Escort accompanying discharge after ambulatory surgery: a necessity or a luxury?

Hui Yun Vivian Ip and Frances Chung

Toronto Western Hospital, University Health Network, University of Toronto, Toronto, Ontario, Canada

Correspondence to Dr Frances Chung, FRCPC, Toronto Western Hospital, University Health Network, University of Toronto, Toronto, ON M5T 2S8, Canada
Tel: +1 416 603 5118; fax: +1 416 603 6494; e-mail: Frances.chung@uhn.on.ca

Current Opinion in Anaesthesiology 2009, 22:748–754

Purpose of review

There is a growing demand for greater efficiency in ambulatory surgery. The patient population is increasingly sick which is also undergoing more advanced and complex surgery. This creates a danger in discharging patients without meeting the criterion of requirement of a responsible adult as an escort to accompany the patient home. The purpose of this review is to examine the most recent findings to determine whether an escort for patient discharge is necessary.

Recent findings

Recent studies have outlined the risks of discharging patients without escort after ambulatory anesthesia. There are three aspects that deter discharge of patients without an escort: medication used in general anesthetics or sedation; regional anesthesia; and surgical factors. All these can affect the cognitive, memory and psychomotor function of the patients, deeming them unable to perform normal daily activities such as driving.

Summary

Both clinicians and patients may have underestimated the risks associated with discharging patients without an escort after ambulatory anesthesia. There should be greater awareness of this problem. Patient discharge without an escort after ambulatory surgery under general anesthesia, sedation or premedication can potentially be dangerous and is not recommended.

Keywords

ambulatory anesthesia, ambulatory surgery, escort, patient discharge

Curr Opin Anaesthesiol 22:748–754

0952-7907

Introduction

Advances in surgery such as minimally invasive techniques, anesthetics pharmacology and regional anesthesia have revolutionized ambulatory surgical care. Surgeries performed on an ambulatory basis have also become more popular owing to the ever increasing pressure on hospital beds. There is an expansion of inclusion criteria for ambulatory surgery, including elderly and obese patients. This creates a danger in discharging patients without meeting the criterion of requirement of a responsible adult as an escort to accompany the patient home. Is the presence of an escort to accompany a patient home after ambulatory surgery an essential discharge criterion? This review examines the current evidence in the literature on whether an escort is necessary for patient discharge after ambulatory surgery.

Prevalence of no escorts in ambulatory surgical patients

In 1972, a survey conducted showed that 31% of patients journeyed home were unaccompanied by a responsible person, 73% of car owners drove within 24 h of the operation and 9% drove themselves home [1]. More than three decades later, little has changed. In an observational study of 28 391 ambulatory surgical patients, an incidence of 0.2% of patients without an escort was reported and, of these, only 9% had their surgery cancelled [2].

Compliance of patients with instructions may also be an issue as shown by our follow-up study of 750 patients. Four percent of patients drove vehicles within 24 h, 1.8% consumed alcohol and one patient made an important decision [3]. Similar results were found in England. Of 240 patients, 4.1% drove, 1.7% made important decisions and 10% cooked, ironed or looked after children. A total of 13.3% failed to have someone to stay with them for 24 h and 1.3% spent the night alone at home [4].

In a recent survey of anesthesiologists, 11.2% were willing to anesthetize ambulatory surgical patients with the knowledge that they did not have an escort accompanying them home later [5]. Chung *et al.* [6] demonstrated that 79% of patients proceeded to surgery despite the

knowledge of a lack of escort preoperatively. Also, 50% of patients who did not have an escort claimed that they did. A total of 28.2% of the patients went home without an escort, had no responsible adult staying with them overnight and some of the patients without escorts traveled over 2 h alone after their surgery [6]. Ambulatory surgical patients who had no responsible adult overnight ranged from 4 to 28% [3,6]. In addition, Pavlin *et al.* [7] found the lack of immediate availability of an escort accounting for 53% of system-related delays in discharge.

Why should we have an escort to accompany patients home?

