

Editorial

Post anaesthesia care unit length of stay: meeting the needs of today's ambulatory surgery patient

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As modern surgery developed during the 20th century, no other aspect of healthcare in the United States has evolved and blossomed to maturity in as short a period of time as has ambulatory surgery, moving from less than 10% of surgical procedures performed in 1970 to 65% in 1995. With the experience gained has come significant liberalization of criteria for both patient and procedure selection. Post anaesthesia care unit (PACU) criteria for patient discharge have also changed, but at a much slower pace. There has been a move away from time-based recovery where the patient is required to stay for a minimum amount of time, unrelated to clinical activity level, and is being replaced by criteria-based recovery where patients who meet specific criteria are considered ready for discharge, regardless of time spent.

In their article, 'Discharge Following Ambulatory Surgery', Marshall and Chung conclude that patients can be discharged rapidly and safely if an ambulatory surgery patient specific scoring system is utilized. Early scoring systems developed by either Aldrete or Steward were non-specific for the day-surgery patient, whereas the modified Post Anaesthesia Discharge Scoring System (PADSS) developed by Chung and co-workers, in addition to vital signs, scores ambulation, nausea and vomiting, pain, and surgical bleeding.

By assigning numeric values to parameters indicating patient recovery, progress becomes more obvious than it would if vital signs were merely charted with accompanying notes, such as, 'patient reacting — appears able to go home'. In a discussion of a patient's postoperative condition, a numbered system is more easily understood, and it allows physicians and nurses to communicate with a common language. A scoring system is a way of providing uniform assessment for all patients and may have added medicolegal value when used in addition to the customary subjective means of assessing a patient's home readiness. For any scoring system to be useful, it must be a practical and simple method of evaluating the patient; it must also be easy to remember and be applicable to all post anaesthesia situations. A scoring system should not create busy work for the nursing staff

and take away from patient care.

Today, even though time-based recovery still exists in some facilities, the requirement for a PACU stay is being questioned by other facilities. Patients who have received short-acting anaesthetics, local anaesthesia with sedation, or regional blocks are being moved directly from the operating room to a secondary, less intensive recovery area if specific criteria are met. Rapid recovery of patients undergoing general anaesthesia in the day-surgery setting is now possible because of the pharmacokinetic and pharmacodynamic properties of the short-acting, fast emergence (S.A.F.E.) anaesthetic agents. The S.A.F.E. study, reported at both the 1996 American Society of Anesthesiologists Annual Meeting and the New York Post Graduate Assembly in Anesthesiology demonstrates that policies and procedures can be developed which will allow patients to safely bypass the labor-intensive first phase of post anaesthesia care. If a patient, at the conclusion of surgery and anaesthesia, meets all discharge criteria while still in the operating room, the anaesthesiologist would be permitted to bypass the phase I recovery area and transfer the patient directly to the phase II recovery unit. Preliminary data at five sites revealed that phase I recovery could be safely bypassed by 70–100% of patients receiving local anaesthesia with sedation, and anywhere from 13% to 40% of patients who received general anaesthesia. On average, the time spent in the less intensive phase II recovery unit was either the same or shorter than the duration of stay for patients who came from the phase I unit.

Recovery care is truly in a state of flux; on the one hand, as some facilities attempt to bypass the PACU, other day-surgery units are expanding their recovery care, providing 24–48 h of care for patients who have had more complicated procedures, in a continuing attempt to contain costs and to avoid use of hospital beds.

With the ever increasing number of ambulatory surgical procedures, each facility must perform its own outcome studies. Assessment of patient needs and time spent in the PACU is becoming an increasingly relevant issue, from both a clinical and cost standpoint.

Review article
Discharge following ambulatory surgery

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Abstract

With increasing numbers of patients being treated on an ambulatory basis it is important to ensure that patients are being discharged safely, and are followed up appropriately. This article reviews the current literature on the subject of discharge from ambulatory surgical units, and complications that occur following discharge. We conclude that patients can be discharged rapidly and safely if a scoring system such as the modified post-anaesthetic discharge scoring system is used. We also conclude that pain control following discharge is inadequate, and is an area that merits further investigation. © 1997 Elsevier Science B.V.

Keywords: Ambulatory surgery; Discharge criteria

1. Introduction

Throughout the developed world there is a trend towards performing more and more surgery on an ambulatory basis. At present approximately 66% [1] of all elective operations in the United States are performed on an out-patient basis, and other countries are aiming to produce similar numbers. This trend is driven by a variety of factors including economic considerations, governmental pressure and patient demands.

As the proportion of operations performed on an ambulatory basis increases, longer and more complex cases are being conducted in the out-patient setting. While this general trend is welcomed it is important to ensure that patients are being discharged into the community safely, and that they have access to appropriate follow-up and emergency referral mechanisms. The key to this is identifying suitable criteria by which to judge the 'home readiness' of the patient.

2. Definition of recovery

Recovery following anaesthesia is defined as occurring in three phases (Table 1) [2]. Early recovery is that period during which patients emerge from anaesthesia and recover their protective reflexes and motor function. This is the stage of recovery that usually occurs in the Post Anaesthesia Care Unit (PACU).

The Aldrete scoring system (Table 2) [3] is used widely as a practical tool by which PACU staff can judge when a patient has completed this early stage of recovery and is fit to be transferred to a phase 2 recovery area, usually ambulatory surgical unit (ASU).

Table 1
Stages of recovery

Stage of recovery	Clinical definition
Early recovery	Awakening and recovery of vital reflexes
Intermediate recovery	Immediate clinical recovery
Late recovery	Home readiness Full recovery Psychological recovery

Taken from [2].

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Patients will remain in the phase 2 recovery area until they are coordinated, ambulating and judged to be home ready — that is until intermediate recovery is complete.

The late recovery period extends from hospital discharge until the patient returns to their pre-operative state and can safely resume activities such as work and driving. This phase may last for many days. The decision as to when a patient is fit to be discharged home is vital to the success of any ambulatory surgery program. As well as jeopardizing patient safety, inappropriate discharge procedures can also cause medico-legal problems for the anaesthetist.

3. Criteria for discharge

It is imperative that patients who have undergone ambulatory surgery are released into the community at the appropriate time. Premature discharge of patients who later require readmission to the hospital or emergency room for treatment of postoperative complications should be viewed as a failure of care, and should happen very rarely, or not at all.

The ultimate responsibility for ordering the discharge of a patient from ASU is that of the physician looking after the patient, however 'a written policy establishing specific discharge criteria is a sound basis for a legally sufficient discharge decision' [4]. What criteria need to be met in that written policy in order to ensure safe discharge with an acceptable incidence of complications? There are a large number of psychomotor tests which have been devised that can assess the recovery of a patient, but these tests are too complex and laborious to be of use in routine clinical practice. They are of much more value as research tools. Minimum acceptable discharge criteria for use in the clinical setting have been suggested (Table 3) [1].

Although the incidence of unanticipated admission rate should ideally be less than 1%, patients who have persistent problems should not be sent home, but should be admitted to an in-patient bed. In practice the most common reasons for admission postoperatively are related to surgical complications rather than anaesthesia [5].

The need to tolerate oral fluids prior to discharge has recently been questioned. It is obviously unacceptable to send a patient out of the hospital if he or she is actively vomiting. However if a patient is comfortable, not nauseated and not dehydrated, but does not feel able to tolerate oral fluids, should they be detained in hospital until they drink?

One study has shown that requiring children to drink before allowing them to be discharged home led to prolonged stay in the ASU and to a higher incidence of nausea and vomiting during the stay [6]. Discharging patients home without insisting that they drink did not

Table 2
Aldrete scoring system

Activity: able to move voluntarily or on command	
4 extremities	2
2 extremities	1
0 extremities	0
Respiration	
Able to deep breathe and cough freely	2
Dyspnoea, shallow or limited breathing	1
Apnoeic	0
Circulation	
BP \pm 20 mm of pre-anaesthetic level	2
BP \pm 20–50 mm of pre-anaesthesia level	1
BP \pm 50 mm of pre-anaesthesia level	0
Consciousness	
Fully awake	2
Arousable on calling	1
Not responding	0
Colour	
Normal	2
Pale, dusky, blotchy	1
Cyanotic	0

Maximum score = 10.

Patients scoring 9 or more are fit to be discharged.

lead to an increased incidence of postoperative complications.

With the exception of patients who have undergone central neural blockade, it also appears unnecessary to require that patients have urinated before they can be discharged. However, if patients have not urinated prior to discharge, they need to be given instructions on when to contact their family physician, or return to the day surgery unit if they run into difficulty.

These considerations led Chung et al. to develop the modified Post Anaesthesia Discharge Scoring System (PADSS) (Table 4) [7]. As its name implies, this scoring

Table 3
Guidelines for safe discharge after ambulatory surgery

- (1) Vital signs must have been stable for at least 1 h
- (2) The patient must be:
 - oriented to person, place and time
 - able to retain orally administered fluids
 - able to void
 - able to dress
 - able to walk without assistance
- (3) The patient must not have:
 - more than minimal nausea and vomiting
 - excessive pain
 - bleeding
- (4) The patient must be discharged by both the person who administered anaesthesia and the person who performed surgery, or by their designates. Written instructions for the post-operative period at home, including a contact place and person, need to be reinforced.
- (5) The patient must have a responsible 'vested' adult escort them home and stay with them at home.

Taken from [1].

Table 4
Modified post-anaesthesia discharge scoring system (modified PADSS)

Vital signs
2 = within 20% of preoperative value
1 = 20–40% of preoperative value
0 = 40% of preoperative value
Ambulation
2 = steady gait/no dizziness
1 = with assistance
0 = none/dizziness
Nausea and vomiting
2 = minimal
1 = moderate
0 = severe
Pain
2 = minimal
1 = moderate
0 = severe
Surgical bleeding
2 = minimal
1 = moderate
0 = severe

Taken from [7].

system superseded an earlier model which included an input/output criterion and had required as a minimum that the patient had either drunk or voided prior to discharge [8]. Subsequent investigation however confirmed that removing these criteria meant that more patients could be discharged earlier, without compromising the safety of that discharge.

The modified PADSS is based on five criteria: vital signs, ambulation, nausea and vomiting, pain and surgical bleeding. Each of these areas is assessed independently and is assigned a numerical score of 0–2 and thus the overall score has a maximum value of 10. Patients are judged to be fit for discharge when their score is 9 or greater.

The modified PADSS is a very simple index to calculate. It relies on straightforward clinical observations which can easily be performed by PACU staff. It puts a numerical value on the degree of a patient's recovery, and allows progress (or lack of progress) to be assessed objectively. It has been demonstrated that the implementation of this scoring system as a criterion for discharge from ASU allows for patients to be discharged earlier, with 80% able to be discharged within 1–2 h (Fig. 1). The main reasons for delays in discharge of patients were related to non-medical problems, such as responsible escorts being late in turning up to collect patients [9].

4. Influence of anaesthetic techniques

The anaesthetic technique chosen can have a marked effect on the quality of the patients recovery from their

ambulatory surgical procedure. It is not only the choice of drugs which is important in this respect, but the overall conduct of the anaesthetic and attention to detail. One simple measure which can effectively reduce the incidence of nausea, thirst, dizziness and drowsiness for up to 24 h postoperatively is to give patients 20 ml/kg of fluid intraoperatively [10].

4.1. Regional anaesthesia

Regional anaesthesia has been used extensively for ambulatory surgical procedures. A whole variety of blocks have been used, and many authors have reported good results. Some studies have demonstrated reduced recovery times with regional techniques when compared to general anaesthesia [11]. Regional anaesthesia provides a number of advantages over general anaesthesia for the ambulatory care setting. These include a lower incidence of postoperative nausea and vomiting, dizziness, disorientation and somnolence, as well as better postoperative analgesia. Regional anaesthesia can also be used as a supplement to general anaesthesia, in which case it will lead to a reduction in postoperative analgesic demands and to faster discharge times [12].

Patients who have received a regional anaesthetic need to meet the same discharge criteria as patients who have undergone general anaesthesia. Their discharge however does not need to be delayed until the full return of sensation, but they do nonetheless need to have an anaesthetic limb properly protected and be given adequate written instructions about care of any insensitive areas.

Spinal anaesthesia offers all the advantages of other regional techniques but it does have its own unique problems in the ambulatory setting. The major drawbacks of spinal anaesthesia for ambulatory patients are the occurrence of post-dural puncture headache (PDPH) and the incidence of urinary retention. Recent studies have demonstrated that the newer pencil point needles produce an acceptable incidence of PDPH which is mild and seldom requires any treatment other than simple analgesics [13]. Another study showed that a combined spinal epidural technique (CSE) with a starting spinal dose of 40 mg of Lidocaine allowed patients to be successfully discharged within 3 h of surgery [14].

Patients who have received a spinal or epidural anaesthetic need to demonstrate full return of sensory, motor, and sympathetic function before they can be safely discharged into the community and all patients who have had a regional block need to be contacted the following day to ensure full return of neurological function.

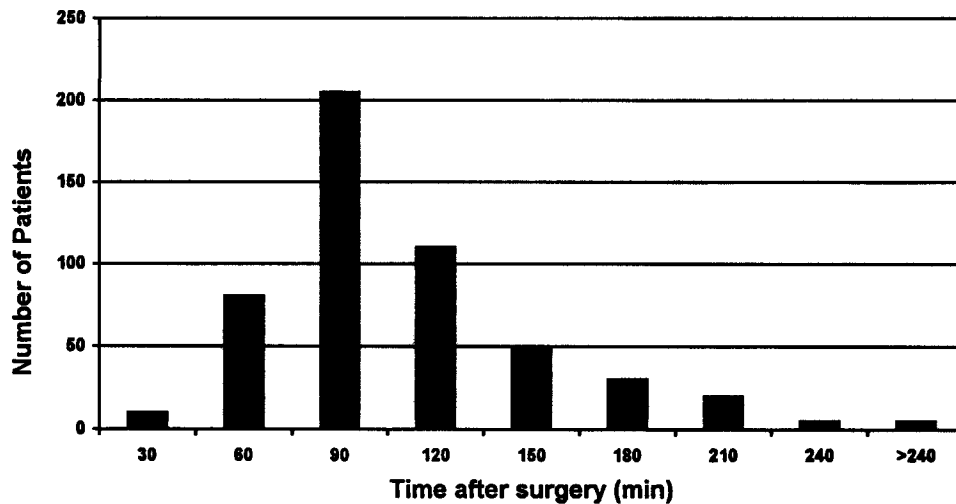


Fig. 1. Number of patients who satisfied Post-Anesthetic Discharge Scoring System home-readiness criteria at each 30 min interval after surgery. Taken from [9].

