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## Discharge criteria – a new trend

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Ambulatory surgical practice continues to increase in response to rising costs of inpatient hospital care. Hospital space limitations and the popularity of ambulatory surgery with patients further encourage the growth of ambulatory surgical care. Technological developments in medicine, surgery, pharmacology and anaesthetic technique have made it possible to perform lengthier and more complex procedures in a greater range of patients.

The question of how long patients should remain in ambulatory surgical facilities following surgery and anaesthesia is crucial to future developments. Ideally, ambulatory anaesthesia should permit rapid recovery with minimal or no residual cognitive and psychomotor impairment. At the time of discharge, patients must be clinically stable and able to rest at home under the care of a responsible adult. Thus far, qualitative clinical discharge criteria have adequately guided the assessment of home readiness. However, as patients and their operations become more complex, so does the timing of safe discharge. I would like to review existing clinical discharge criteria and to provide a system for quantifying clinical criteria to permit a reproducible, objective determination of home readiness for the ambulatory surgical population.

### Discharge guidelines

The major accreditation bodies in the United States (Joint Commission of Accreditation of Hospitals (JCAH), Accreditation Association for Ambulatory Health Care) and the Canadian Anaesthetists' Society impose certain policies and procedures to ensure safe recovery after anaesthesia, including physical examination of the patient, a responsible escort home, and written postoperative instructions that include advice to contact a physician, should problems develop.

Scoring systems developed to guide the transfer from hospital recovery room to ward may be used to assess Phase 1 recovery in ambulatory surgical patients. The most commonly used method, described by Aldrete and Kroulik,<sup>1</sup> assigns a score of 0, 1 or 2 to activity, respiration, circulation, consciousness and skin colour, a score of 10 indicating the best possible condition for dis-

charge from the Post-anaesthesia Care Unit. However, Phase 2 recovery to home readiness cannot be determined by these criteria. That is, inpatients who satisfy Aldrete criteria are transported to a hospital room where they are monitored continuously by nursing personnel, whereas ambulatory surgical patients must be capable of returning home. Consequently, the ability to ambulate, tolerate oral intake and void become important criteria for ambulatory discharge, along with the absence of excessive pain or vomiting.

### Clinical discharge criteria

Several clinical discharge criteria have been formally described, to facilitate and guide physicians' or nurses' subjective assessment of patient status.<sup>2-8</sup> However, none has been evaluated for validity and reliability. Until recently, there has been no objective scoring system to quantify home readiness.

### Postanaesthesia discharge scoring system (PADSS)

Patient readiness for discharge needs to be addressed in a simple, clear, reproducible manner that meets national standards of medical and anaesthesia care. Nursing staff must be able to evaluate postoperative course in a systematic manner and, when necessary, meet guidelines to seek physician consultations. We have developed a simple cumulative index to measure home-readiness – the Post-Anaesthesia Discharge Scoring System (PADSS).<sup>9</sup>

PADSS is based on five major criteria: (1) vital signs, including blood pressure, heart rate, respiratory rate and temperature; (2) ambulation and mental status; (3) pain, nausea/vomiting; (4) surgical bleeding; and, (5) fluid intake/output (Table I). Qualifications for discharge include (1) a postoperative discharge score of  $\geq 9$ , and (2) the presence of a competent adult to accompany the patient home.

For a discharge scoring system to be useful, it must be practical, easy to retain, and applicable to most, if not all, postanaesthesia situations. Using only the commonly observed physical signs avoids additional, more complex monitoring responsibilities for postanaesthesia care personnel. By assigning numerical values to variables indicating patient recovery, progress or the lack of it becomes quantifiable and more easily evaluated. PADSS permits direct, uniform assessment of patient home-readiness, and provides a technique for routine or repetitive patient evaluation that should improve patient supervision. Our comparison of timing of patient discharge using PADSS and clinical discharge criteria demonstrated that PADSS results in earlier safe discharge, with most patients returning home within one to two hours.<sup>10</sup> Thus, PADSS can be used to determine the optimal length of stay in an ambulatory surgical unit, thereby reducing

TABLE I Postanaesthesia Discharge Scoring System (PADSS)

1	<i>Vital signs</i>
2	= Within 20% of preoperative value
1	= 20–40% of preoperative value
0	= 40% of preoperative value
2	<i>Ambulation and mental status</i>
2	= Oriented $\times$ 3 and has a steady gait
1	= Oriented $\times$ 3 or has a steady gait
0	= Neither
3	<i>Pain, or nausea/vomiting</i>
2	= Minimal
1	= Moderate
0	= Severe
4	<i>Surgical bleeding</i>
2	= Minimal
1	= Moderate
0	= Severe
5	<i>Intake and output</i>
2	= Has had PO fluids and voided
1	= Has had PO fluids or voided
0	= Neither

The total score is 10. With patients scoring  $\geq 9$  considered fit for discharge home.

nursing time per patient and increasing nursing staff efficiency. By following and documenting patient progress using a scoring system, we can estimate the time of home readiness of individual patients undergoing different surgical procedures and different anaesthetic techniques. Delay in discharge typically can be attributed to persistent symptoms such as pain, nausea/vomiting, hypotension, dizziness, unsteady gait, or quite simply, lack of an escort.<sup>10</sup>

#### *Is oral fluid intake necessary for discharge?*

The ability to tolerate oral fluids remains controversial as a clinical criterion for discharge. The decision to discharge a patient should be based on a number of factors such as: age, medical condition, distance from home, availability of a responsible adult, state of hydration, and anticipation of whether or not the patient is likely to suffer any complication if fluids are not taken on the day of surgery.

