

Developments in non-anesthesiologist administered sedation in endoscopic procedures in the Netherlands

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Introduction

All over the world we are seeing an ever-increasing number of medical diagnostic and therapeutic procedures outside the Operating Room, requiring sedation. The procedures often bring pain, anxiety and discomfort to the patient, resulting in poor cooperation from the patient. Suboptimal conditions for the physician as well as for the patient threaten the efficacy of the treatment as well as the safety for the patient. On the other hand stress during the procedure can cause morbidity and even mortality in high-risk patients.

Sedation techniques for these procedures have been described extensively. Anesthesiologists have specific expertise in pharmacologic, hemodynamic, and airway management aspects of sedation. Because in many countries departments of anesthesiology are short-staffed, reimbursement of more anesthesiologists would imply a significant increase in health care costs, and the number of invasive procedures is ever increasing, the need for safe non-anesthesiologist administered sedation became urgent. Traditionally, gastroenterologists use a benzodiazepine and an opioid, while performing their procedure. However, simultaneous performing an endoscopy as well as administering safely sedative medication as well as monitoring the patient is far from optimal. With expanding practice and newer techniques and medications there is a growing need for safe guidelines. Although in a review large numbers of endoscopies with gastroenterologist administered propofol have been declared "safe" by showing a small number of necessary intubations, ventilatory support, deaths or morbidity, questions could be raised about the occurrence of "hidden" morbidity, i.e. hypoventilation masked by normal saturation levels when giving oxygen-enriched air.

In the Netherlands a guideline for non-anesthesiologists on sedation and/or analgesia at remote locations was prepared in 1998 by a multidisciplinary group of specialists, all involved with this type of procedure and sedation. Because only gastroenterologists implemented this guideline by formulating protocols, health care authorities required reformulation and better adherence to this guideline. Instruments such as training, visitations and performance indicators were introduced in the guideline. Anesthesiologists and anesthesiologist-technicians play an important part in the formulation of the sedation guideline.

Traditional role of anesthesiologist-technicians in the practice of anesthesia in the Netherlands

From the beginning of modern anesthesia in the Netherlands (1946) specialized physicians gradually took over the anesthetic care from surgeons and nurses. Inspired by the already existing practice in the

UK, formal training for specialized anesthesiologists was commenced. Nurses working in the OR gave support to these physicians. Both groups professionalized and the previous nurse became a well-educated specialized assistant to the anesthesiologist. A three year training course and a considerable well guided practical experience, combined with theoretical courses in physiology, pharmacology, anesthesiology, physics, chemistry, pathology, psychology provide them nowadays with an official diploma. They are well trained in ventilatory support, monitoring, resuscitation, pharmacology and a number of anesthesiologic acts and treatments. They are officially capable of acting in anesthetic patient care under responsibility of, and acting under orders of, the anesthesiologist. Often the latter has to take care of two Operating Rooms, which is only possible by the permanent presence of the anesthesia technician. The anesthesiologist's supervision varies from direct to supervision at a distance. This formal relation is vital for this model as well as for the technician's recently new part in providing sedation.

Role of anesthesiologist-technicians in the practice of sedation by non-anesthesiologists

Anesthesiologists have to participate in the sedation care of higher ASA class patients or patients undergoing complex procedures, while on the other hand take part in the formulation of guidelines for sedation and analgesia by non anesthetic personnel [3] for less complex patients and procedures.

It was in this context that two major teaching hospitals in the Netherlands, Academic Medical Center in Amsterdam and University Medical Center Utrecht decided to institute a training program. It was never the intention that the gastroenterologist or the gastroenterological nurse be the subject for training but rather the anesthesiologist-technician so that the optimal anesthetic influence can be applied into safe sedation practice. This group of trainees comprises a group of paramedical personnel with extensive knowledge of airway management, use of anesthetic drugs and monitoring vital signs. The focus was on skilled anesthesiologist-technicians with at least 5 years experience in their work. In correspondence with literature-based superiority of propofol as a sedative agent, the medicament of choice was propofol. The administrative system was a TCI technique (Target Controlled Infusion). All the experienced students were familiar with TCI-Propofol as an anesthetic agent in the OR. Lectures of two hours duration each were given according to the schedule shown overleaf.

In addition, 100 sedation sessions are carried out by the trainees, 50 of them under direct supervision of an experienced tutor-anesthesiologist. Finally the trainee sits for the Sedation Exam.

• Pharmacokinetics en Pharmacodynamics, TCI, Propofol, Alfentanil
• Gastroenterologists view: Endoscopic Procedures, risk, complications perforation, bleeding
• EKG, disturbances and arrhythmias
• Sedation Scoring
• Discharge Criteria and Recovery; Aldrete Score
• Communication, accompanying, support
• EEG and BIS monitoring
• Pulse Oximetry and Capnography during sedation
• Anaphylaxia and Allergic Reactions
• Guidelines on Sedation
• Airway management, oxygen supply in sedation
• Preoperative Screening
• Legal aspects of sedation by anesthesiologist technicians
• Communication and briefing with staff anesthesiologists

The candidates are trained for Resuscitation on a yearly basis. If they were successful in the Sedation Exam, the anesthesiologist-technician then is called "Sedationist". They work under remote control of a staff anesthesiologist in the Endo-suite, who is on direct call. The sedationists preassess their patients on their own. They provide sedation care to ASA I and II patients, and occasionally also to stable ASA III. Higher ASA-classes, higher Body Mass Index, especially male, and patients with complex procedures are screened by the anesthesiologist, since these categories are associated with an elevated risk on sedation linked adverse events [4]. Saturation, EKG, Non Invasive BPM and capnography by a simple nose sampling system are monitored in every patient. It must be remembered that administered oxygen masks hypoventilation under sedation [5]. All data are stored in the existing Patient Data Management System. Usually TCI is started with the Target on 3–4 mcg/ml Propofol. Moderate sedation level is the target. In painful situations 1:10 diluted Alfentanil solution (50 mcg/ml) is administered. If necessary drugs like Atropine or Efedrine are used. Monitored recovery after the sedation is typically quick and uneventful, with use of an adapted Aldrete discharge criteria list.

This practice has been in existence now for three years. Thousands of patients have been treated during this time. No sedation related complications occurred. Both patients and physicians are very satisfied with this service. Having set this example, the two teaching hospitals are approached with requests from other hospitals to train more sedationists. Also the further skilled anesthesiologist-technicians are very satisfied with their responsibility and their relative independent status.

References

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