4.2. General anaesthetic agents

4.2.1. Intravenous agents

Propofol at the present time is the most popular intravenous induction agent for out-patient anaesthetic procedures, because of its rapid recovery characteristics and lower incidence of nausea and vomiting than other intravenous agents [15]. Indeed a continuous intravenous infusion of propofol supplemented with N₂O may be the ideal out-patient general anaesthetic, as it provides recovery characteristics which are indistinguishable from those of the newer inhalational agents but with less postoperative nausea and vomiting (PONV).

4.2.2. Inhalational agents

The familiarity of most anaesthetists with inhalational anaesthesia, its proven track record and its ease of use mean that it is still the most popular form of general anaesthesia for ambulatory patients. The availability of newer less soluble volatile agents mean that recovery characteristics should be better. Studies comparing sevoflurane with isoflurane reveal that although patients recover consciousness more quickly following anaesthesia with sevoflurane, there is no difference to the time of home readiness or in the recovery of cognitive and psychomotor function [16]. Comparing sevoflurane with halothane in paediatric practice confirms these findings. Children anaesthetized with sevoflurane complete the early phase of recovery more rapidly, however their time to discharge is not significantly different [17].

Nitrous oxide, because of its physical characteristics, allows for rapid recovery from inhalational anaesthesia, and when it is used to supplement a propofol infusion it reduces the amount of propofol required and reduces

recovery times [18]. Despite earlier concerns it does not seem to increase the rate of PONV [18], it therefore retains an important place in out-patient anaesthetic techniques.

4.2.3. Opiates

Although widely used as analgesics, opiates are associated with a high incidence of PONV. Morphine is a worse offender in this regard than fentanyl, but avoiding fentanyl in the anaesthetic technique will reduce the incidence of PONV even further [19]. The use of local blocks and non-steroidal inflammatory drugs (NSAIDs) may allow the use of opiates to be minimized, or even avoided altogether for many procedures. If opiates are to be used, then the newer agent remifentanyl may offer some advantages. It is rapidly metabolized by non-specific esterases and allows a more rapid recovery than with other opiates [20].

4.2.4. Muscle relaxants

Suxamethonium is known to cause postoperative myalgias and this is a particular problem in an ambulatory patient population, its use is therefore best avoided in this situation. The newer non-depolarizing relaxants seem to have little effect on recovery in their own right, however the use of neostigmine as a reversal agent is associated with an increased incidence of PONV. The rapid recovery characteristics of mivacurium obviates the need for reversal, and allows neostigmine to be eliminated from the anaesthetic technique [21].

4.2.5. Non-steroidal anti-inflammatory drugs (NSAID)

The NSAIDs as a group are relatively potent analgesics which can replace, or reduce the need for opiates in the treatment of postoperative pain. When used in the out-patient setting NSAIDs can reduce patient dis-

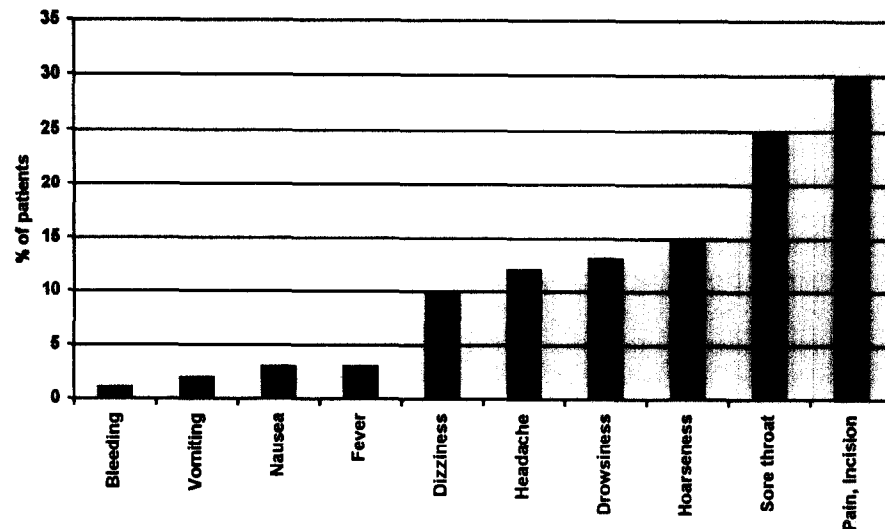


Fig. 2. Overall percentage of patients with postoperative symptoms 24 h after surgery. Taken from [9].

comfort, reduce the incidence of PONV and shorten recovery times when comparisons are made with patients who have received fentanyl [22]. When used as part of a balanced technique in combination with small doses of opiates and local anaesthetics, the NSAIDs reduce the analgesic requirements and shorten discharge times [23].

5. Post-discharge

Discharge from hospital is not the end of the process of recovery as far as the patient is concerned, they still have to go through the late stage, and it may be days or even weeks before they return to their preoperative physiological status. In this late recovery period the patient may also run into complications of anaesthesia and surgery which require further contact with the hospital or with their own family practitioner.

Pain is a major problem following ambulatory surgery, with 26.9% of patients experiencing wound pain 24 h postoperatively [24]. The incidence of wound pain is related to the surgical procedure, with the highest incidences being recorded in patients following laparoscopic, orthopaedic or general surgical procedures. Not surprisingly patients who are in pain at 24 h postoperatively have less functional recovery, and take longer to resume their normal activities. Other significant problems found at 24 h are drowsiness, dizziness and nausea and vomiting, although the numbers reported in studies over time are declining, suggesting that the use of newer agents may be leading to a lower incidence of these symptoms (Fig. 2).

These studies highlight the need for adequate patient education about problems in the postoperative period, and specific instructions about who to contact in the event of any difficulty. It is well known that patients do

not remember oral instructions well, and therefore post-discharge written instructions should be given to the patient and their escort. There has been some interest in the place of standardized instructional videotapes as teaching aids for surgical patients. However, a recent study failed to demonstrate a significant difference in knowledge or expectations in a group of patients who were shown a video preoperatively as compared to those given a routine pre-op visit [25]. For the present, the recommendation must remain that patients are given written instructions that should include the telephone number of an emergency contact at the hospital or freestanding surgical facility.

The recovery process ends when the patient is able to return to their normal daily activities, including driving an automobile. When is it safe to resume driving following an out-patient general anaesthetic? It is possible to detect prolonged reaction times for up to 2 days following repair of an inguinal hernia under general anaesthesia as an out-patient procedure [1]. However this work was done with patients who had received halothane anaesthesia and so it may be that the newer agents will prove to have advantages in this area. However this is an area which remains to be adequately investigated [1].

The current recommendations are that patients who have had an anaesthetic lasting less than 60 min should not drive for 24 h, whereas patients who have had longer procedures should be advised against driving for 48 h [1].

6. Summary

The growth of ambulatory surgery and anaesthesia is such that it will become an increasingly significant part of most anaesthetists' workload as time progresses. It is

vital to ensure that the increasing number of ambulatory patients are discharged into the community at an appropriate time, with effective follow-up and referral procedures. The implementation of objective, standardized scoring systems such as the modified PADSS will allow for early discharge from ambulatory units without compromising patient safety.

Modern general anaesthetic agents allow for rapid recovery and early discharge from the ambulatory units, however recovery may be more rapid if general anaesthetics are avoided and patients are given a regional block. Following discharge, patients need to be followed up appropriately and given specific written guidelines on referral procedures in the event of complications. Pain is a problem in the post-discharge period, and consideration should be given to providing adequate analgesia. Patients should be advised against driving for 24–48 h depending on the duration of the procedure.

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The cardiovascular changes during upper gastrointestinal endoscopy

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Abstract

Tracheal intubation under general anaesthesia causes a rise in heart rate and blood pressure. This can worsen myocardial ischaemia or precipitate infarction in patients with coronary artery disease. We monitored 50 sedated and non-sedated patients undergoing upper gastrointestinal endoscopy with continuous non-invasive blood pressure monitoring. We subsequently studied 15 patients undergoing endoscopy and oesophageal dilatation under general anaesthesia. We observed a significant ($P < 0.01$) rise in rate pressure product (RPP) occurring on oesophageal intubation in both sedated and non-sedated patients. There was no significant change in RPP on oesophageal intubation in patients under a general anaesthetic. The rise in RPP in response to tracheal intubation in those patients receiving a general anaesthetic was as great as the rise in RPP occurring in response to oesophageal intubation in the sedated and non-sedated patients. Oesophageal intubation in sedated and non-sedated patients produces a rise in RPP comparable to that associated with tracheal intubation in anaesthetised patients and may confer the same risk of worsening myocardial ischaemia in patients with coronary artery disease. © 1997 Elsevier Science B.V.

Keywords: Blood Pressure; Rate pressure product; Upper gastrointestinal endoscopy; Sedation; Midazolam

1. Introduction

In the last 20 years, there have been enormous increases in the number of endoscopic procedures performed. A recent review from the Trent region suggests that since 1975 the incidence of upper gastrointestinal (GI) endoscopies has increased from <1 to 8.6 per thousand of the population [1]. The proportion of elderly and frail patients subjected to these procedures is also increasing [2].

A prospective audit of over 13 000 patients undergoing upper gastrointestinal endoscopy describes the mortality rate for diagnostic endoscopy to be at least 1 in 2000 procedures and the morbidity rate 1 in 200 [3]. Most of the morbidity and mortality was due to car-

diopulmonary complications such as myocardial infarction, stroke and pneumonia. A recent review suggests that since 1976, there has been a small increase in the mortality associated with this procedure and that the proportion of cardiopulmonary complications is increasing [2].

The changes in blood pressure and heart rate in response to tracheal intubation are well documented in the anaesthetic literature because of the association with myocardial ischaemia [4,5]. Multiple regimens designed to attenuate this response have been investigated. The haemodynamic responses to upper gastrointestinal endoscopy are not so widely appreciated and may be as great as those seen in anaesthesia and may cause a similar morbidity.

To find out the effect of sedation and anaesthesia on the haemodynamic side effects of upper GI endoscopy, we monitored 65 sedated, non-sedated and anaesthetised patients undergoing upper gastrointestinal en-

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doscopy, using continuous non-invasive blood pressure monitoring and pulse oximetry.

2. Method

Following ethics committee approval, 50 consecutive patients presenting for routine diagnostic upper GI endoscopy between the ages of 18 and 90 years were studied (ASA groups I–IV). The endoscopies were all performed by one experienced operator (GDB) using either a Pentax FG34X or FG29X forward viewer. Twenty patients received up to 100 mg of lignocaine topically to the pharynx approximately 5 min prior to endoscopy and no sedation. Thirty patients received midazolam sedation given over 30 s approximately 2 min prior to endoscopy. Patients aged 70 years and over received 2 mg midazolam and patients aged less than 70 years received 5 mg midazolam.

On arrival in the endoscopy suite, patients were monitored with the Finapres 2300e non-invasive blood pressure monitor together with pulse oximetry and received supplemental oxygen via nasal cannulae at 2 l/min throughout the procedure. Monitoring commenced at least 90 s prior to the endoscopy to record baseline levels of heart rate (HR) and blood pressure (BP). Heart rate, systolic and diastolic blood pressures were continuously recorded throughout the procedure and downloaded directly onto a computer for later analysis.

Fifteen patients between 18 and 90 years undergoing upper GI endoscopy and oesophageal dilatation under general anaesthesia were also studied. They received a standard anaesthetic technique. Premedication was with oral temazepam and atropine. They were pre-oxygenated for 3 min, induced with thiopentone at 3–5 mg/kg and given fentanyl 50–100 µg. Cricoid pressure was applied. Tracheal intubation was facilitated with suxamethonium at 1 mg/kg, the patients were ventilated and anaesthesia was maintained with oxygen in 66% nitrous oxide and enflurane 1–2%. Supplemental doses of suxamethonium were administered for continued muscle relaxation if clinically indicated or if the procedure was prolonged.

All patients were monitored continuously throughout the procedure with pulse oximetry, ECG, capnography and the Finapres 2300e non-invasive blood pressure monitor. Heart rate, systolic and diastolic blood pressure measurements were continuously recorded throughout the procedure and downloaded onto a computer for later analysis.

Statistical evaluation of the data was performed using analysis of variance, followed by Student's *t* test. Differences were considered to be significant if $P < 0.05$

Table 1
Gender and age characteristics of patient group

Patients	Male	Female	Mean age
Sedated	16	14	69
Non-sedated	10	9	72

3. Results

There were no statistically significant differences between the sedated and non-sedated patients in terms of age or sex (Table 1). One patient was excluded from the non-sedated group and one patient from the anaesthetised group due to technical problems with monitoring and failure of the information to download onto computer.

We compared the mean heart rate (HR), systolic blood pressure (SBP) and mean rate pressure product (RPP) over 30 s periods for each patient. Mean readings were taken over 10 s periods for 1 min following oesophageal intubation. Taking mean values over 10 or 30 s periods provided a more accurate reflection of the actual changes taking place as opposed to taking single values at intervals.

There were no significant differences in the baseline values of HR, SBP or RPP prior to oesophageal intubation in the patients sedated or not sedated. There was a significant rise in RPP in both sedated and non-sedated patients following oesophageal intubation ($P < 0.01$). There was no significant difference in the peak value of RPP in these two groups following oesophageal intubation (Table 2).

The rises in RPP that occur during upper GI endoscopy when patients are sedated (Fig. 1), not sedated (Fig. 2) or receive general anaesthesia (Fig. 3) are illustrated. In those patients receiving general anaesthesia, there were no significant differences in RPP prior to induction of anaesthesia, compared to the non-anaesthetised patients. There was no significant change in RPP on oesophageal intubation in the anaesthetised group compared to pre induction values (Fig. 3). There was a significant rise in RPP on tracheal intubation ($P < 0.01$) and the peak value of RPP attained was not significantly different to the peak value of RPP following oesophageal intubation in the sedated and non-sedated groups (Figs. 1–3).