Schreiner *et al.* found that paediatric patients required to drink before hospital discharge had an increased incidence of vomiting and prolonged hospital stay.<sup>11</sup> Six thousand children were discharged after surgery from The Children's Hospital of Philadelphia without oral intake. Only three patients required admission for vomiting and one, re-admission from home for intractable vomiting and dehydration. These findings suggest that oral fluid intake may not be a necessary criterion for discharge. A patient

cannot be discharged home if actively vomiting, but it is undesirable to continue to administer oral fluids in the presence of vomiting.

#### *Is voiding a necessary criterion for discharge?*

The requirement to void before discharge is a second controversial clinical criterion. Failure to void, urinary retention and resultant catheterization have been associated with reflex urethral spasm, or reflex inhibition of normal bladder detrusor muscle activity by pain, distension of the anal canal, and prolonged block of bladder automatic innervation.<sup>12,13</sup>

A study conducted at The Medical College of Virginia found that 86% of patients were discharged sooner using PADSS than Clinical Discharge Criteria. In the remaining 14% of patients, Clinical Discharge Criteria were satisfied sooner because failure to void was required by PADSS but optional in the clinical criteria.<sup>14</sup> If voiding is not included among the criteria for discharge, the patient must be fully informed about his/her role, when to call a physician, or when to return to the facility.

#### *A modified post-anaesthetic discharge scoring system*

The necessity to drink and to void before discharge from an ambulatory surgical facility is not universally adopted. Therefore, we designed a modified postanaesthetic discharge scoring system that eliminates input and output (Table II), then compared it with the existing PADSS.<sup>15</sup> We found that more patients (approximately 20%) could be discharged home earlier using the modified scoring system. However, follow-up studies are required to evaluate the short- and long-term effects on recovery of eliminating these criteria.

#### *Discharge instructions and street fitness*

Home readiness does not assume street fitness. Discharge instructions should be given to the patient and the escort responsible for the care of the patient at home. From the patient's perspective, recovery signifies the return to normal function such as driving a car or returning to work. That psychomotor impairment may persist hours after discharge from an ambulatory surgical unit does not preclude safe discharge home. Sophisticated testing exists but is not yet adapted to the clinical setting.

#### **Summary**

The safe, expeditious conduct of ambulatory surgical care can succeed only by careful selection of patients and procedures, appropriate intra- and postoperative anaesthetic management, and safe, timely discharge of patients. Discharge of patients should be achieved without compromising the quality of patient care. As the patients presenting for ambulatory surgery become more complex and

TABLE II A Modified Postanaesthetic Discharge Scoring System (MPADSS)

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1	<i>Vital signs</i>
2	= Within 20% of preoperative value
1	= 20–40% of preoperative value
0	= 40% of preoperative value
2	<i>Ambulation</i>
2	= Steady gait/no dizziness
1	= With assistance
0	= None/dizziness
3	<i>Nausea/vomiting</i>
2	= Minimal
1	= Moderate
0	= Severe
4	<i>Pain</i>
2	= Minimal
1	= Moderate
0	= Severe
5	<i>Surgical bleeding</i>
2	= Minimal
1	= Moderate
0	= Severe

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The total score is 10. With patients scoring  $\geq 9$  considered fit for discharge home.

compromised, and their surgical treatment more demanding, it is important to replace, or at least supplement, our existing qualitative, subjective method for evaluating patient discharge with a quantitative, objective technique to provide a simple and consistent method of determining home readiness.

Practical discharge criteria or a postanaesthesia scoring system should be implemented in every ambulatory surgery centre to ensure safe recovery and discharge after anaesthesia. The Post-Anaesthesia Discharge Scoring System (PADSS) is simple, practical, easy to apply and to remember. In addition to permitting a uniform assessment of home readiness for patients, PADSS establishes a pattern of routine, repetitive evaluation of patients home readiness that is likely to contribute to improved patient outcome. In this way, PADSS also may have added medicolegal value.

We recommend using the postanaesthesia recovery score (Aldrete score) to evaluate initial patient recovery. Once the Aldrete criteria are met, home-readiness can be evaluated by PADSS or modified PADSS in which input and output are eliminated (Table I, Table II). When the patient satisfies PADSS or modified PADSS criteria, he or she can be discharged home. We have discharged 30,000 patients safely home from our ambulatory surgical facility.<sup>9</sup> Reduction in the length of stay in an ambulatory surgery unit by the prompt and safe discharge of patients

can help to reduce costs and improve unit efficiency. For certain surgical procedures, ambulatory treatment is cheaper, even allowing for treatment failures and re-admissions. However, we must remember that the application of any discharge criteria scoring system must include common sense, clinical judgment, and home-readiness of an outpatient does not assume street fitness.

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