sedation should exist and such a choice should be available to all patients. Additionally, an unbiased discussion regarding the pros and cons of propofol and conscious sedation should be part of the consent process.

Research has shown that hypoxemia and aspiration are some of the commonest adverse events during propofol based sedation. Any history and examination should focus on factors that predispose to such events.

Accurate documentation of any relevant discussion with the patient and the gastroenterologist along with all intraprocedural events is crucial, especially in the event of an adverse outcome.

It is hoped that incorporating these recommendations in formulating guidelines can increase the safety of sedation during GI endoscopy. It is likely that such standardized care can improve the patient satisfaction and outcome. The recommendations might be flexible in case of simple endoscopic procedures e.g., those scheduled for screening, where no therapeutic intervention is planned. It is also time for all national societies (both gastroenterology and anaesthesiology), to place aside the politics of propofol administration and work towards the common good.

References

1. Jagadisan B. A survey of procedural sedation for pediatric gastrointestinal endoscopy in India. *Indian Journal of Gastroenterology*. 2015 Mar 1;34(2):158-63.
2. Obara K, Haruma K, Irisawa A, et al. Guidelines for sedation in gastroenterological endoscopy. *Digestive Endoscopy*. 2015 May 1;27(4):435-49.
3. Dumonceau JM, Riphaut A, Schreiber F, et al. Non-anaesthesiologist administration of propofol for gastrointestinal endoscopy: European Society of Gastrointestinal Endoscopy, European Society of Gastroenterology and Endoscopy Nurses and Associates Guideline—Updated June 2015. *Endoscopy*. 2015 Dec;47(12):1175-89.
4. Wernli KJ, Brenner AT, Rutter CM, et al. Risks associated with anesthesia services during colonoscopy. *Gastroenterology*. 2016 Apr 30;150(4):888-94.

5. Goudra B, Nuzat A, Singh PM, et al. Cardiac arrests in patients undergoing gastrointestinal endoscopy: A retrospective analysis of 73,029 procedures. *Saudi journal of gastroenterology: official journal of the Saudi Gastroenterology Association*. 2015 Nov;21(6):400.
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. *Clinical endoscopy*. 2016 Apr.
7. Behrens A, Ell C, Studiengruppe AP. Safety of sedation during gastroscopy and colonoscopy in low-risk patients—results of a retrospective subgroup analysis of a registry study including over 170 000 endoscopies. *Zeitschrift für Gastroenterologie*. 2016 Aug;54(8):733.
8. Goudra B, Singh PM, Gouda G, et al. Propofol and non-propofol based sedation for outpatient colonoscopy—prospective comparison of depth of sedation using an EEG based SEDLine monitor. *Journal of Clinical Monitoring and Computing*. 2015 Sep;12:1–7.
9. Goudra BG, Penugonda LC, Speck RM, et al. Comparison of Acoustic Respiration Rate, Impedance Pneumography and Capnometry Monitors for Respiration Rate Accuracy and Apnea Detection during GI Endoscopy Anesthesia. *Open Journal of Anesthesiology*. 2013;3(2):74–9.
10. Goudra B, Singh PM. Providing Deep Sedation for Advanced Endoscopic Procedures: The Esthetics of Endoscopic Anesthetics. *Digestive diseases and sciences*. 2016 Jun 1;61(6):1426–8.
11. Goudra BG, Singh PM, Gouda G, et al. Safety of non-anesthesia provider-administered propofol (NAAP) sedation in advanced gastrointestinal endoscopic procedures: comparative meta-analysis of pooled results. *Digestive diseases and sciences*. 2015 Sep 1;60(9):2612–27.
12. Pelosi P. Retraction of endorsement: European Society of Gastrointestinal Endoscopy, European Society of Gastroenterology and Endoscopy Nurses and Associates, and the European Society of Anaesthesiology Guideline: Non-anesthesiologist administration of propofol for GI endoscopy. *Endoscopy*. 2012 Mar;44(3):302; author reply 302.
13. Goudra BG, Singh PM, Penugonda LC, et al. Significantly reduced hypoxemic events in morbidly obese patients undergoing gastrointestinal endoscopy: Predictors and practice effect. *Journal of Anaesthesiology Clinical Pharmacology*. 2014 Jan 1;30(1):71.

CONFLICTS OF INTEREST

The authors declare that they have no competing interests.

FUNDING

None

ETHICS COMMITTEE APPROVAL

Not Applicable

PEER REVIEW

Peer reviewed.

Figure 1: Total number of procedures performed with anaesthesia assistance from 20007-2016, Courtesy Dr Jonathan Tanner, Assistant Professor, Hospital of the University of Pennsylvania

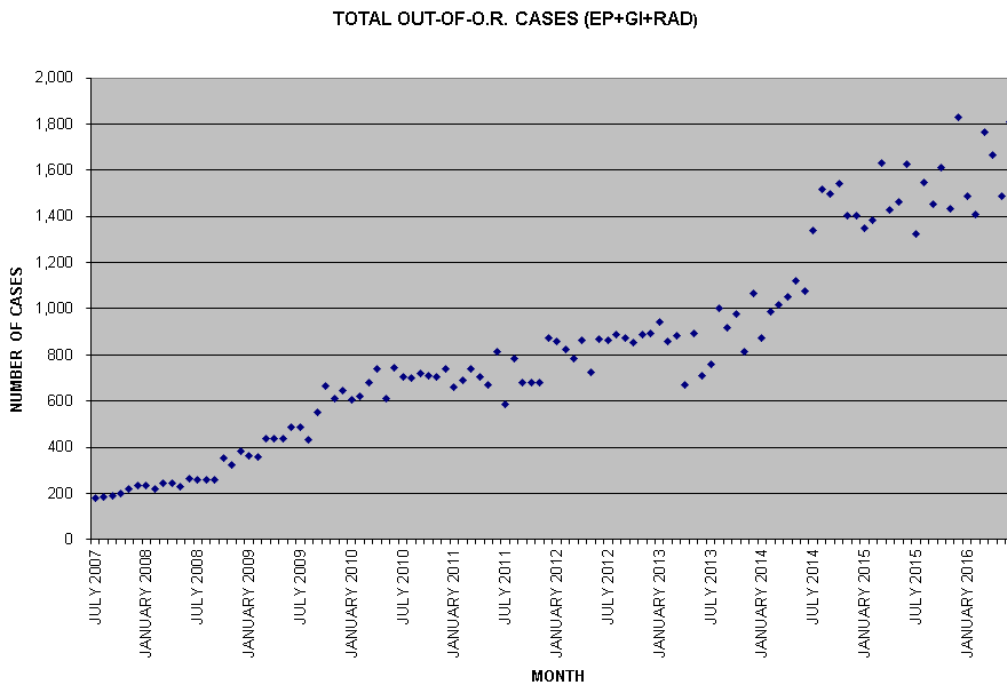


Figure 2: Typical equipment needed for providing safe sedation in an endoscopy suite