Table 2
Rate pressure product

Patients	Baseline	(± SEM)	Peak	(± SEM)
Sedated	10 808	(± 551)	18 278	(± 1189)
Non-sedated	11 673	(± 594)	17 501	(± 1140)

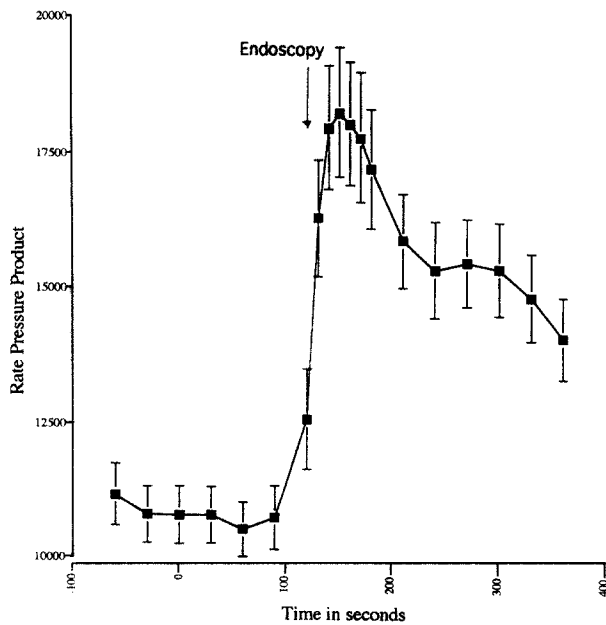


Fig. 1. Graph to show the changes in rate pressure product that occur in sedated patients undergoing upper gastrointestinal endoscopy.

The area under the RPP curve following oesophageal intubation ($t = 120$ s to $t = 300$ s) is 3.3 times greater in those patients receiving sedation, when compared to the same time interval after oesophageal intubation in patients receiving general anaesthesia ($t = 180$ s to $t = 360$ s) (Figs. 1-3). The area under the curve following oesophageal intubation in sedated patients ($t = 120$ s to $t = 360$ s) is 2.2 times greater, when compared to the same time interval after tracheal intubation (the first time of epipharyngeal stimulation) in those patients receiving general anaesthesia ($t = 60$ s to $t = 300$ s).

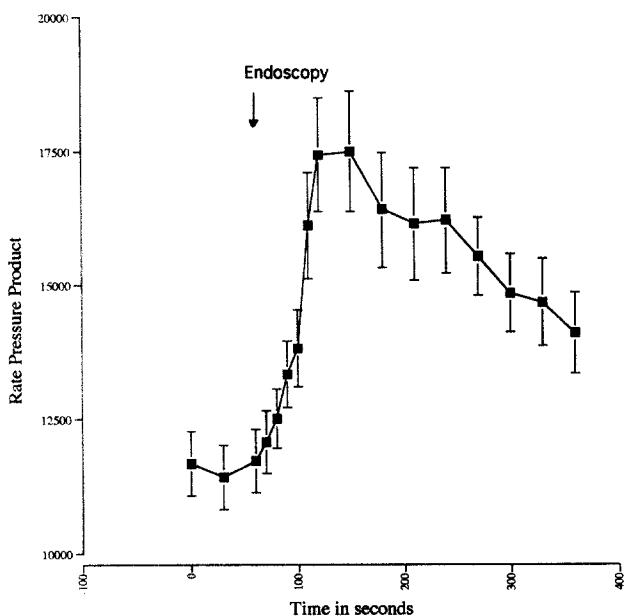


Fig. 2. Graph to show the changes in rate pressure product that occur in non-sedated patients undergoing upper gastrointestinal endoscopy.

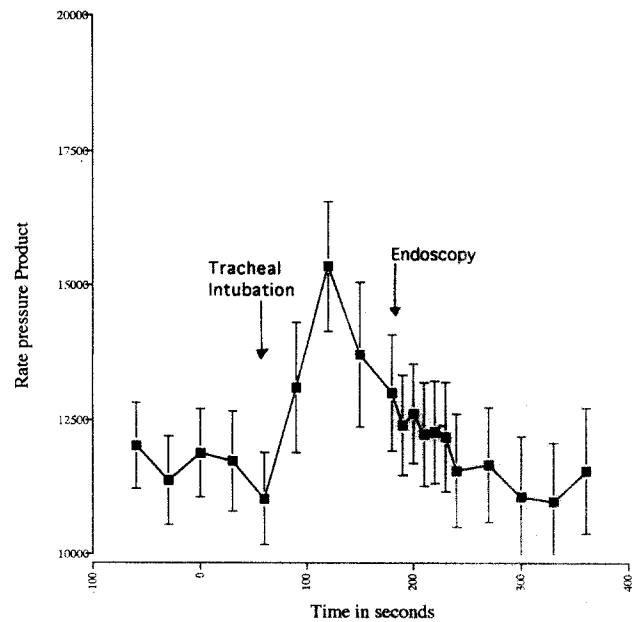


Fig. 3. Graph to show the changes in rate pressure product that occur in patients undergoing upper gastrointestinal endoscopy and oesophageal intubation under general anaesthesia.

4. Discussion

We have monitored continuously the changes in blood pressure and heart rate that occur during upper GI endoscopy and we have demonstrated a significant rise in HR, SBP and RPP in response to oesophageal intubation in both sedated and non-sedated patients. We demonstrated no difference in pressor response in those patients receiving midazolam sedation compared to those not sedated (topical local anaesthetic spray only). Patients who received a general anaesthetic did not demonstrate a significant pressor response to oesophageal intubation, however, the pressor response to tracheal intubation was of similar magnitude to the pressor response to oesophageal intubation in the other two groups. The greater area under the RPP curve in patients receiving sedation compared to patients receiving general anaesthesia suggests that their pressor response to oesophageal intubation is sustained for a longer period of time when compared to the pressor response to tracheal intubation. The myocardial oxygen demands may be greater in patients subjected to a more prolonged period of hypertension and tachycardia.

Although several other groups have documented a pressor response to oesophageal intubation by using intermittent monitoring they may have failed to document the most significant peaks of these changes [6-8]. The Finapres 2300e blood pressure monitor is an easy, non-invasive method of continuous blood pressure measurement and is more accurate than oscillometric methods of measurement [9]. It clearly demonstrates changes in blood pressure however brief, whereas inter-

mittent monitoring can miss transient changes and peaks of rises.

A recent audit of upper GI endoscopy carried out by the Royal College of Surgeons of England [3] has shown that the majority of endoscopists use a bolus injection method of sedation rather than the theoretically more correct safer slow titration method. The doses of midazolam used in our study had previously been found to produce a dysarthric and drowsy patient, who was still able to cooperate and in whom oesophageal intubation was easy and well tolerated. This was based on a study of 800 consecutive cases using bolus doses in this unit [10].

Perioperative cardiovascular changes have been extensively studied in patients undergoing coronary artery bypass surgery. Slogoff and Keats clearly demonstrated a relationship between post operative myocardial infarction and perioperative myocardial ischaemia [11]. Ischaemia was significantly associated with tachycardia and many ischaemic episodes occurred during intubation. Roy et al. also observed ischaemic episodes related most often to increase in heart rate and blood pressure following tracheal intubation in patients with known coronary artery disease during non-cardiac surgical procedures [4]. They concluded that intubation is one of the highest risk intervals in anaesthesia and surgery. It seems likely that patients with ischaemic heart disease undergoing upper GI endoscopy will be exposed to similar risks when subjected to hypertension and tachycardia particularly during oesophageal intubation.

Many asymptomatic patients have advanced coronary artery disease [12]. They are at risk of myocardial ischaemia during periods of increased oxygen demand, such as that which occurs during upper GI endoscopy and oesophageal intubation. There is a profound increase in the rate pressure product in the first few minutes of upper GI endoscopy associated with oesophageal intubation. A rise in rate pressure product increases myocardial oxygen consumption and may be associated with ST segment depression in some patients. RPP has been shown to be a reliable index of myocardial oxygen consumption [13]. A rise in RPP is known to correlate with angina [14].

Tomori and Widdicombe investigated reflex cardiovascular responses to mechanical stimulation of the upper respiratory tract in cats and found cardiovascular responses and sympathetic activity to be most pronounced during stimulation of the epipharynx [15]. This area is stimulated during upper GI endoscopy and likewise during laryngoscopy and tracheal intubation.

Our study clearly demonstrated the dramatic increase in rate pressure product that occurs on intubating the oesophagus in both sedated and non-sedated patients. In patients undergoing oesophagoscopy under general anaesthesia, the rise in RPP associated with tracheal intubation was well documented. The peak rise in RPP

was not significantly different to the rise in RPP occurring on oesophageal intubation in patients sedated or in those receiving topical local anaesthetic spray.

There has been an increase in the incidence of endoscopy related deaths in the last 20 years [2,3]. This is in comparison to anaesthetic related deaths which have fallen dramatically. One explanation for this is the increase in the use of monitoring equipment and better training standards for anaesthetists [16]. This may result in fewer critical events (hypoxaemia, arrhythmias, myocardial ischaemia) occurring during anaesthesia compared to those occurring with procedures performed under sedation. Methods to improve the safety of endoscopic procedures are urgently required.

Our patients routinely received supplemental oxygen via nasal canulae to avoid hypoxaemia and were continuously monitored using pulse oximetry. The greatest degree of oxygen desaturation occurs at the time of oesophageal intubation [17,18] i.e. at the time of increased myocardial oxygen demands, and this must therefore compound the risks of myocardial ischaemia. The Royal College of Surgeons' Working Party now recommends the administration of supplemental oxygen to all patients and we would endorse this in the face of our own results.

It is likely that the combination of tachycardia and hypertension at a time of oxygen desaturation is detrimental. This may contribute significantly to the cardiopulmonary morbidity and mortality associated with upper gastrointestinal endoscopy. The adverse myocardial effects are substantiated by ECG changes which occur at this time [7].

Increased use of monitoring with routine use of supplementary oxygen together with methods to prevent hypertension and tachycardia during endoscopy may confer greater myocardial protection. Active methods to protect the myocardium may reduce the incidence of myocardial complications and mortality associated with upper gastrointestinal endoscopy. This is clearly an area that needs further investigation.

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Australian men's experiences of cystoscopic day surgery

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Abstract

The New South Wales health care system is experiencing considerable growth in the number of day surgery procedures and in all likelihood the complexity of these will increase. Urological procedures have led the way for a variety of reasons including the rapid growth in technological innovations in this field. An assessment of the effect of decreased contact with medical and nursing professionals, particularly in the postoperative recovery phase, and the experience of home recovery specially for the elderly and potentially less well population, is warranted. Semi-structured interviews were used to investigate the experience of cystoscopic day surgery and the recovery process of 21 men. In most cases no significant complications were recorded. Eight patients have had previous experience with cystoscopic day surgery, and expected the same uncomplicated recovery as they have had in the past. Generally patients felt that they were adequately prepared for their experience. However, some did not know who to contact or what to do in case of unexpected symptoms presenting postoperatively. © 1997 Elsevier Science B.V.

Keywords: Day surgery; Cystoscopy; Outcomes; Recovery

1. Introduction

The 1983 Australian Health Minister's Conference defined day surgery as 'a surgical operation or procedure on a patient who can be admitted and discharged safely on the same day from a hospital or from a free standing facility which is in close proximity to a hospital' [1].

During the past decade in New South Wales (NSW) day surgery has experienced a dramatic increase in numbers [2]. This growth has followed an international trend showing an increase in the numbers as well as in the variety and complexity of procedures being performed on an ambulatory basis [3,4]. It is the intention of the New South Wales government to continue to increase the number and range of the procedures undertaken in day surgery units [5].

In New South Wales cystoscopic procedures account for an important percentage of the day surgery case load [6]. Cystoscopic procedures are now well established as a diagnostic and therapeutic procedure in day surgery venues and are increasingly being performed in surgeon's consulting rooms [7]. They have tended to be used for the generally healthier population [8] but there is clearly potential to expand the population. It is likely that if numbers are to increase older men and those with more co-morbidities will undergo day only cystoscopies.

There is very little research which discusses patients' experiences with day surgery, in particular following cystoscopic procedures. The importance of establishing more comprehensive outcome measures has been recognized by the NSW Department of Health [5].

This paper discusses the findings of a qualitative study which analysed men's experiences of cystoscopic day surgery and the recovery process. These findings have implications for pre- and postoperative education, community support services and aftercare.

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2. Literature review

Day surgery is not new. The practice of performing operations and discharging the patients on the same day has existed for a long time [9]. The increase in number and the variety of procedures being performed results from technological advances, the availability of new anaesthetic agents, the need to reduce health costs and changing attitudes among health professionals [10]. These developments have contributed to a reduction in the time necessary to both perform and recover from a variety of procedures, thereby increasing the likelihood of them being performed on an ambulatory basis.

Day surgery has the potential to reduce hospital costs and long waiting lists for surgery with no associated decrease in quality of care [2,11,12]. Several studies suggest that there is no difference in morbidity and mortality between day case surgery and inpatient surgery, and in some cases outcomes have been improved with reduced incidence of hospital-acquired infections and of respiratory complications [11–14]. Studies have shown that a variety of urological procedures performed on an outpatient basis are 40–60% cheaper than as an inpatient [10].

The literature suggests that historically urology has been a major contributor to the development of day only and outpatient surgery [10,15,16]. Urological procedures, cystoscopic ones in particular, represent a high percentage of day only procedures. In the United Kingdom, cystoscopies make up 15% of day surgery procedures, while in the USA it is the fourth most commonly performed procedure [17].

According to Warden, a leading advocate of day surgery, a variety of cystoscopic procedures, namely cystoscopy and urethroscopy including dilatation, removal of foreign material, ureteric catheterisation, treatment of warts, biopsy and resection of bladder tumour figured among the 30 most frequent Australian National Diagnostic Related Groups (AN DRG) for same day separations in 1991/1992 in NSW [6]. Surgeons' personal preferences are very important when determining the setting where a particular procedure will be performed [13]. Technological developments also play an important role and seem to be having an impact on urologic day surgery [10].

There has been limited research in Australia on patients' satisfaction with and recovery from, day surgery procedures [18]. However, data suggesting that the type of day surgery unit has an impact on patients' recovery experience have been presented [19]. Additionally, evidence from overseas indicates that outcomes following day surgery vary depending on previous experience of day surgery, employment status, education, expectations and preparations for surgery [20].

In a qualitative study of 31 Sydney women experiencing gynaecological laparoscopy, it was found that pa-

tients and carers were unprepared for the longer than anticipated duration of recovery [21]. Home support for at least 24 h appears essential when day surgery involves a general anaesthesia and/or the patient is elderly, a combination particularly common in urological surgery [13].