Patients who undergo ambulatory surgery have general anesthesia, or local anesthesia with or without sedation, or regional anesthesia with or without sedation. Sometimes, they have a combination of regional and general anesthesia. Each one of the above can have an effect that precludes patients being discharged alone.

Effect of general anesthetics

Studies have demonstrated a significant impairment to the cognitive and psychomotor performance after various types of anesthesia, namely, general anesthesia and monitored anesthesia care [8–10]. However, the extent and duration of these are undetermined. It becomes difficult to advise patients when they can safely return to normal daily living activities. This is particularly important in ambulatory surgery, as patients are often discharged 2–3 h postoperatively. The cognitive failures questionnaire, a subjective test to investigate failures of perception, memory and motor function, has been used to study this issue [11,12]. The questionnaire was conducted 3 days postoperatively on 258 ambulatory surgical patients undergoing general anesthesia and 250 patients who had regional anesthesia without sedation. A statistically significant impairment of cognitive function was found in those patients who received general anesthesia [11]. Anesthetic agents can affect cognitive functions such as memory. By demonstrating a difference in regional cerebral blood flow, Veselis *et al.* [13] postulated that the episodic memory loss produced by propofol could be due to the interference of the brain region identified with the working memory process.

In 12 healthy volunteers, Thapar *et al.* [10] demonstrated that sedative or analgesic drug combinations, such as midazolam 2 mg and propofol 35 mg, produced impairment similar to or greater than that observed with a large dose of alcohol. A combination of midazolam, fentanyl and/or propofol produced a significantly greater degree of impairment than alcohol at a blood alcohol concentration of 0.11%. This alcohol concentration was higher than the recommended safe limit for driving of 0.08–0.1% [10]. Midazolam appeared to be the key drug in producing prolonged psychomotor and subjective impairment. Even at 75 min, the psychomotor impairment such as eye–hand coordination, subjective effects and short-term memory remained affected greater than the recommended safe limit of alcohol for driving [10]. However, clinically significant difference of these psychomotor impairment and subjective effects could not be demonstrated at 180 and 240 min after midazolam, fentanyl and/or propofol administration. There were several limitations to this study. Only relatively low doses of drugs were used; repeated administration of drug or bolus followed by an infusion drug regimen was not explored. This study used healthy volunteers who did not experience preoperative anxiety, sleep deprivation or postoperative pain which may require analgesia. Furthermore, this could not be extrapolated to the elderly population or different ethnic groups. Nonetheless, this study demonstrated potential prolonged psychomotor and subjective impairment of the sedative or analgesic drugs used in ambulatory anesthesia. On the other hand, using a driving simulator to test vigilance and reaction time, Horiuchi *et al.* [14•] demonstrated that the driving ability was remarkably impaired at 2 h after midazolam bolus compared with propofol administration in healthy individuals. They were also able to show that the plasma propofol concentration 60 min after injection of 40–80 mg of propofol for a 5–8-min procedure was less than 100 ng/ml [14•] and the driving ability returned to baseline.

Another prospective cohort study of 10 healthy volunteers was conducted by Grant *et al.* [15]. They studied the psychomotor performance in terms of choice and secondary reaction time during recovery after a target-controlled infusion of propofol. Their study concluded that reaction time was impaired as the plasma concentration of propofol was increased. Psychomotor performance may not be the most sensitive indicator of drug effect after sedation [9]. Lichtor *et al.* [9] studied 12 healthy volunteers receiving four common drug combinations: propofol 2.5 mg/kg; propofol 2 mg/kg and fentanyl 2 μg/kg; propofol 2 mg/kg and midazolam 2 mg/70 kg; and midazolam 0.07 mg/kg and fentanyl 2 μg/kg. Sleep latency and psychomotor performance were assessed at different time intervals. Sleep latency was found to be a better instrument in terms of sensitivity for detecting drug effect after different anesthetic regimens. A combination of midazolam and fentanyl was observed to have shorter sleep latency than other drug combinations. Patients fell asleep sooner 6 h after the injection of midazolam and fentanyl. The recommendation was that patients must consider driving and operating heavy machinery unsafe activities up to 8 h after an injection of midazolam and fentanyl.

