Anesthesiology
V 75, No 3A, Sep 1991

A1105

TITLE: PADS - A DISCRIMINATIVE DISCHARGE INDEX FOR AMBULATORY SURGERY

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Introduction: In medicine, transforming clinical data into useful clinical scale is one of the most challenging problems in clinical research. The assessment of home readiness is an important element in ambulatory surgery. It is important to replace subjective clinical impressions as basis for discharging patients with objective observations which are summarized in a single index. Several discharge criteria exists but none have been evaluated for their validity and reliability. An instrument, the Post Anaesthesia Discharge Scoring System (PADS) has been designed and validated against the existing clinical discharge criteria (CDC) used in the ambulatory surgery unit (Figure 1). The time taken to obtain a PADS ≥ 9 and the time to fulfill all CDC were respectively recorded. Patients were routinely discharged according to usual hospital practice by personnel blinded to the study.

Figure 1.

Post Anaesthetic Discharge Scoring System (PADS)

1. Vital signs
- 2 = Within 20% of preoperative value
- 1 = 20-40% of preoperative value
- 0 = >40% preoperative value

2. Activity and mental status
- 2 = Oriented x 3 AND has a steady gait
- 1 = Oriented x 3 OR has a steady gait
- 0 = Neither

3. Pain, nausea and/or vomiting
- 2 = Minimal
- 1 = Moderate, having required treatment
- 0 = Severe, requiring treatment

4. Surgical bleeding
- 2 = Minimal
- 1 = Moderate
- 0 = Severe

5. Intake and output
- 2 = Has had PO fluids AND voided
- 1 = Has had PO fluids OR voided
- 0 = Neither

Total PADS score is 10; Score ≥9 considered fit for discharge

Clinical Discharge Criteria (CDC):
1. Stable vital signs
2. Patients is alert and oriented
3. Patient is free of nausea and vomiting
4. Steady of gait
5. Patient is not bleeding.

Results: Following Institutional Review Board approval and informed consent, 247 patients were entered into the study. Sixty one percent of patients underwent D & C and 39% of the patients had arthroscopies (24%), laparoscopy (8%), and other minor orthopaedic and general surgery (7%).

As a discriminative index, the instrument should cover critical dimensions which would reflect the detection of clinically important changes during post-op recovery and discriminate between patients who can be discharged or not. The results show that patients had stayed significantly longer in the unit than the time needed to achieve a safe PADS score of ≥ 9 or a satisfactory CDC ($p<0.0001$). Using the PADS, the D&C patients can be discharged 66.1 $\pm$ 46.4 min earlier and for patients undergoing arthroscopies, laparoscopy and minor orthopaedic and general surgery (Arth/Lap/Others) 89.6 $\pm$ 65.3 min earlier. If the CDC were strictly followed, D&C patients could be discharged 58.1 $\pm$ 44.6 min earlier while the Arth/Lap/Others patients 85.5 $\pm$ 63.1 min earlier.

When one combines measurements on distinct items into a single summary score as in the PADS, statistical evidence that the items form a scale or that the scale is internally consistent, must be demonstrated. The internal consistency reliability of the PADS (alpha = .65) was superior to that of CDC (alpha = .14). A close correlation was measured from the end of surgery to time patients can be discharged using either PADS or CDC (Pearson's Correlation Coefficient r = 0.94, p = 0.0001). There was no readmission or significant postoperative complications reported.

Discussion: PADS has been validated as a useful index in assessing home-readiness of ambulatory surgery patients. We intend to validate the PADS as a predictive index by discharging patients using the PADS and CDC separately and comparing hospital readmission rate and emergency consult of these 2 groups of patients.

A1106

Title: OUTPATIENT ANESTHESIA: A COMPARISON OF THE EFFECTS OF ATRACURIUM VS VECURONIUM

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Both atracurium (A) and vecuronium (V) have been found to be suitable neuromuscular blocking agents for outpatient anesthesia when doses close to the ED_{90} are used (1). The weight potency ratio of A to V has been established as 5:1 (2). As the literature is still not clear as to which is the better drug for outpatient anesthesia, we undertook a multicentered, randomized, open label study to determine the onset time, intubation conditions and time to 25 % twitch recovery with 250 mcg/kg of A (ED_{95}) vs 50 mcg/kg of V (ED_{90}) using the five to one ratio.

70 ASA I or II patients, within 20 % of their ideal body weight, undergoing outpatient surgery requiring endotracheal anesthesia were enrolled in this IRB approved study with informed consent. Patients were brought to the OR unpremedicated and anesthesia was induced with alfentanil 20 mcg/kg and thiamylal 4-6 mg/kg iv. After loss of the lid reflex the ulnar nerve was stimulated with a supramaximal twitch at a rate of 0.1 Hz and the isometric twitch tension was measured from the thumb. Patients randomly received 250 mcg/kg of A or 50 mcg/kg of V. Intubation was performed at 10 % of the baseline twitch (T10) and the conditions were rated by a scale (1=excellent; 2=good, patient coughs; 3=fair, bucking or movement of extremities; 4= poor, intubation impossible). Anesthesia was maintained with N_2O in 02 2:1 and a variable rate alfentanil infusion until 25 % recovery of the twitch (T25). Results were compared with a Student's t-test or Mann-Whitney-U test with a $P < 0.05$.

One patient could not be intubated in the V group vs 4 in the A group without giving extra drug ($P < 0.05$), and the onset and recovery times were dropped from further data analysis. Patients in group V had better intubating scores than group A ($P < 0.01$, see Table I). Patients in group V had a shorter onset time to intubation - 3.56 $\pm$ .16 min vs group A - 4.93 $\pm$ .35 min, and a quicker recovery to T_{25} 20.9 $\pm$ .95 - group V vs 23.9 $\pm$ .90 min for group A ($P < 0.05$).

Since the use of ED_{95} doses of A or ED_{90} of V may result in less than excellent intubating conditions and delay in intubation, it is common practice to give multiples of the ED_{90} doses to hasten and improve intubation conditions. However higher doses are associated with a longer recovery time which would be unsuitable for most outpatient procedures. With this in mind, in the doses studied, V - (50 mcg/kg), is superior to A - (250 mcg/kg), due to a quicker onset time, shorter duration of action and improved intubation conditions.

References
1. Bailey DM, Nicholas ADG: Br J Anaesth 61:557, 1988.
2. Gramstad L, Lilleaasen P: Br J Anaesth 54:647, 1982.
3. Robertson EN, et al: Br J Anaesth 55:125, 1983.

Table I - Intubation scores:

	Group A	Group V*
excellent	17	25
good	8	8
fair	6	1
poor (impossible)	4	1

(* Patients in Group V had better intubation scores than those in Group A - $P < 0.01$. More patients in the A group had poor intubation scores $P < 0.05$)

Table 2 - Intubation and Recovery Times

	Group A	Group V
T_{10}	4.93 $\pm$ .35	3.56 $\pm$ .16 min*
T_{25}	23.9 $\pm$ .90	20.9 $\pm$ .95 min*

(* $P < 0.05$ when compared to Group A)