The need for further health outcomes research has been recognized by the NSW Department of Health [5]. In addition, a recent publication [22] identified the need for further research to determine the characteristics of services to provide the 'ideal patient encounter'.

3. Purpose of the research

The cystoscopy population was considered sufficiently important to warrant at least preliminary study for several reasons. Firstly, cystoscopy appears to be a relatively 'invisible' procedure lacking even the small incisions of laparoscopy or arthroscopy. There is no external evidence and until micturition, often little sensation to remind the patient that a procedure has been carried out. Do these factors influence the patient's expectations, their experience or their process of recovery? Does this 'invisibleness' and relative non-invasiveness of the procedure influence health professionals in their preparation of the patient and management of their discharge or recovery?

Secondly, the number of cystoscopic day surgery patients is large (approximately 13 500 in 1992–1993 [6]) and the potential for this population to increase further justifies the population selection.

The objective of the study was to report men's experiences of cystoscopic day surgery. The project aimed to:

- Determine aspects of the post operative experience, such as difficulties with urination, discomfort, pain; emotional responses; limitations to normal activity; and duration of recovery.
- Investigate if there was any difference in the reported experiences of men who had a cystoscopy in the day surgery unit for the first time, compared to those who have had previous day surgery cystoscopies.
- Investigate patients' perceptions of their preparation for the procedure.
- Investigate patients' satisfaction with their day surgery experience.

4. Methods

4.1. Selection and recruitment

Twenty-one men were recruited by the research assistant from the cystoscopy population at a large teaching

hospital day surgery unit during an eight month period. Exclusion criteria were age under 18 years and insufficient English ability.

Patients were made aware of their right to refuse or withdraw and confidentiality was assured. Consenting patients were then allocated at random to one of the two interview times: between the third to sixth postoperative day (10 patients) called early (E), or between the 21st and 24th postoperative day (11 patients) called late (L). These intervals were chosen because the onset of complications would usually occur within the first 72 h. In the laparoscopy study by Donoghue et al. [18] the longest interval of recovery detected was 21 days. This longer period allows for the development of complications such as infection.

4.2. Interviews and instrument

Data were collected using a semi-structured interview of 20–50 min depending on the length of free response to open ended questions and the course of the participants' recovery. Three researchers conducted interviews to validate the semi-structured questions and to achieve heuristic relevance. The interviews were conducted at a time and place selected by the participant. Interviews were recorded.

4.3. Transcription and analysis

Transcribed tapes with identifying material removed were read and coded by all researchers individually. Minor differences emerged.

5. Results

The patients' ages ranged from 29 to 81 years old, with a mean of 56.8 and a median of 54. For 13 participants this had been their first cystoscopy. One patient had experienced day surgery previously for a different procedure. All patients with previous cystoscopic experience (eight) had at least one of their cystoscopies at a day surgery centre. Therefore, nine patients had previous experience with day surgery of which eight had uncomplicated recoveries (Table 1).

Table 1
Distribution of patients according to their previous cystoscopic and day surgery experience

	Previous day surgery experience	No previous day surgery experience
Previous cystoscopic experience	8	0
NO previous cystoscopic experience	1	12

5.1. Patients' recovery

The majority of patients perceived their recovery to be uncomplicated, as shown in the comment "I just felt like nothing had happened to me". This was despite the presence of bleeding and/or dysuria.

Eleven patients reported bleeding ranging from slight bleeding on the first evening to profuse bleeding. Three patients experienced clots and in one case this led to obstruction. The length of bleeding in the other eight patients ranged from a few hours to 3 days. Several first timers were shocked on the first postoperative void to see blood rather than urine. They had not been warned or could not recall being warned on the amount of bleeding and they did not expect this outcome.

Postoperative pain was not an issue for most of the participants. Only four patients reported pain as a problem for example:

I had maybe a day or a day and a half of pain, when I urinated...it brings tears to your eyes. (E9)

The recovery period was complicated for two patients (L2 and L5), one of whom took 9 days to recover. This respondent needed to visit his own doctor because of his concern about the continued bleeding, dizziness and dysuria.

Several patients recovered fully within hours of the procedure. Two patients (aged 63 and 67) returned to work the same day. The majority followed instructions provided and had no adverse recovery experiences.

5.2. Educational preparation

Another theme related to the preoperative information supplied. Only three of the total responses clearly indicated that they did not know enough about the procedure itself:

I had no idea what cystoscopy was I had no idea what prostatitis was (E8)

When I went in I knew nothing (L5)

Generally, participants believed that they had received sufficient information, although the characteristics of the information, timing and provider varied from one participant to another.

Participants were treated at a day surgery centre whose practice was to provide each patient having a general anaesthetic with a booklet. This publication provides an outline of day surgery plus valuable information about fasting, medication, the need to leave with an escort, advice on what to do after surgery and the geographical location of the unit. When questioned about the information they had received three patients

mentioned this leaflet as the main source of information:

They certainly give you instructions before you go, quite a good outline of the day surgery and what you ought to do and what you shouldn't do and...the procedure for going home... (L3)

Others did not refer to the information leaflet but described the instructions and/or explanations given by the urologist or the staff at the day surgery centre:

I wasn't really given any idea of what to expect, I sort of had my own ideas of what might happen....[After the operation] they gave me a whole lot of instructions about what to do and all the rest of it, for twenty-four hours, now I would have felt that I didn't need half of that information but of course it would probably depend on what dose of anaesthetic you got, I'd imagine (E3)

The majority of patients knew who to contact if they needed assistance during the recovery period, although two patients were uncertain who to contact if problems arose during the night. One had undergone 25 cystoscopies and it is surprising that he was not clear how to proceed should he have needed help.

Information provided after the operation was commented on by only six participants, three commented on the intake of fluids and two on discharge instructions. Two patients sought information about the procedure and the process of recovery, and suggested a possible format for urologists to provide information to patients. One of these patients expressed his surprise about not getting information in writing because of the possibility of patients suing doctors and the occurrence of misunderstandings:

The specialist just said to me well we'll have to have a look, so that's what I thought he was going to do...So I knew nothing, about the operation...If he had told me,...well...I would have been happier if he had told me...and I would have agreed to have it done...but when I went in I knew nothing...I think it probably would help people to know beforehand what it will entail or may entail. (L5)

One patient mentioned that he would like to see the equipment used for the procedure, but he added that he was in two minds about this as he was curious but at the same time afraid of what he could find out.

5.3. *Expectations of and satisfaction with the experience*

Another theme identified related to patients' expecta-

tions of the experience. Experienced patients who had undergone urological or day surgery had preconceived ideas which influenced their expectations and perceptions.

Oh well because I had it before I understood what was going on. (E4)

Another patient who had required medical assistance for postoperative bleeding on another occasion felt anxious because he was bleeding on his arrival home from the unit (L3). One patient having his ninth cystoscopy (L8) expressed his apprehension before the operation both about having a general anaesthetic and the possibility of tumour regrowth. Two other patients expressed their apprehension about the outcome of the surgical procedure, e.g. tumour regrowth. This could be expected as reasonable in light of the reason for cystoscopy.

Those who were novices also had preconceived ideas "No there weren't any surprises because I knew it was day surgery so I knew it wouldn't be anything of a serious nature..." (L4). Three patients having their first day surgery experience were in this group. Two of them said that the anaesthetic was their main worry or that it was "the least pleasant aspect of it [the day surgery experience] that I could think of" (E5).

Strong positive responses were expressed by the majority of the participants reflected in comments like: "No trouble at all", "could do it with my eyes closed" or "no worries...as soon as he had finished the procedure I was ready to go, it was that easy".

Eight were pleased with short waiting times or prompt feedback from the surgeon. Many strongly recommended the day surgery track for cystoscopy or other procedures perceived to be minor: "...day surgery is the way to go...the best place to recover is at home" (E8).

6. Conclusion

This study indicates that the cystoscopic day surgery population appears to be well served, but the concerns expressed by these patients need to be addressed. An area worthy of attention is patient education, particularly for first timers. The majority responded positively in terms of satisfaction with the information received. However, they demonstrated their lack of knowledge when unexpected situations such as bleeding arose. Ways of ensuring the consistency of information supplied should be explored, as well as the provision of an opportunity for patients to reflect on and discuss with a health professional the information they have received. Despite the fact that the postoperative symptoms are

likely to be minor, the best educational preparation is critical to enhance patient outcomes irrespective of where the procedure is undertaken.

Acknowledgements

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The unplanned admission: a review of the day surgery experience

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Abstract

A retrospective review of unplanned admissions from the Day Surgical Centre (DSC), Royal North Shore Hospital was undertaken. Over the 5 year study period 18 102 patients underwent a surgical procedure in the DSC. Seventy-four patients required an unplanned admission to the hospital. This cohort of 74 patients formed the study group for this review. The mean unplanned admission rate was 0.41%. The unplanned admission rate varied with the surgical speciality and ranged from 0.21% in Paediatric Surgery to 0.55% in Gynaecology. The major cause of the unplanned admissions was due to surgical complications in 49% of the study group. Anaesthetic complications accounted for 23% of unplanned admissions whilst admission, because of a more extensive procedure than originally proposed, accounted for 17.5% of unplanned admissions. The development of significant medical complications was responsible for 9% of unplanned admissions, while social factors were responsible for 1.5% of unplanned admissions. The role of criteria for patient selection is reviewed. © 1997 Elsevier Science B.V.

Keywords: Day surgery; Unplanned admission; Failure to discharge; Surgical specialities; Anaesthesia

1. Introduction

The gradual introduction of the Day Surgery concept, either in stand-alone or integrated centres, has provided an excellent mechanism for the delivery of surgical services to the community.

The economic and logistic advantages of the Day Surgery process are thwarted when a patient is unable to be discharged on the procedure day, as originally planned. The subsequent unplanned admission to the hospital results in cost duplication and increases access pressures on an ever reducing number of inpatient beds.

At the Day Surgery Centre, Royal North Shore Hospital, we reviewed our Day Surgical experience in an attempt to identify the subgroup of patients or procedures that, based on failure to discharge or unplanned admission, are unsuitable to be managed in this type of facility. We also attempted to identify any factors that may have contributed to the unplanned admission.

2. Methods

2.1. Patient selection

The Day Surgery Centre (DSC), a stand-alone facility at the Royal North Shore Hospital (RNSH), a teaching hospital of the University of Sydney, provided details of patients who had an unplanned admission following a Day Surgery procedure. The patients were identified from the computerised Operating Theatre Register and the Discharge Register at the Day Surgical Centre. A retrospective review of patient case notes from March 1990 to June 1995 was undertaken.

A series of data points were considered and were available in all cases. These data points included the proposed and the actual operation performed, the intercurrent medical conditions that may contribute to the unplanned admission, the type of anaesthetic, the duration of the operation, the post-operative course in the recovery ward and the social situation of the patient.

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Table 1
Unplanned admissions per surgical speciality

Speciality	No. of surgeons	Unplanned admissions	Admission rate/surgeon	Unplanned admission rate	
Gynaecology	11	41	1.5	41/7517	(0.55%)
Urology	2	4	3.7	4/1782	(0.23%)
ENT	2	13	2.0	13/3041	(0.43%)
General surgery	5	11	6.5	11/2752	(0.4%)
Paediatric surgery	2	3	2.2	3/1457	(0.21%)
Ophthalmology	2	2	1.0	2/363	(0.55%)

3. Results

Between March 1990 and June 1995, 18 102 patients underwent a procedure in the Day Surgery Centre, Royal North Shore Hospital. Seventy-four patients required an unplanned admission to the hospital following a Day Surgery procedure. This represents an unplanned readmission rate of 0.41% for this period. This unplanned admission group comprised 50 female and 24 male patients. The mean age was 44.3 years. The surgical specialities responsible for these admissions are detailed in Table 1.

The unplanned admission patients comprised two cohort groups. Group 1 (13 patients) underwent a procedure that was more extensive than the original booked procedure. This usually involved a diagnostic laparoscopic procedure being converted into a therapeutic procedure. All of these patients were admitted under the Gynaecology Service. Ten patients underwent a definitive procedure following laparoscopy, 1 patient had a laparotomy for adhesions following failed laparoscopy, and 2 patients required further surgery related to a laparoscopic complication.

Group 2 (61 patients) had unplanned admissions due to the development of post-operative complications, either related to the surgical procedure, intercurrent medical co-morbidities or the anaesthetic. Thirty-six patients experienced a surgical complication: 32 of this group were admitted due to surgical bleeding, 1 patient had a CSF leak following an ENT procedure and 3 patients had a complication related to the laparoscopic technique — a perforated uterus and two perforated bladders.

Seventeen patients had complications related to the anaesthetic (0.12% of general anaesthetics). These complications are detailed in Table 2. During the study period 14 659 general anaesthetics were given. In addition 2974 procedures were performed under local anaesthetic and 469 procedures were performed under intravenous sedation. Only patients who received a general anaesthetic required an unplanned admission. There has been no mortality associated with day surgical procedures in the unit.

Seven patients had an unplanned admission due to an acute problem related to the development of a

medical complication. These are listed in Table 3. One patient, an 87-year-old female, was admitted as the social arrangements for her Day Only Surgery were cancelled by her family.

4. Discussion

The success of any innovation in surgery is a function of ease of access, reproducibility and reliability. The unplanned admission to an inpatient service following a day surgery procedure represents a 'failure of the day care service' [1]. If the Day Surgery process is to continue to develop as a viable and cost effective way of providing surgical services it is essential that patients are 'carefully selected and prepared for day care procedures' [2]. Failure to continue to monitor the service and use bench marks of quality such as the unplanned admission rate will result in falling standards and a facility that is not supported by either the patients or the clinicians.

The unplanned admission rate at the RNSH DSC of 0.41% across a range of surgical specialities is at the lower end of the published experience. In N.S.W. the aggregated unplanned admission rate in eight day surgery facilities is 2.7% [3]. Some centres with a single surgical speciality have produced lower admission rates, such as 1.07% in an orthopaedic centre [4], 0.32% in a plastics centre [5], and 0.25% in a day care dental surgical centre [6]. Our experience reflects this variation, which is related to the type of surgical speciality. In Paediatric surgery the unplanned admission rate was 0.21%, but in both Gynaecology and Ophthalmology

Table 2
Unplanned admissions due to anaesthetic complications

Complication	No. of patients (<i>n</i> = 17)
Delay in recovery time	6
Convulsions	2
Aspiration	2
Pain	2
Vomiting	2
Respiratory distress	2
Allergy	1

Table 3
Unplanned admissions due to medical complications

Complication	No. of patients (<i>n</i> = 7)
Cardiac arrest (resuscitated)	1
Pulmonary oedema	2
Arrhythmia	2
Stroke	1
Convulsions	1

the rate was 0.55%. This higher readmission rate in Gynaecology and Ophthalmology has been noted in previous studies [7,8].