Also, there have been recent studies on the effect of general anesthetics and driving performance. A prospective, randomized within-participant design of three

Table 1 Cognitive and psychomotor impairment similar to alcohol after different combinations of sedatives/anesthetics

Different sedative/anesthetic combinations	Duration of effects similar to blood alcohol concentration level exceeding the safe limits for driving in United States: 0.08–0.1%
Fentanyl 50 μg and propofol 35 mg	5–30 min
Fentanyl 50 μg and midazolam 2 mg	5–60 min
Fentanyl 50 μg, midazolam 2 mg and propofol 35 mg	5–75 min
Fentanyl 1 $\mu g\,kg^{-1}$, propofol 2.5 $mg\,kg^{-1}$, nitrous oxide and desflurane 1 MAC	2 h

MAC, minimum alveolar concentration of anesthetic agent. Reproduced from [10,16].

treatments was as follows: no drug; general anesthetics; and alcohol administered to 12 volunteers. A driving simulator test was performed at 2, 4 and 24 h postanesthesia. No significant effects were found on the performance in a driving simulator compared with the control sessions with a balanced general anesthetic with propofol, fentanyl, desflurane and nitrous oxide at any time interval postoperatively [16]. However, healthy volunteers rather than patients were studied and these volunteers had neither surgery nor postoperative pain medications. Table 1 shows the duration of effect similar to a significant alcohol level after a combination of drugs such as fentanyl and midazolam (Table 1).

In addition, a prospective, comparative study on 20 patients undergoing knee arthroscopic surgery matched to 20 healthy controls was performed [17]. The driving simulation performance, electrocephalographically verified parameters of sleepiness and subjective assessment of sleepiness were measured preoperatively and 2 and 24 h postoperatively. Patients showed attention lapses, lower alertness levels and poor lane accuracy at the preoperative testing versus control. The parameters were worse at 2 h postoperatively, but they returned to normal levels by 24 h.

Horiuchi *et al.* [18] recently evaluated the safety and effectiveness of nurse-administrated low-dose propofol sedation on 10 662 patients for diagnostic esophagogastroduodenoscopy. They concluded that it is a safe practice, but they also suggested that patients may be able to drive themselves home or to their offices after the procedure [18]. This should be interpreted with caution as the study included only American Society of Anesthesiologists (ASA) I and II patients undergoing a 5-min diagnostic esophagogastroduodenoscopy. Also these patients did not require any pain medication or antiemetics in the postoperative period, which could further affect the cognitive or psychomotor level. In addition, the questionnaire regarding driving was provided to only 400 patients (4%). This may have introduced selection bias.

Therefore, general anesthetic has significant impairment on cognitive, memory and psychomotor function, which in turn affects the ability to carry out normal daily activities like driving. After discharge, the functionality of the patient was assessed by using the recently published user-friendly, 14-item Functional Recovery Index in a cohort of 688 patients [19••].

Effect of regional anesthetics

Regional anesthesia may render a patient's limb immobile for many hours. Patients undergoing surgery having had regional anesthesia with sedation would be exposed to the pharmacodynamic effects as stated above. Using a Balance Master (NeuroCom International Inc., Clackamas, Oregon, USA), a computerized force platform, patients receiving 5 mg of heavy bupivacaine (7.5%) with 10 μg intrathecal fentanyl were shown to have impairment of functional balance at 150–180 min afterwards [20].