Our patients failed the discharge process, more frequently, as a result of surgical, (36/74, 47%), rather than anaesthetic complications (17/74, 23%). This difference is statistically significant ($P = 0.002$; Chi square). This is in keeping with the experience of other groups where surgical complications were responsible for 1.08% of unplanned admissions, while anaesthetic complications were responsible for 0.65% of unplanned admissions [4].

To continue to reduce the unplanned admission rate it is important to constantly evaluate the surgery. The incidence of wound complications, such as post operative bleeding, is reduced by having all surgery performed by consultant surgeons, rather than trainees. The day surgery centre is not the place for the occasional operator [9]. The reduction in wound complication rates, in addition to the provision of a dedicated day surgery facility, are associated with a reduction in the unplanned admission rate [10].

Anaesthetic techniques in Day Surgery practice are aimed at minimising delayed discharge. The routine use of propofol for induction of anaesthesia, intravenous narcotic administration, supplementary local anaesthesia by infiltration or specific nerve blocks, and the use of non steroidal anti-inflammatory agents such as ketorolac are associated with earlier discharge of an awake, pain-free patient [11]. In this study, all the anaesthetic complications were in patients who underwent a general anaesthetic, which comprised 76% of all the anaesthetics given over the study period. To further reduce that component of the unplanned admission rate due to anaesthetic related problems of delayed recovery, vomiting and aspiration, it may be possible to extend the use of local anaesthetic and intravenous sedation as anaesthetic techniques. Nonetheless, these were rare complications in this series (Table 2).

The exacerbation of a medical co-morbidity or the development of an acute medical problem was an uncommon (7/74) cause of unplanned admission. There are two elements in keeping this complication rate low. The conduct of the anaesthetic and the involvement of consultant anaesthetic staff in all cases would appear to

be one element of importance. The criteria for patient selection based on patient fitness has been shown to be of prime importance [12]. The patient selection criteria used at RNSH DSC is broadly based and identifies American Society of Anaesthesiology (ASA) classification I and II patients [13]. Despite careful patient selection, seven patients required an unplanned admission due to the development or exacerbation of an underlying medical problem. Six of these patients (86%) were ASA II, while one patient (14%) was ASA III. In the Mayo Clinic series [13] 6/31 patients (19%) were ASA I, 17/31 (55%) were ASA II and 8/31 (26%) were ASA III. These DSC admission criteria were introduced primarily as a guide for referring surgeons. It is unit policy for cases that do not comply with this criteria to be, nonetheless, accepted for day surgery at the discretion of the consultant anaesthetist concerned.

In addition to being medically fit for day only surgery the patient must be socially fit [14]. The importance of non-medical delays in the discharge process is highlighted by Chung [15]. Only one patient in our study had an unplanned admission related to her social situation. Patients are given clear instructions about the need for a support person to collect them from the DSC and to be present overnight after the procedure. The nursing staff contact each patient the following day to ensure that all is well. The presence of a working phone and a support person during the first 48 h is an important inclusion criteria for day surgery cases [16].

The day surgery centre provides an excellent venue for delivering lower cost surgical interventions to the community. It is necessary to continually review one's experience against established benchmarks. Following this process, any highlighted areas for improvement should be carefully considered. Through this process, this important innovation in surgery should continue to develop and command the support of both the patient and the surgeon.

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Primary varicose veins in a day surgery unit

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Abstract

Patients awaiting surgery for primary varicose veins can dominate 'in-patient' waiting lists. However, there is now an established pattern of change towards day case surgery. Significantly, this may lead to a rise in the numbers treated, lowering of 'per-case' costs and a concomitant release of 'in-patient' beds. The service must be both safe and cost effective and should be led by senior staff to minimise complications and maximise theatre utilisation. For the patient, their hospital experience can be enhanced by the provision of clear information, careful surgical technique and appropriate aftercare, including suitable points of contact. © 1997 Elsevier Science B.V.

Keywords: Varicose veins; Day surgery; Ambulatory surgery

1. Introduction

Each year in the United Kingdom, it is estimated that over 400 000 people consult their General Practitioners about varicose veins. Of these, more than 50 000 are finally placed onto vascular and general surgical waiting lists for an operative procedure [1]. Many will have cosmetic disfigurement or moderate symptomatology alone and, hence, command a low priority for elective admission to hospital. In consequence, patients awaiting surgery for (primary) varicose veins can dominate hospital waiting lists.

Over the past few years, there has been a firm move towards day case surgery, to allow a greater overall throughput of surgical patients, to free 'in-patient' beds and to allow patients a far more rapid return to their own familiar surroundings [2,3]. Such

a trend must be seen to be both safe and cost effective, which could be monitored for example, by recording transfer rates from the Day Surgery Unit to the main hospital, complication rates and by assessing theatre utilisation and overall costs per case.

For the patients, the overall cosmetic result is often paramount, although their hospital experience is likely to be enhanced by the clear provision of information, careful surgical technique to minimise complications, appropriate aftercare, repeated reassurance and knowledge of a suitable point of contact should they have any particular concerns.

In this paper we record the experience of a large, purpose-built day surgery unit in its treatment of primary varicose veins over a 3.5 year period (January 1992 to June 1995 inclusive), highlighting: (i) the rapidly changing pattern of surgical practice away from the use of 'in-patient' beds with the advent of this facility, together with a significant rise in the overall numbers of patients treated and a lowering of 'per-case' costs, (ii) a low complication rate and high theatre utilisation rate achieved by use of senior staff and (iii) our means of recording information, complications and how we provide patient assistance.

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2. Methods

2.1. Surgery and anaesthesia

During the period under review, over 96% of all primary varicose vein procedures performed in both the Day Surgery Unit and in the main hospital theatre complex were undertaken by the vascular surgical firm. For patients accepted for day surgery (according to guidelines based upon the recommendations of the Royal College of Surgeons of England [2]), the operative procedure is one of flush sapheno-femoral ligation and division of all long saphenous vein (LSV) tributaries, stripping of the LSV to just below the knee and multiple phlebectomies via stab incisions (with use of Oschner hooks). Short saphenous vein surgery is also undertaken, with flush sapheno-popliteal ligation and multiple phlebectomies.

The anaesthetic procedure is to monitor all patients continuously for heart rhythm, blood pressure and oxygen saturation. At induction, Fentanyl (Janssen) is given intravenously followed by intravenous Propofol (ICI). Generally, a laryngeal mask is used and the patient is maintained on nitrous oxide and isoflurane (Abbott). Post-operative pain relief is provided by a Voltarol (Geigy) suppository given with the patient asleep (prior to the commencement of surgery and after consent has been obtained). In addition, local anaesthetic (0.5% plain Marcain) is infiltrated around wounds prior to closure. Patients are provided with a short course of oral analgesic tablets (Coproxamol) to take home.

2.2. Information gathering

From January 1992 until October 1994, information has been obtained (manually) from the theatre registers. Since November 1994, all information has been entered onto a computerised theatre management system (Surgserv-2000, TME Systems, Chertsey, Surrey). This system records much more information than that provided by the traditional theatre register including the time of patient arrival into the anaesthetic room, the actual anaesthetic start time, the actual procedural start and finish times and the time spent by the patient in the recovery ward. Reasons for delay at any stage can be recorded.

Since the inception of the Day Surgery Unit, a strict log has been kept of the number and reasons for post-operative transfer from a day unit bed to an 'in-patient' bed. The figures presented have been cross-referenced to the Department of Surgery's returns used for the monthly audit meetings.

Since January 1995 a new service has been offered for patients attending the Day Surgery Unit. In addition to each patient being given written details of whom to

contact should any complication or concern arise, a 24 h mobile phone number has been provided. The phone is held by a senior day surgery nurse who is able to provide instant advice or to direct a patient towards appropriate specialist help. All such calls are strictly logged. However, we accept that some post-operative problems will not have been recorded as patients may either attend their General Practitioner directly, or simply wait for matters to resolve with time, without informing the hospital. The true impact of day surgery on our local community services forms part of a larger team project due for completion in mid-1997.

3. Results

3.1. Turnover

In the 3.5 year period from July 1988 to December 1991 inclusive, prior to the Day Surgery Unit opening, the total number of primary varicose vein procedures undertaken in the main hospital theatres (based on two sites: King's College and Dulwich Hospitals) was 562 (a mean of 161 per year). For the 3.5 year period of investigation, January 1992 to June 1995 inclusive, 806 patients in total were operated upon. Of this number, 667 patients were operated upon in the Day Surgery Unit (a mean of 191 per year), with a further 139 procedures undertaken on an 'in-patient' basis. In both periods under review, approximately 20% of varicose vein procedures were bilateral. Those patients now remaining on the hospital 'in-patients' waiting list for primary varicose vein surgery totals less than 10% of all those waiting for such surgery and represents that cohort of patients deemed unsuitable for day case surgery (because of conditions such as poorly controlled hypertension or diabetes, obesity, age, or for socio-domestic reasons).

Before the Day Surgery Unit was opened, the approximate time spent by each of the above 562 patients waiting for primary varicose vein surgery to be performed on an 'in-patient' basis was 12 months (with a mean of 161 patients being treated per year). Since the Day Surgery Unit opened (and despite the loss of one of our surgical 'in-patient' facilities), the mean number of patients treated per year rose to 215, representing an approximate 33% increase. Furthermore, between 1988 and 1991, approximately 55% of patients stayed for between 1 and 2 days (inclusive of the day of admission and the day of discharge) with a further 40% recorded as staying for between 3 and 7 days. In the final 12 month period of our study (July 1994–June 1995, inclusive), only 14 primary varicose vein procedures have been performed within the main theatre complex on an 'in-patient' basis, with a maximum hospital stay in three cases of 5 days.

3.2. Costs

At Summer 1995 rates, the costs incurred by the Health Service (at King's College Hospital) when a single (4 h) session was run in the Day Surgery Unit were estimated to average £1000. For this sum, three (or more usually four) cases could be completed within the time available. However, an 'in-patient' stay was costed (on average) at £400 per 'bed day'. Although this was inclusive of operating costs, with a 2–3 'bed day' stay necessary (on average) for each case, this translated to a 'per-list' cost for four procedures of approximately £4000.

3.3. Morbidity

In all cases, the operations were performed by a Consultant/Senior Registrar (or very experienced middle-grade Registrar) with the assistance of a Senior House Officer. A Senior House Officer was not allowed to operate alone. Of the 667 patients attending for primary varicose vein surgery, 14 (2.1%) required transfer to an in-patient bed (Table 1).

There was no significant difference in complication rates between the senior surgical staff who operated. In addition, the mobile telephone service received three calls: two questioning a lump in the groin presumed to mean haematoma formation, and one concerning the degree of bruising sustained. In each case, these patients were referred to the Casualty Department where they were seen by either the operating surgeon or the duty Registrar. None were admitted into the hospital.

3.4. Efficiency

The information available from November 1994 onwards provided by the computerised theatre management system (Sergiserver-2000) indicated that for an allocated theatre session time of 4 h, theatre utilisation averaged 77% in the Day Surgery Unit (with utilisation defined from an assessment of the start of the first anaesthetic procedure to the official session end). For a Consultant/Senior Registrar led procedure, the average

operating time was 41 min (range 22–81 min) and for a middle-grade Registrar led procedure, the average operating time was not significantly different at 44 min (range 21–79 min). The average anaesthetic time per case (serviced by a Consultant or Senior Registrar only) was 13 min (range 6–26 min). This would allow up to four primary varicose vein operations to be scheduled per session (assuming the exclusion of any other type of operation from the list).

4. Conclusions

Varicose veins are so prevalent that they are likely to remain as one of the single most common conditions prompting referral to vascular surgical units and, indeed, many general surgical units. However, the low priority usually assigned to their surgical treatment means that many 'admission cards' can accumulate and come to dominate hospital waiting lists.

Day case surgery has had a dramatic impact on hospital practice since its rise to prominence over the past 20 years and the trend would now seem to be set for surgical departments to be asked to perform at least 40–50% or more of all procedures on a day case basis [4–6]. However, the assumption that numbers on a waiting list will decrease, because of the presence of a Day Surgery Unit, may not be true. In our case, over the past 3.5 years since the advent of the Day Surgery Unit, we have seen (on average) a 33% increase in the overall number of patients being treated which may reflect an increasing General Practitioner and patient awareness of the facility and its perceived benefits, encouraging referral.

Before the Day Surgery Unit was open, all primary varicose vein procedures were undertaken on an 'in-patient' basis, resulting in an average hospital 'bed day' stay of 2–3 days. Of course, this is an expensive way to manage such cases and often lists would change and patients be cancelled at short notice because of the lack of a bed. With the advent of the Day Surgery Unit the 'per-list' cost to the Health Service locally has fallen dramatically (from approximately £4000 to £1000). There has been a concomitant freeing of 'in-patient' beds and there is the distinct advantage to the patient that there is a very limited risk of cancellation for the want of a bed in the Day Unit.

For day surgery units to continue to be promoted and funded, they must be seen to be both safe and efficient. Patient selection remains of paramount importance as expressed by the Royal College of Surgeons [2] and by the Medical Defence Union [7], to minimise from the outset the post-operative complications from foreseeable causes. Once accepted, however, it is vitally important in order to prevent further complications, to provide optimum surgical and post-operative care,

Table 1
Post-operative complications following surgery for primary varicose veins in the Day Surgery Unit requiring transfer of the patient to an 'in-patient' hospital bed

Complication	Number
1. Large haematoma formation	3
2. Persistent bleeding	2
3. Disabling nausea	2
4. Hypotension or fainting	3
5. Pain (uncontrolled by oral therapy)	1
6. Social factors	3

combined with efficient (and cost effective) theatre management [8–11]. In this study, we were able to keep complications to an acceptably low level (less than 3%) and achieve a high rate of theatre utilisation (consistently above 75%). We feel that this has been achieved by only using senior staff to run lists (for both surgery and anaesthesia) and by monitoring practice with an efficient theatre management system (Surgiserver-2000). From the information gathered, we know that three or more usually four primary varicose vein procedures, correctly performed, can comfortably and safely be undertaken in a single theatre session. For the patient, as part of the aftercare package, we provide information sheets listing whom to contact in the event of a complication or concern after discharge. We feel the additional service offered by a 24 h mobile phone gives further reassurance (and indeed, sourced three further problems). In an attempt to pick up those complications missed by our recording systems, it may be deemed appropriate to also give the local General Practitioners the mobile phone number.

In our opinion, primary varicose vein surgery is ideally suited as a day case procedure. We recommend careful screening of patients onto the day surgery waiting list. The operation itself should be performed by the most senior surgeons and anaesthetists available, with experienced assistance. In order to maximise theatre utilisation time, three to four primary varicose vein procedures can realistically and safely be booked onto

an operating list. We would emphasise the need to keep a careful log of all complications and would advocate the introduction of a 24 h mobile phone system.

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Highlights from the 1996 American Society of Anesthesiologists' Annual Meeting Panel on: Admission and Discharge Criteria: "Why you can't get in... why you can't go home!"

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Keywords: Preoperative management; Guideline development; Surgicenters; Discharge criteria

1. Introduction

A leading group of experts in preoperative evaluation and ambulatory anesthesia convened a panel at the October 1996 American Society of Anesthesiologists' Annual Meeting. This panel focused on the recent issues related to criteria for ambulatory admission and discharge. Speakers addressing these issues included Rebecca S. Twersky MD, the panel moderator, Reuven Pasternak MD, Bradly Narr MD, Stephen Fischer MD, and Patricia Kapur MD.

The issues related to preoperative evaluation are that there has been no consistent system for risk assessment to determine appropriate preoperative management. The costs of preoperative laboratory testing are estimated to be between \$20–\$30 billion per year in the US. Health care cost containment in the US has moved surgery into the out-patient and same day admission settings in about 80–85% of all elective surgeries. The selection of procedures by third party payers to be done on an out-patient and same day admission basis is generally determined on the presumed complexity of the procedure and not the patient's other underlying medical problems or potential issues associated with anesthesia. Therefore, preoperative assessment and postoperative management provides challenges for the anesthesiologist from both a clinical and an organizational perspective.

2. Guideline development

Dr. Reuven Pasternak, Associate Professor of Anesthesiology and Critical Care Medicine at the Johns Hopkins School of Medicine, and Chair of the American Society of Anesthesiologists (ASA) Task Force on Pre-Anesthesia Guidelines enlightened the audience with the project of guideline development. The objective of the preanesthesia guideline is to develop an approach to preanesthesia evaluation and testing that is sound and accepted not only within the specialty but whose recommendations are acknowledged by primary care physicians and surgeons. The force behind guideline development has been the changing structure of medicine, with the need to establish accountability and cost-effective choices. These choices should show that there is added value to a particular test or evaluation, and the benefits exceed the costs for all parties. Value, however, is subjective and depends on the vantage point and how quality is perceived. The fundamental questions attempted to be answered in the pre-anesthesia guidelines are: 'when and by whom should patients be evaluated preoperatively and what tests should be conducted?' The anesthesiologist, as the perioperative physician, must be in charge of the process of preanesthesia evaluation, although for years this process was 'given away' to our internal medicine colleagues. The preanesthesia guideline would serve as an advisory framework for practice, while still preserving the clinician's ability to use discretion. The evidence-based guidelines should show that there is an association between the decision and the outcome. For preanesthesia evaluation the decisions made should show a reduc-

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tion in anesthesia-related complications, morbidity and mortality, unplanned admissions, while improving utilization of service by reducing delays and cancellations. However, despite a review of nearly 2000 articles, there did not appear to be direct linkages between the intervention taken (e.g. specific lab tests, timing of preoperative evaluation) and a reduction in clinical, physiologic or system morbidities. Therefore, an alternative approach needed to be taken, and is still underway by the ASA.

These guidelines will be based on a consensus model developed by experts and consultants. The framework will take into account the preoperative medical status, using the ASA classification system, the surgical risk classification based on the nature of the procedure (Table 1) and the type of anesthesia to be administered. The current philosophy is that preanesthesia evaluation is a focused assessment to address issues relevant to the safe administration of anesthesia and performance of surgery. The preanesthesia evaluation is a component of the overall surgical evaluation and should be performed under the direction and guidance of anesthesiologists. Performance by other medical personnel does not constitute a preanesthesia evaluation. This evaluation is related to the primary care process, but should not serve as a general physical screening. When acute or chronic medical conditions are encountered during the preanesthesia assessment that require further evaluation or treatment, the patient should be referred to his/her primary care provider or organization. Requests

Table 1
Surgical classification system

Category 1	Minimal risk to the patient independent of anesthesia Minimally invasive procedures with little or no blood loss Often done in an office setting with the operating room used principally for anesthesia and monitoring
Category 2	Minimal to moderately invasive procedure Blood loss less than 500 cc Mild risks to patient independent of anesthesia
Category 3	Moderately to significantly invasive procedure Blood loss potential 500–1500 cc Moderate risk to patient independent of anesthesia
Category 4	Highly invasive procedure Blood loss greater than 1500 cc Major risk to patient independent of anesthesia
Category 5	Highly invasive procedure Blood loss greater than 1500 cc Critical risk to patient independent of anesthesia Usual postoperative ICU stay with invasive monitoring

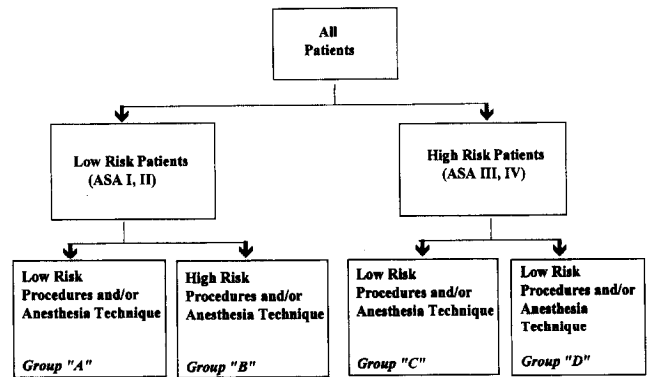


Fig. 1. Preoperative algorithm.

by patients for performance of tests not deemed necessary for the performance of surgery or administration of anesthesia should be referred to other primary health care sources. Tests, consultations and preoperative therapy are obtained on the basis of a reasonable expectation of their utility to the anesthesia and the surgical staff during the perioperative and postoperative periods. Dr. Pasternak presented his decision tree for preoperative evaluation (Fig. 1). There are clear indications in which healthy, low risk patients, scheduled for low risk procedures and anesthesia may not have added benefit from being evaluated by the anesthesiologist prior to the day of surgery. Conversely, there are medically complex patients who are undergoing complex surgery and/or anesthesia who must be seen by the anesthesiologists in a preoperative evaluation center or clinic. The grey zone exists for those patients that are low risk but undergoing high risk procedures, or those high risk patients undergoing low risk procedures. The pros and cons of a preanesthesia evaluation center and the utility of ordering tests were addressed later on in the panel. The ASA consensus model should be completed in 1997.

3. Preoperative tests

To address the recurring questions that arise in daily practice regarding the appropriateness of specific preoperative tests, the panel featured Dr. Bradley Narr, Assistant Professor of Anesthesiology, and Chair, Division of Intensive Care and Respiratory Therapy from the Department of Anesthesia and Critical Care at the Mayo Clinic. He provided various references that support the notion that preoperative laboratory testing may indeed have become obsolete.

Preoperative laboratory tests should only be performed because they will influence medical treatment. There are no perfect tests, as the specificity and sensitivity of the laboratory test varies, resulting in false positives and negatives. In the 1970s, preoperative screening

tests were conducted because they were believed to detect disease, just based on screening alone. However, that notion has been disproved. It is difficult to improve an individual's condition if the person is asymptomatic. It is traditionally thought that history is an important trigger for laboratory tests. In a study by Kim and Berlowitz [1], extensive lab tests were conducted on severely impaired nursing home residents, who could not provide an accurate history. They demonstrated that the use of routine comprehensive laboratory panels to assess severely impaired patients in a long-term care facility may be of limited value. None of the screening panels detected an abnormality that led to patient benefit, compared with 1%, 1.4% and 3% of monitoring, follow-up and diagnostic panels, respectively. Despite the restricted population in a group presumably more likely to have new abnormalities requiring intervention, the impact remained minimal. It is unlikely that a healthier population, like that scheduled for ambulatory surgery, would have a greater yield of laboratory abnormalities. Based on this study, there is no support for the use of a comprehensive battery of screening laboratory tests. An alternative to the automatic, routine practice of ordering a large number of lab tests would be to eliminate all of the tests that are used for true screening purposes. Lab tests can be limited primarily to diagnostic purposes, or when a patient's clinical status changes acutely. Monitoring and follow-up tests strictly defined and tailored to individual patient needs may also be useful.

The value of coagulation studies was discussed. There are many false positives secondary to viral infections that can induce an elevated PTT. Abnormal tests do not predict intraoperative or postoperative bleeding. Rather, history and surgical technique are stronger predictors of perioperative bleeding. In the largest prospective study of preoperative coagulation testing and its effect on outcome, Houry et al. [2], reported that there was no relation between the results of the screening tests and postoperative hemorrhage related to mortality. The patients were divided into four groups: normal history and normal tests; normal history and 1 or more abnormal tests; abnormal history and normal tests; and abnormal history and abnormal tests. Postoperatively, all groups had similar incidence of hematomas, blood loss from drains, reoperations from hemorrhage and mortality due to bleeding. More patients within the abnormal preoperative coagulation test groups had more operations postponed and more additional tests ordered, $P < 0.001$. More patients in the abnormal history and lab group required blood transfusions and modifications of anesthetic and surgical vigilance. However, the difference in median amounts of blood transfused was only 1 unit. There were no intergroup differences in postoperative hemorrhage-related mortality. Routine preoperative coagula-

tion testing is not warranted in patients with normal clinical data who are undergoing surgical procedures. These investigators concluded that detection of coagulation test abnormalities are of no use outside the setting of clinical or history abnormalities with the common knowledge that bleeding is related to surgical techniques [2]. Therefore, recommendations for coagulation tests are in those patients who are on anticoagulation treatment, have liver disease, or history of bleeding disorder, ongoing transfusions or significant nutritional deficiencies.

The appropriate age for conducting a preoperative ECG is based on the incidence and prognosis of unrecognized MI. As unrecognized myocardial infarctions are as likely as recognized ones to cause death, heart failure or stroke, identifying this in the perioperative period may affect the anesthetic and surgical plan. Data suggest that this incidence is increased in males > 45 and females > 55 years of age, in the absence of any other clear risk factors [3]. The Framingham Study estimates that 25% of infarctions in males and 40% of infarctions in females are unrecognized and appear on biennial ECGs [3]. The incidence of new abnormalities with repeat ECGs for time periods was reviewed by Rabkin and Home [4,5] and they concluded that in patients greater than age 60 the incidence of new abnormalities is high enough (20% compared to 10% in patients less than 60) to justify retesting, especially if the previous ECG was abnormal. Interestingly, however, the new abnormalities could not be seen to have any effect on clinical decisions in the perioperative period [5]. The reasons to obtain a preoperative ECG are to identify risk, help quantify abnormalities, and decide about perioperative treatment.

Recommendations for laboratory testing as required for administration of anesthesia are offered in Table 2.

4. Organizing preoperative evaluation and patient education

To streamline the system for preoperative evaluation and laboratory testing, Dr. Stephen Fischer, Assistant Professor of Anesthesiology and Medical Director of the Anesthesia Preoperative Evaluation Program at the Department of Anesthesiology Stanford University School of Medicine, discussed the organization of a preoperative evaluation and patient education program. Because of the rapidly changing health care environment, a preanesthesia clinic establishes control, accountability and responsibility for the anesthesiologist. 'Visibility by the anesthesiologists is viability!' Several components are needed to operate a successful preoperative evaluation program/clinic (PAEC): staffing, financial commitment by the institution, and the involvement of the anesthesiologists as the periopera-

tive medical specialists. Until recently, many facilities have had very informal systems for preanesthesia clinics with a non-dedicated area and staff, with limited hours of operation. However with the changes in health care reimbursement and the increase in volume and acuity of out-patients and same day admission, a well-run, efficient PAEC may reap significant benefits for the patient, physicians and ambulatory surgical facilities.

Inadequate facilities and equipment, limited availability of anesthesia residents, lack of attending oversight, unavailability of old medical records, and absence of a surgical history or physical exam at the time of the anesthesia pre-op led to incomplete patient work-ups. In addition, the lack of on-site phlebotomy or technical assistant, overcrowded and uncomfortable

waiting room with long patient waits of up to 2–3 h resulted in patients leaving without being evaluated and receiving adequate patient teaching. This resulted in significantly high day-of-surgery cancellations or delays, excessive preoperative lab testing, and inappropriate consultations, all of which add to the cost of health care. Dr. Fischer indicated that the greatest value for establishing a pre-anesthesia evaluation center lies in its ability to decrease cost by: providing efficient service, with appropriate utilization of preoperative lab testing and consultations; greatly enhancing clinical productivity by reducing cancellations and delays; and preserving physician and patient satisfaction with timely access for the patient.

There is a need to develop protocols/clinical pathways, and integrate the process of preoperative assessment into QA review, so that the value of a PAEC can be directly measured. A preanesthesia clinic can also greatly enhance the preoperative education of patients and families. The facility can include a preoperative teaching area, where the patients are able to review video tapes from a patient education library, reinforce preoperative instructions, and review special concerns. The clinical nurse educator is an integral part of the preanesthesia clinic and is responsible for engaging the patients and their families in preoperative education. This interaction can decrease anxiety and fear, and increase awareness and patient comfort. The clinic also provides an educational experience for the residents, medical students and perioperative staff. There also exists an opportunity for clinical research. The staffing of a PAEC should include an on-site anesthesia director, with either dedicated anesthesia residents or utilization of nurse practitioners. The anesthesiologist is available to provide an anesthesia/medical consultation for the medically-complex patients. Implementation of these strategies requires the commitment of the Anesthesiology Department chair, faculty collaboration, and an alliance with the Department of Nursing. Dr. Fischer described the initial reluctance within the surgical specialties to send the patients to the clinic. Now, because the Department of Anesthesia offers almost a 'guarantee' to proceed with surgery, sending the patient to the PAEC has a clinical advantage.