Effect from surgery

Surgery itself may impair the ability of the patient to drive. In a study of patients undergoing total knee arthroplasty, the brake response time returned to normal at 3 weeks after surgery [21]. The degree of functional recovery in patients after surgery may be related to the specific type of surgery. The self-rated quality of recovery score was significantly different between minor and major surgery, not to mention sex and age also had an impact on the degree of perceived functional recovery [22]. The Functional Recovery Index developed by Wong *et al.* [19••] can be used as a tool to evaluate the recovery of patients after their hospital discharge. Furthermore, there is evidence that unrelieved pain may decrease psychomotor cognitive performance [23]. This further aggravates the effect of anesthesia on functional capabilities. Postoperative pain is an important factor which may hinder recovery from surgery. A recent systematic review found four significant predictors of postoperative pain: preoperative pain, anxiety, age and type of surgery [24••]. This may help us recognize those at risk and to implement intervention at an earlier stage.

Criteria for discharge

Patients will be considered fit to be discharged home once the discharge score or criteria are met [8]. Ambulatory surgical patients may not have completely regained the physiological state at discharge. Therefore, discharge home does not necessarily equate to complete recovery of the physiological state and by no means the preoperative functional state.

Compliance

Patients frequently disregard hospital instructions [1]. In the survey of 240 patients by Cheng *et al.* [4], 25% of the patients were unable to comply with the postoperative instructions in full. Patients often forget verbal instructions or ignore them altogether [25,26]. Another study suggested failure to adhere to written instructions could be related to low health literacy and age [27].

The potential for unnecessary harm from noncompliance with postoperative instruction will always be present [4]. Therefore, it is important that patients understand the implications and the potentially life-threatening consequences of noncompliance.

Role of escort

There are few guidelines for the role of escort. Most units would insist on a responsible adult who is physically fit to come to the aid of the patient. A responsible adult can be defined as a person who has the physical and mental ability to assist the patient, recognize when help is needed and to summon help should the patient be unable to do so. The minimum age of this attendant could range from 16 to 18 years [28]. However, there are no guidelines on how frequently the patient should be checked and how much supervision is required. This is further compounded overnight when a carer in a different room has less chance of detecting problems than one sharing the same bedroom [4].

Furthermore, the escort can relay postoperative information which the patient may have difficulty retaining after hypnotic agents, sedation or opioid. He/she can help the patient administer analgesic or antiemetics at home. The carer can also assist in the normal daily activities such as cooking and making decisions.

Recommendations and legal aspects

In a 10-year case review of litigations in ambulatory surgery by the Canadian Medical Protective Association, three malpractice cases of car accidents after ambulatory surgery in patients without an escort were identified. One was a case of intranasal midazolam for sedation [29••]. Another case was a patient with minimal sedation of midazolam 2 mg, fentanyl 50 μg and propofol 50 mg intravenously (i.v.) being discharged without an escort [29••]. He subsequently drove himself home and had an accident, which left him quadriplegic. Also, sedation as little as 1 mg lorazepam as a premedication could also deem a clinician to be negligent for allowing the patient to drive home [29••].

There have also been adverse events in children after discharge postoperatively. In many cases, children may need deeper sedation with higher dosage. The American Academy of Pediatrics (AAP)/American Academy of Pediatric Dentistry (AAPD) have recommended discharge criteria to minimize the likelihood of adverse events following sedation. The guideline suggests that a child transported in a car safety seat should be accompanied by at least two adults upon discharge such that transportation to and from a treatment facility is provided by one of the adults, while the other one can take care of the child [30].

There should be wider recognition among anesthesiologists, surgeons and nursing staff regarding the importance of the presence of an escort after sedation or premedication, as well as general anesthetics. Patients should be made aware of the importance of having an escort on discharge home and overnight, together with written information regarding the functional activities which should be avoided after anesthetics or sedation. This includes driving, operating machinery, riding bicycles or taking a responsible role such as taking care of children. Patient education should ideally take place at the time when the decision for surgery is made or in the preoperative clinic. Written as well as verbal instructions should be provided and an interpreter should it be necessary. The name and contact details of the escort should be ascertained preoperatively.