A financial plan needs to be made involving nursing, anesthesia, and administration. The economics of a preoperative screening clinic can only be fully appreciated if there is available resource utilization data. Facilities will experience a decrease in lab and diagnostic studies, a reduction in the number of surgery cancellations and delays, decreases in overall cancellations and unnecessary medical consultations [6,7]. These all translate into significant cost savings. In a recent article, Dr. Fisher reported that in his facility, cancellations decreased from 132 to 16, or 1.7% to 0.2%, respectively [6]. By reviewing pre-op lab selection, medically un-

Table 2

Recommended laboratory testing (these tests are required for administration of anesthesia and are not intended to limit those required by surgeons for issues specific to their surgical management)

Electrocardiogram	Age 50 or older
	Hypertension
	Current or past significant cardiac disease
	Current or past circulatory disease
	Diabetes mellitus (age 40 or older)
Chest X-ray	Renal, thyroid or other metabolic disease
	Procedure level 5
	Asthma or COPD that is debilitating or with change of symptoms or acute episode within past 6 months
	Cardiothoracic procedure
	Procedure level 5
Serum chemistry	Renal disease
	Adrenal or thyroid disorders
	Diuretic therapy
	Chemotherapy procedure level 5
Urinalysis	Diabetes mellitus
	Renal disease
	Genito-urologic procedure
	Recent genitourinary infection
	Metabolic disorder involving renal function
Complete blood count	Procedure level 5
	Hematological disorder
	Vascular procedure
	Chemotherapy
Coagulation studies	Procedure level 4
	Anticoagulation therapy
	Vascular procedure
Pregnancy testing	Procedure level 5
	Patients for whom pregnancy might complicate the surgery
	Patients of uncertain status by history and/or examination

essary lab tests will be cancelled unless the surgical specialty attending has specific preoperative requirements. By enforcing accountability in lab testing, \$112 per patient could be saved by eliminating unnecessary lab tests, extrapolated to \$1 million in cost savings per year [6]. These cost savings can easily demonstrate to the hospital administration the benefit of a PAEC.

5. Freestanding ambulatory surgical facilities

Dr. Patricia Kapur, professor and chairman of the Department of Anesthesiology at the University of California Los Angeles School of Medicine, and the Medical Director of the UCLA Surgicenter, provided insight into the clinical challenges facing the practitioner in the freestanding ambulatory surgical facility. Certain assumptions exist in surgicenters: that the patients are as well prepared for surgery as possible; that the anesthesiologist providing care in this setting is capable of caring for all patient types; and that the center is able to stabilize a patient prior to transferring the patient to a hospital. A surgicenter does not have a blood bank, comprehensive pharmacy, respiratory therapy services, an extensive laboratory or advanced radiological services. As such, surgical case selection is limited; as are the types of patients that can be managed in a freestanding facility. Although freestanding facilities have expanded their case load beyond the ASA 1 and 2 patients, the clinician needs to assess the likelihood of medical complications, and the need for invasive monitoring, if it becomes necessary during the perioperative course. Therefore, preoperative screening becomes an essential component of patient preparation in a surgicenter. An ASA 3 or 4 patient may be operated on in a freestanding surgicenter, given that the patient is stable, and the chronic condition is well managed. The planned anesthetic technique should not worsen the patient's chronic medical condition or result in prolonged postoperative observation or sequelae. The perioperative period should not be the time to adjust the medical management of the patient with pre-existing disease. Examples of various disease states were given.

5.1. The cardiac patient

The patient with stable hypertension, coronary artery disease, compensated valvular abnormalities, stable post-cardiac surgery patients, may be appropriate for the freestanding surgicenter. Each facility must recognize its abilities in being able to treat a patient with cardiac complications, new or breakthrough arrhythmias, hypertension, ischemia, hypotension, congestive heart failure or cardiac arrest. These conditions may require a diversion of resources for patient treatment

and facilities should be staffed accordingly. General principles for managing the cardiac patient are to continue preoperative medications and to understand the anesthetic and cardiac drug interactions. In addition, for a surgicenter to undertake elective surgery on a cardiac patient, it must determine whether the facility can perform a 12 lead EKG, test for a simple panel of electrolytes, have external pacing capability and whether the staff is Advanced Cardiac Life Support (ACLS) certified.

5.2. The patient with bronchospastic disease

It is quite common to anesthetize a patient with bronchospastic disease in a freestanding surgery. This has become particularly common in patients undergoing endoscopic sinus surgery. These patients should be thoroughly evaluated for the severity of the disease, exacerbating factors and predictability of asthma attacks and degree of symptom control. Patients may have been treated with steroid and β_2 agonist inhaler therapy, which would be continued as appropriate immediately prior to surgery and prior to discharge. Dr. Kapur suggested that those practising in surgicenters may prefer to use the laryngeal mask airway instead of instrumenting the larynx. Should bronchospasm occur, the facility should have the capability of treating the patient with beta agonists, theophylline, or if not resolved, transfer the patient to the hospital.

Patients with a recent URI, prolonged intubation, or prior intubation difficulties may be prone to postoperative croup. If croup does occur, the freestanding surgicenter must be prepared to treat it, provide aerosolized dexamethasone, or transfer the patient to a hospital if symptoms are not resolved.

5.3. Diabetics

Patients on oral hypoglycemic, and stable intermittent insulin, implantable insulin pumps, and those with no serious cardiovascular compromises can be safely managed in a freestanding surgicenter. The patients must be observed postoperatively for no prolonged nausea and vomiting. Perioperative considerations are the same for hospital-based ambulatory surgery units.

5.4. Renal failure

A patient with history of renal failure should have current lab data available for review preoperatively and must be evaluated as to his/her volume status. The patient should not be scheduled for a procedure that is expected to result in significant fluid shifts. The blood pressure must be controlled, as well as other associated cardiac symptoms. Patients that are post liver or renal transplant may be managed in a freestanding surgicenter, provided that their conditions are stable.

5.5. Obesity

Unlike the hospital setting, the surgicenter may set limits on patient weight, due to limitations of the standard available equipment. The patient should be able to lie supine, have no obstructive sleep apnea and should be scheduled for short procedures.

5.6. Extremes of age

Preemies > 52 weeks postconceptual age, with no history of apnea or bradycardia can be managed as out-patients in a freestanding surgicenter. The full-term infant, > 44 weeks, with no significant history, would not require any special neonatal facility. The elderly, if they meet other organ system criteria, and the home support situation is good, may be appropriately managed through a freestanding surgicenter. The facility should determine this prior to patient's arrival on the day of surgery.

5.7. Communicable diseases

A freestanding surgicenter can manage a patient with Hepatitis B or HIV, as universal precautions are essentially applied to all patients. Patients with respiratory infections, such as tuberculosis, should be managed in an isolation facility postoperatively. Patients undergoing out-patient surgery following a transplant, should have no evidence of rejection, and may be immunosuppressed. They should have their immunosuppression regimen maintained, including cyclosporin elixir. Malignant hyperthermia-susceptible patients may be managed in a freestanding facility, as long as the patient receives a trigger free anesthesia, and that a treatment plan is ready. Dantrolene must be available; at least for 3 mg/kg dose for a 100 kg person.

5.8. Extended observation

Freestanding surgicenters may be able to perform procedures that heretofore have been considered too extensive for an out-patient facility: e.g. laparoscopic cholecystectomies, laparoscopic vaginal hysterectomies, anterior cruciate ligament repairs, ORIF of distal extremities, rhytidectomies, mastectomies, non-invasive neurosurgical procedure following MRI, radiofrequency ablation for Parkinson's disease. These are possible with extended observation units contiguous with the surgicenters that permit 24–72 h of non-acute patient care. There is significant regional variation within the United States regarding licensure, accreditation, and reimbursement of these facilities.

5.9. Inappropriate patients for surgicenters

Nonetheless, there are still patients whose medical conditions are significantly brittle, and who may best be managed within a hospital setting. These include patients with severe pulmonary dysfunction, marginal myocardial reserve, severe coronary artery disease, brittle diabetes, unusually challenging airway, CPAP-dependent sleep apnea, mentally challenged with behavioral disruption. The clinician must evaluate and decide whether elective surgery is appropriate under any circumstance, regardless of the location in which it is being performed.

6. Criteria for discharge and their impact on outcome

The concluding lecture, presented by Dr. Rebecca Twersky, Associate Professor of Anesthesiology at SUNY Health Science Center at Brooklyn and Medical Director of the Ambulatory Surgery Unit, discussed the criteria for discharge and how they impact on outcome. Outcome following ambulatory surgery can be measured by: unanticipated hospital transfer or admissions, readmissions following discharge, frequency of minor side effects on patients follow-up, resumption of patient's activity of daily living, and patient satisfaction. Do criteria for discharge influence any of these outcome variables? Dr. Twersky first addressed how long a patient must remain in the ambulatory surgery unit following surgery. Time is not as crucial as is the need for fulfilling criteria that reflect the passages of the patient through the phases of early and intermediate recovery. While in the past a fixed-time interval had been suggested for recovery, it is now felt that criteria-based rather than time-based recovery better determines when the patient can be transferred to the step-down area and discharged home. There is no evidence that improved outcome occurs when patients are discharged following fixed time intervals.

The recovery phase of the ambulatory patient has been divided into early, intermediate and late stages. The first two stages occur while the patient is physically present in the Ambulatory Surgery Unit (ASU). Phase 1 where the patient remains in the recumbent position, and Phase 2 where the patient will ambulate and prepare for discharge from the facility. Phase 1 recovery incorporates the period of observation in a monitored unit upon transfer from the O.R. Skilled nursing staff conduct regular assessment of the patient's cardiorespiratory status, need for pain medication, treatment of nausea and vomiting and other disturbing side effects. The Aldrete scoring system is the standard for evaluating patients for discharge from Phase 1 Post Anesthesia Care Unit (PACU) and occurs when the patient achieves an Aldrete score of ≥ 8 . With the newer

shorter acting anesthetics and analgesics (e.g. propofol, remifentanyl, midazolam, desflurane and sevoflurane) this can occur in less than 60 min. Patients may even bypass Phase 1 recovery at the conclusion of the procedure, following monitored anesthesia care and regional anesthesia. Studies are underway to determine the safety and outcome of patients bypassing PACU after receiving general anesthesia. The Phase 2, or step-down intermediate recovery is the area which is unique to the ambulatory surgical patient. It is during this phase that the patient is evaluated for being 'home-ready'. The patient's ability to be discharged home should not be confused with being 'street-fit'. The latter requires a more prolonged period of time beyond hospital discharge, and is influenced by the surgical procedure and anesthesia. Because residual impairment of cognitive ability has been demonstrated to persist even beyond the patient's discharge, patients must be cautioned not to make important decisions, drive or operate machinery for at least 24 h postoperatively [8].

Guidelines for safe ASU discharge include stable vital signs, return to baseline orientation, ambulation without dizziness, minimal pain, nausea/vomiting and minimal bleeding at the surgical site. Following sedation, regional or general anesthesia, the patient must have a responsible 'vested' adult escort, who preferably could stay with the patient overnight. The ability to maintain oral fluids postoperatively as a criterion for discharge has been challenged, as insistence on drinking may in fact provoke continued nausea and vomiting. The ability to void must be evaluated in light of the surgical procedure and the type of anesthetic administered. Urinary retention postoperatively may occur due to the inhibition of the micturition reflex from surgical manipulation, excessive fluid administration distending the bladder, pain and anxiety or from spinal and epidural anesthesia. When voiding is required for discharge, patients may either be catheterized as a single attempt or left with an indwelling catheter. Some surgeons have discharged patients home with adequate instructions to contact their physician or return to the emergency room should urinary retention persist [8].

A scoring system that allows for a more standardized assessment of home readiness has been developed. This simple, cumulative index, the Post-Anesthesia Discharge Scoring System (PADSS) assigns numerical values (from 0–2) for the following five recovering categories: vital signs, activity and mental status, pain, nausea/vomiting, surgical bleeding, intake and output. The total score is 10, and patients are considered to be fit for discharge when they have achieved a score of ≥ 9 . The majority of patients can be discharged within 1–2 h after out-patient anesthesia [9].

Each facility must develop policies and procedures regarding discharge criteria and delineate the responsibility for discharging patients home from the ASU.

This includes evaluation and examination of the patient by the physician or the application of rigorously accepted discharge criteria if a physician does not perform this evaluation. In addition, the patient must be given written postoperative instructions with information about where to seek emergency medical assistance including phone numbers of the surgeon, ASU, and the nearest emergency room. Patients should be cautioned about performing functions that require complete recovery of cognitive ability. Proper adherence to these discharge criteria and documentation protect against premature discharge of patients with the potential for unanticipated hospital admission, return for emergency care, postoperative complications or legal repercussions.

How do these processes affect outcomes? Although the incidence of complications following ambulatory surgery is rare, they can occur and should be monitored. Several outcome studies have reported that the rate of hospital admission following ambulatory surgery averages about 1–2% (range from 0.1–9%) [10]. However, the majority of admissions were due to surgical causes (e.g. more extensive surgery, observations for bleeding) rather than anesthesia or medically related. Warner et al. reported that major morbidity e.g. perioperative MI, stroke, respiratory failure, pulmonary embolus within 30 days of ambulatory surgery were quite rare, and in fact, occurred at a frequency less than the general population [11]. Twersky et al. reported a 3.1% readmission rate of patients within 30 days following discharge [12,13]. The majority of return visits were to the emergency room (64%), with bleeding, pain and fever among the most common reasons for return. Over 50% of patients returned within 1 week, 75% within 2 weeks. Only urology and gynecology patients had significantly greater rates than other surgical specialities. Discharge criteria were met in all patients, except 2 who refused hospital admission. By enforcing discharge criteria, the return rates can be kept to a minimum. Like unanticipated hospital admissions, return hospital visits occur infrequently and are related to surgical factors rather than anesthesia or medical conditions [13]. Several retrospective studies identify that patients report minor side effects such as muscle aches, drowsiness, headache, dizziness, sore throat, nausea and vomiting. Many of these minor sequelae prevented patients from resuming their normal activities. In a study by Philip [14], 62% of patients required an average of 3.2 days to resume their normal activity, primarily limited by general malaise and surgical discomfort. When patients are informed prior to discharge (accompanied with written instructions) about the anticipated minor sequelae, they are more prepared to deal with the symptoms. It does not appear that the occurrence of these symptoms reflect inappropriate discharge. In a prospective study of patients activity at 24

h postoperatively, Chung et al. [15] reported that the common symptoms reported in decreasing frequency are pain, headaches, drowsiness, dizziness and nausea/vomiting. These are directly related to the type of surgery. Patients undergoing gyn laparoscopy, general surgery and orthopedic procedures were more likely to require additional days to recover. Forty percent of patients that experienced 1 or more symptoms postoperatively were unable to resume their normal activity at 24 h, as compared to only 20% with no postoperative symptoms.