The Ambulatory Anesthesia guidelines from the ASA state: 'A licensed physician should be in attendance in the facility or in the case of overnight care, immediately available by telephone at all times during patient treatment and recovery and until the patients are medically discharged' [31]. It would be the responsibility of the anesthesiologist and surgeon regarding the 'fitness' for patients to be discharged home as suggested by the Australian College of Anesthetists [32]. The recommendations from various anesthesia societies are summarized in Table 2 [31–36].

If no known escort is available before surgery, the elective procedure should be cancelled, rescheduled or the patient should be admitted overnight in the 23 h care unit. Patients' compliance with finding an escort for discharge may increase if the cancellation of the surgery is impressed upon them. If an escort is not available after anesthesia has been administered, elective hospital admission should be arranged. If, however, an escort is available at the patient's home but is unable to travel to the hospital to accompany the patient home, a form of hospital transport should be arranged. The driver or someone should be able to call for help when necessary during the journey home and the patient should be accompanied all the way into his/her accommodation. Whereas some units allow patients to return home under the care of a taxi driver as long as they have an adult carer

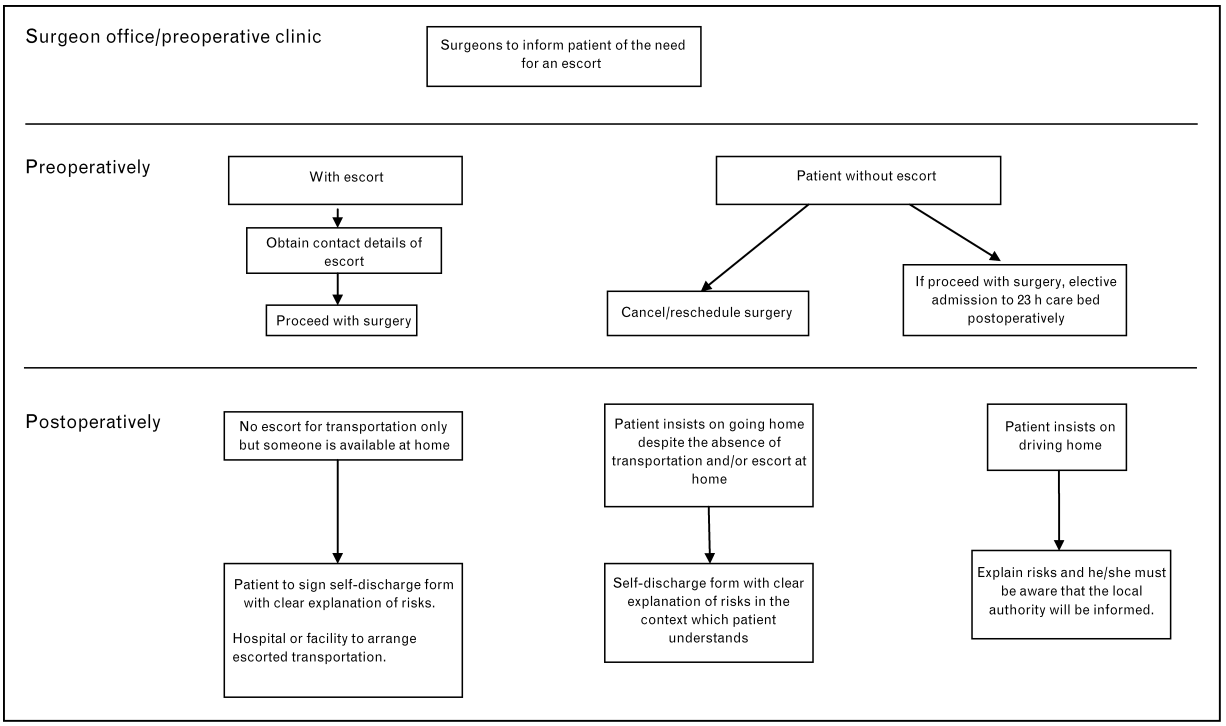
Table 2 Recommendations of current guidelines

Anesthesia associations	Summary of recommendations	Comments
American Society of Anesthesiologists (2003) [31]	It recommends, in part, that patients who receive other than unsupplemented local anesthesia must be discharged with a responsible adult.	It does not mention about driving.
Canadian Anesthesiologists' Society (2008) [33]	It advises patients about the additive effects of alcohol and other sedative drugs, about the danger of driving or the operation of other hazardous machinery in the postoperative period and of the necessity for attention by a competent adult.	It mentions about driving and the use of hazardous machinery. It also states the postoperative period most commonly being 24 h postoperatively.
Royal College of Anaesthetists (2009) [34]	It recognizes information should be given verbally and in written form upon discharge. It also recommends that a responsible adult needs to remain available for 24 h after surgery.	It has not differentiated between patients undergoing general anesthesia and those who had local anesthesia only.
Association of Anaesthetists in Great Britain and Ireland (2005) [35]	It advises patients to avoid driving for 24 h, especially after receiving sedation, until pain or immobility from operation allows them to safely control the car.	It is not specific regarding the need for an escort to accompany patients home.
Royal College of Surgeons of Australia and New Zealand (modified in 2009) [32]	It states that the discharge arrangements are the responsibility of the anesthetist and the surgeon. It advises specifically that patients should not drive until physical and mental recovery is compatible with safe driving.	It states that safe driving could be 24 h or more.
British Association of Day Surgery [36]	It advises patients to have a responsible adult to take them home and a carer at home for the next 24 h.	

waiting to meet them at the end of the journey [4], others may consider leaving a patient in the 'care' of a stranger unsafe, especially as the short-term memory may be affected by anesthetic drugs [13]. If a taxi ride is arranged for the patient to go home, the taxi driver does not necessarily have the obligation to be the responsible adult accompanying the patient en route. There is also an issue of getting from the transport vehicle into the accommodation safely.

It is the obligation of the caregiver to prevent the patient driving home. If the patient insists on driving home within 24 h postoperatively, the police or local authorities should be informed as the patient is endangering himself/

Figure 1 Recommendation for safe patient discharge after ambulatory surgery



Flow chart showing the recommendations for safe patient discharge after ambulatory surgery.

herself as well as the general public [28]. There is a lack of current guidelines and, if they exist, they tend to be nonspecific. In the United Kingdom, the Drivers and Vehicle Licensing Agency (DVLA) [37] suggests that there is no need to advise the DVLA unless the medical condition is likely to affect safe driving for longer than 3 months. The DVLA advises that the decision about the capability to drive should be based upon recovery from anesthetics (sedation and cognitive impairment), the distracting effect of pain, impairment due to analgesia as well as any physical restrictions due to the surgery, but does not offer any specific advice.

If the patient insists on leaving the hospital premises, he/she should sign a self-discharge against medical advice form. This way, written information is given to the patient explaining why discharge is potentially hazardous and what consequences may arise from leaving without an escort. However, another dilemma is introduced: is the patient competent to make an informed decision to sign the self-discharge form? Signing a waiver of discharge against medical advice is by no means the perfect solution, though it is the best available method to deter patients from harming themselves and others. A summary of the recommendation for safe patient discharge is shown in Fig. 1.

Conclusion

Patient discharge without an escort after ambulatory surgery under general anesthesia, sedation or premedication can potentially be dangerous and is not recommended. The role of an escort should be more than merely providing the patient with 'the ride home'. Hospital administrators should implement policies to prevent patient discharge without an escort. Surgeons, anesthesiologists and nurses involved in patient care and discharge after ambulatory surgery should be aware of these policies and guidelines. Patients certainly should not be allowed to drive home after administration of any kind of hypnotic, sedative or opioid. This should be a fundamental issue of patient safety and good standard of care in relation to ambulatory anesthesia [8,29••].

References and recommended reading

Papers of particular interest, published within the annual period of review, have been highlighted as:

- • of special interest
- •• of outstanding interest

Additional references related to this topic can also be found in the Current World Literature section in this issue (p. 822).

1 Ogg TW. An assessment of postoperative outpatient cases. Br Med J 1972; 4:573–576.

2 Imasogie N, Wong DT, Luk K, Chung F. Elimination of routine testing in patients undergoing cataract surgery allows substantial savings in laboratory costs. A brief report. Can J Anaesth 2003; 50:246–248.

3 Correa R, Menezes RB, Wong J, *et al.* Compliance with postoperative instructions: a telephone survey of 750 day surgery patients. Anaesthesia 2001; 56:481–484.

4 Cheng CJ, Smith I, Watson BJ. A multi centre telephone survey of compliance with postoperative instructions. Anaesthesia 2002; 57:805–811.

5 Friedman Z, Chung F, Wong DT. Ambulatory surgery adult patient selection criteria – a survey of Canadian anesthesiologists. Can J Anaesth 2004; 51:437–443.

6 Chung F, Imasogie N, Ho J, *et al.* Frequency and implications of ambulatory surgery without a patient escort. Can J Anaesth 2005; 52:1022–1026.

7 Pavlin DJ, Rapp SE, Polissar NL, *et al.* Factors affecting discharge time in adult outpatients. Anesth Analg 1998; 87:816–826.

8 Awad IT, Chung F. Factors affecting recovery and discharge following ambulatory surgery. Can J Anesth 2006; 53:858–872.

9 Lichtor JL, Alessi R, Lane BS. Sleep tendency as a measure of recovery after drugs used for ambulatory surgery. Anesthesiology 2002; 96:878–883.

10 Thapar P, Zacny JP, Choi M, Apfelbaum JL. Objective and subjective impairment from often-used sedative/analgesic combinations in ambulatory surgery, using alcohol as a benchmark. Anesth Analg 1995; 80:1092–1098.

11 Ward B, Imarengiaye C, Peirovy J, Chung F. Cognitive function is minimally impaired after ambulatory surgery. Can J Anaesth 2005; 52:1017–1021.

12 Broadbent DE, Cooper PF, FitzGerald P, Parkes KR. The Cognitive Failures Questionnaire (CFQ) and its correlates. Br J Clin Psychol 1982; 21 (Pt 1): 1–16.

13 Veselis RA, Reinsel RA, Feshchenko VA, Dnistrian AM. A neuroanatomical construct for the amnesic effects of propofol. Anesthesiology 2002; 97:329–337.

14 • Horiuchi A, Nakayama Y, Katsuyama Y, *et al.* Safety and driving ability following low-dose propofol sedation. Digestion 2008; 78:190–194.
This study prospectively assessed the safety of low-dose propofol sedation and compared driving ability following propofol and midazolam sedation for esophagogastroduodenoscopy. The authors found that driving ability recovered to the basal level within 60 min of propofol administration after a bolus of 40–80 mg of propofol over 5–8 min. The psychomotor impairment was much more prolonged with midazolam.

15 Grant SA, Murdoch J, Millar K, Kenny GN. Blood propofol concentration and psychomotor effects on driving skills. Br J Anaesth 2000; 85:396–400.

16 Sinclair DR, Chung F, Smiley A. General anesthesia does not impair simulator driving skills in volunteers in the immediate recovery period – a pilot study. Can J Anaesth 2003; 50:238–245.

17 Chung F, Kayumov L, Sinclair DR, *et al.* What is the driving performance of ambulatory surgical patients after general anesthesia? Anesthesiology 2005; 103:951–956.

18 Horiuchi A, Nakayama Y, Hidaka N, *et al.* Low-dose propofol sedation for diagnostic esophagogastroduodenoscopy: results in 10 662 adults. Am J Gastroenterol 2009; 104:1650–1655.

19 •• Wong J, Tong D, De Silva Y, *et al.* Development of the functional recovery index for ambulatory surgery and anesthesia. Anesthesiology 2009; 110: 596–602.
This article described a new Functional Recovery Index to assess the functional recovery of ambulatory surgical patients. It was developed using a cohort of 688 patients and it has been validated and is reliable and user-friendly.

20 Imarengiaye CO, Song D, Prabhu AJ, Chung F. Spinal anesthesia: functional balance is impaired after clinical recovery. Anesthesiology 2003; 98:511–515.

21 Pierson JL, Earles DR, Wood K. Brake response time after total knee arthroplasty: when is it safe for patients to drive? J Arthroplasty 2003; 18:840–843.

22 Myles PS, Hunt JO, Nightingale CE, *et al.* Development and psychometric testing of a quality of recovery score after general anesthesia and surgery in adults. Anesth Analg 1999; 88:83–90.

23 Sjogren P, Olsen AK, Thomsen AB, Dalberg J. Neuropsychological performance in cancer patients: the role of oral opioids, pain and performance status. Pain 2000; 86:237–245.

24 •• Ip HYV, Abrashami A, Peng P, *et al.* Predictor for postoperative pain: a qualitative systematic review. Anesth Analg 2009; 108:S249.
This is a systematic review on the predictive factors for postoperative pain intensity and analgesic consumption. The four significant predictors for postoperative pain are preoperative pain, anxiety, age and type of surgery.

25 Chung F, Lane R, Spraggs C, *et al.* Ondansetron is more effective than metoclopramide for the treatment of opioid-induced emesis in postsurgical adult patients. Ondansetron OIE Post-Surgical Study Group. Eur J Anaesthesiol 1999; 16:669–677.

26 Laffey JG, Carroll M, Donnelly N, Boylan JF. Instructions for ambulatory surgery – patient comprehension and compliance. Ir J Med Sci 1998; 167:160–163.

27 Chew LD, Bradley KA, Flum DR, *et al.* The impact of low health literacy on surgical practice. Am J Surg 2004; 188:250–253.

28 Springman SR. Ambulatory anesthesia: the requisites in anesthesiology. Philadelphia, Pennsylvania: Elsevier Health Sciences; 2006.

29 Chung F, Assmann N. Car accidents after ambulatory surgery in patients •• without an escort. Anesth Analg 2008; 106:817–820.
This article discussed the malpractice cases in which patients were discharged without an escort after ambulatory surgery and had a car accident.

30 Cote CJ, Wilson S. Guidelines for monitoring and management of pediatric patients during and after sedation for diagnostic and therapeutic procedures: an update. Pediatrics 2006; 118:2587–2602.

31 American Society of Anesthesiologists Task Force on Postanesthetic Care. Practice guidelines for postanesthetic care: a report by the American Society of Anesthesiologists Task Force on Postanesthetic Care. Anesthesiology 2002; 96:742–752.

32 Australian Day Surgery Council. Day Surgery in Australia – Report and Recommendations. Royal Australasian College of Surgeons. College of Surgeons of Australia and New Zealand; 2009.

33 Guidelines to the practice of anesthesia – 2008. The postanesthetic period. Canadian Anesthesiologists' Society; 2008.

34 Guidance on the Provision of Anaesthetic Services For Day Surgery. Guidelines for the provision of anaesthetic services. London: The Royal College of Anaesthetists; 2004. http://www.rcoa.ac.uk/docs/GPAS-day Surg.pdf.

35 Postoperative recovery and discharge. Day surgery. London: Association of Anaesthetists for Great Britain and Ireland; 2005. p. 17. http://www.aagbi.org/publications/guidelines/docs/daysurgery05.pdf.

36 Cahill H, Jackson I, McWhinnie D. Guidelines about the discharge process and the assessment of fitness for discharge. London: British Association of Day Surgery Handbook series; 2009. p. 5. http://www.daysurgeryuk.net/bads/joomla/files/Handbooks/badsdischargecriteria.pdf.

37 Information For Medical Practitioners. At a glance guide to the current medical standards of fitness to drive. Swansea: Driver Medical Group, Drivers and Vehicle Licensing Agency; 2008. p. 5. http://www2.mansfield.gov.uk/aksmansfield/images/att5007.pdf.