Patient satisfaction appears to be extremely high following ambulatory surgery. Most of the patient satisfaction data comes from comparative anesthetic techniques, in which patients are asked at the conclusion of their surgery whether they were satisfied with the anesthetic they received, or when conducted by nursing staff postoperatively. To date, there has been no well-formulated scientific study addressing patient satisfaction. Dr. Donald Fung, of Sunnybrook Health Science Centre in Ontario, Canada, has developed a rigorous tool for measuring patient satisfaction in ambulatory surgery. He has identified determinants of patient satisfaction for various components of perioperative ambulatory surgery. These include assessment of the physical structure and environment, the technical content of care, interpersonal relationships among hospital personnel and patients, the efficiency of care and the outcomes of care. Future application of these determinants will allow a more rigorous assessment of patient satisfaction.

Discharge criteria do identify factors associated with outcome. Outcome, however, is primarily influenced by the surgical procedure. Nonetheless, anesthetic and surgical techniques aimed at reducing postoperative symptoms will facilitate the patient's functional ability and resumption of normal activities.

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Brief reviews of selected nursing articles related to ambulatory surgery

D. Green *

Kingston, Surrey, UK

ALDERMAN, C. (1990)

Day Tripper

Nursing Standard Vol. 4 No. 40 pp. 22-23

Based on the 12 year history of the SDU at Barnet, UK. The criteria for patient selection is discussed as is the booking system.. Emphasis is placed on good written information to be given to patients and for this to be reinforced by the nurse. Another use for the unit besides surgery is for diagnostic treatments.

ALLEN, D. (1994)

Nursing Staff Contributions Aid Ambulatory Eye Surgery Efficiency

Journal of Ophthalmic Nursing and Technology Vol. 13 No. 1 pp. 11-13

In Sunderland, a multidisciplinary approach was taken when they established their new DSU for ophthalmics

- multidisciplinary notes
- nurse assessment and eye examination, exploration of day surgery and possible complications
- nurse stays with patient during surgery and writes in pre-printed operation notes
- nurse undertakes 1st day post-op visit to home if patient cannot get to hospital
- named nurse concept

AMERICAN SOCIETY OF OUTPATIENT SURGEONS (ASOS) MEETING (1987)

Ambulatory surgery meeting stresses quality of care
A.O.R.N. Journal Vol. 45 No. 5 pp. 1191-1198

A summary of the American Society of Outpatient Surgeons meeting which discussed an accreditation scheme. The scheme was used to improve the quality of care and contains 17 standards which are outlined. The final section includes some material on risk management.

AUGUSTIN, P. and HAINS, A. (1996)

Effect of Music on Ambulatory Surgery Patient's Pre-operative Anxiety

A.O.R.N. Journal Vol. 63 No. 4 pp. 750-758

This article commences with a good literature review of the research already performed in relation to music and anxiety. Drawing on the recommendations of these previous studies, the authors performed an experimental study on 42 patients. The experimental group had patient education and own choice of music. The control group just had patient education. Very interesting discussion at the end with recommendations for further studies.

AVIS, M. (1994)

Choice Cuts: An Exploratory Study of Patients' Views About Participation in Decision Making in a Day Surgery Unit

International Journal of Nursing Studies Vol. 31 No. 3 pp. 289-298

The subjects were 20 patients undergoing hernia repair in a DSU. 12 were studied by non-participant observation and 10 were interviewed at home post-operatively. Emergent themes make very interesting reading for all those involved in day surgery patient care.

BATES, J. (1994)

Reducing Fast Times in Paediatric Day Surgery

Nursing Times Vol. 90 No. 48 pp. 38-39

Useful pre-operative information for parents on morning and afternoon starving. Clinical nursing research which produced a reduction in fasting times with excellent results over a 1 year period from September 1992 to 1993 (for both minimum and maximum fast times).

BICKLER, B. (1994)

Putting Patient Focused Care into Practice

A.O.R.N. Journal Vol. 60 No. 2 pp. 242-245

* 17 Tadworth Avenue, New Malden, Surrey, KT3 6DJ, UK.

The use of a patient focused approach to operating department nursing — but could just as easily apply to the day surgery environment. The four elements of the model discussed are:

- staff member empowerment and cross-training
- decentralisation
- patient care teams
- computerisation

Bickler sees the outcomes as open communication, the manager as change agent and that the model is measurable.

BOURNE, A. (1992)

A Paediatric Day Service

British Journal of Theatre Nursing Vol. 2 No. 3 p. 17

A synopsis of changes made to accommodate children (including those for day surgery) in a new District General Hospital. The changes followed a visit to a dedicated children's hospital.

BRAY J., POWELL, J., LOVELOCK, R., PHILIP, I. (1995)

Using a Softer Approach. Techniques for Interviewing Older People

Professional Nurse Vol. 10 No. 6 pp. 350–353

Although not specifically to do with day surgery, there are parts of this article which may be of use —

1. it mentions interviewing skills with the elderly
2. issues surrounding the presence of carers who may support the elderly patient.

BRYKCYNSKA, G. (1995)

Ethics of Day Surgery for Children

Surgical Nurse Vol. 8 No. 1 pp. 11–13

Re-iterates the important points when caring for children in the day surgery environment. Most importantly

- staffing requirements
- honesty and keeping faith with older children and family
- consent for surgery
- fair distribution of paediatric resources

BURDEN, N. (1988)

National Conference: Ambulatory Track

Journal of Post Anaesthesia Nursing Vol. 111 No. 4 pp. 278–280

Main points of the American Society of Post-Anaesthetic Nurses (A.S.P.A.N.) when the ambulatory surgery arena was discussed —

- children
- anaesthetics
- management
- nurse as marketing agent
- quality assurance

BURNS-STEWART, S.M. (1987)

Who is Your Same Day Surgery Learner?

Perioperative Nursing Quarterly Vol. 3 No. 2 pp. 14–18

A rather confusing title — it actually relates to the patient and what they need to know about Day Surgery. It discusses the learning environment for the patient and the role of the nurse as educator. Another comparison of teaching methods — 1:1, group teaching and the production of booklets.

CALDWELL, L.M. (1991)

Surgical Outpatient Concerns

A.O.R.N. Journal Vol. 53 No. 3 pp. 761–763, 766–767

The patients having day surgery for the first time involved in a research study. The qualitative part involved interviews and questionnaires asking patients their preferences for information and self-care and how these may influence pre-operative stress and coping. Six broad areas of concern were identified from their responses — professional care, information, the process of surgery, health outcome, recovery process, personal vulnerability. Discussion of the nurses role.

CARRINGTON, S. (1990)

Day Care: The Changing Face of Day Surgery

British Journal of Theatre Nursing Vol. 27 No. 1 p. 19

The pitfalls of a relatively new unit. How they set up a Quality Control Team to analyse their difficulties and see how they could be improved. These included re-decorating the unit, adopting a standard care plan and updating written and verbal instructions.

CARRINGTON, S. (1993)

Day Surgery in Bristol

British Journal of Theatre Nursing Vol. 2 No. 11 pp. 12–15

An overall summary of nursing care specifically in Bristol. It is divided into the following sections:

- patient selection
- appointment booking system
- organisation of lists
- staff involvement in the DSU
- discharge of patient from DSU
- monitoring the care given

CHAPMAN, A. (1996)

Current Theory and Practice: a Study of Pre-operative Fasting

Nursing Standard Vol. 10 No. 18 pp. 33–36

An excellent article summarising the literature on pre-operative fasting. Overall, patients are still being fasted for too long a period. Towards the end of the article day surgery is mentioned and the inter-relationship with information-giving.

- COLLISS, V. (1990)
Pre- and Post-operative Management
Paediatric Nursing Vol. 2 No. 5 (?) June pp. 16–17
This does not deal specifically with day surgery but it does highlight the importance of good communication (written and oral) to avoid confusion for the parents of children undergoing surgery.
- CONNOLLY, M.L. (1991)
Ambulatory Surgery and Prepared Discharges — Effects on Orthopaedic Patients and Nursing Practice
Nursing Clinics of North America Vol. 26 No. 1 pp. 105–112
Influences on a changing health care system — cost, technology and consumerism. The need for staff preparation to ensure a successful ambulatory surgery programme is mentioned. Connolly explains the use of the nursing process, including the need for assessment and discharge to go together.
- CRAMER, C. (1988)
Ambulatory Surgery: Nursing Considerations
Current Reviews for Post Anaesthesia Care Nurses Vol. 9 Lesson 22 pp. 174–180
An article from an American Recovery nurses journal. The lesson objectives at the start of the article related to the post-study questions at the end. It covers types of facilities, scope of services, anaesthetic techniques, discharge planning. Good tables × 5.
- DEARMUN, A. (1994)
Defining Differences: Children's Day Surgery
Surgical Nurse Vol. 7 No. 6 pp. 7–11
Highlights a useful mnemonic — children's needs DIFFER
D = Development differences
I = Information
F = Family-centred care
F = Facilities
E = Environment
R = Referral
and each of these points is expanded upon.
- DOBSON, F. and DOBSON, M. (1993)
Eye Contact
Nursing Times Vol. 89 No. 39 pp. 26–29
This highlights the specific care necessary for this speciality group — particularly psychological care and practical hints to give quality care.
- DOROSHAW, M.L. and LONDON D.L. (1988)
Surgery and Children
A.O.R.N. Journal Vol. 47 No. 3 pp. 696–697, 700
Article based on the production of a pre-operative colouring book for children being admitted for day surgery. The emphasis being on the preparation of the family in their own environment.

- DOUGHERTY, L. and STUTTAFORD, J. (1993)
Turning Over a New Leaflet
Nursing Times Vol. 89 No. 45 pp. 46–48
An article about patient information for cancer sufferers but it has some interesting points day surgery nurses may wish to take 'on board'.
1. Patients are more interested in learning about self-care than disease/condition.
2. Space allowed for individual comments and questions (organise life for admission, e.g. child care).
3. Space to individualise it to the patient, i.e. name and admission date.
4. Knock-on communication advantages for the primary health care team.
- DUTTON, K. (1995/96)
Multiskilled Nurse at Centre of Day Surgery Success
Nursing and Health Care (4) p. ix
The role of the day surgery nurse (at Addenbrooke's Hospital, Cambridge) is examined. The multiskilling aspect is considered from the nurses viewpoint —
pre-assessment
ward nursing
theatre nursing
recovery nursing
- EDDY, M. and COSLOW, B. (1991)
Preparation for Ambulatory Surgery: A Patient Education Programme
Journal of Post Anaesthesia Nursing Vol 6. No. 1. pp. 5–12
Use of the Systems Evaluation of Patient Education Model.
INPUT = preparation of all staff and the patient.
THROUGHPUT = Assessment of Needs
OUTPUT = Patient Education Programme
OUTCOME/FEEDBACK = Staff attitudes and patient behaviours
- EDMONDSON, M. and BILLINGS, J. (1995)
G.P. Fundholders: Marketing Day Surgery — A Personal View
Surgical Nurse Vol. 8 No. 2. pp. 29–31
Article looks at the links between marketing and selling. It considers who 'major' and 'minor' purchasers are and gives a framework for promoting day surgery. The main points of this framework are — quality assurance, targeting General Practitioners and targeting patients and the general public.
- FRITH, F. (1991)
Pain after Day Surgery
Nursing Times Vol. 87 No. 40 pp. 72/74/76
A very unobtrusive article with very far-reaching consequences for those in the day surgery speciality. A questionnaire was drafted and given to 1000 patients

regarding their pain following day surgery. The Q is included in the article (with the authors results). Only adults were subjects. As a result of the survey, practice was changed. Staff ensured adequate pain relief at home and patients were advised to consult their General Practitioners should pain persist.

GAMOTIS, P.B., DEARMAN, V.C., DOOLITTLE, N.O. and PRICE, S.C. (1988)

In-patient Versus Out-patient Satisfaction
A.O.R.N. Journal Vol. 47 No. 6 pp. 1421–1422, 1424–1425

Subjects were 99 inpatients and 84 outpatients between the ages of 18 and 65 who had elective surgery with no surgical complications. Data collection instrument was the Patient Satisfaction Instrument originally devised by Riser in 1975 as a questionnaire. In the discussion at the end it states “the comparison between outpatients and inpatients revealed that outpatients were significantly more satisfied with their nursing care”. This is followed by possible reasons for this situation.

GREEN, D. (1994)

Responding to Local Needs
Nursing Standard Vol. 8 No. 4 p. 21

Creation of the day surgery modules in the South Bank University INSET framework.

GREEN, D. (1995)

Patient Assessment for Day Surgery
British Journal of Theatre Nursing Vol. 5 No. 1 pp. 10–12

An overview of pre-assessment in Day Surgery giving consideration to

- (a) a nursing perspective
- (b) role of the theatre nurse

HAMBIDGE, M.C. (1987)

Laparoscopy: A Revolution in Gynaecological Surgery
Today's O.R. Nurse Vol. 9 No. 4 pp. 30–37

A very good article on gynaecological laparoscopy (generally not specific to day surgery). Covers history, indications, contraindications, pre-operative preparation, operative phase including procedure, recovery care, complications and the future.

HAWKSHAW, D. (1994)

A Day Surgery Patient Telephone Follow-up Survey
British Journal of Nursing Vol. 3 No. 7 pp. 348–350

A telephone survey undertaken for 1 year to ascertain patient satisfaction on a number of issues surrounding day surgery care.

HICKS, F. (1992)

The Power of Music
Nursing Times Vol. 88 No. 41 pp. 72–74

An article outlining the effects of music on patients coming to the operating theatre. It has implications for a main theatre and a day surgery theatre environment.

HODGE, D. (1994)

Introduction to Day Surgery
Surgical Nurse Vol. 7 No. 2 pp. 12–16

An article overviewing current day surgery practice. It gives consideration to the nurse's role and nurse education. Tables include routine day surgery procedures and A.S.A. classifications.

HODGE, D. (1994)

Hernias
Surgical Nurse Vol. 7 No. 4 pp. 5–8

A definition of a hernia, types of hernia, day surgery routine, and discharge at follow-up are all covered in this article.

HUDDLESTON, K.R. (1994)

Strabismus Repair in the Paediatric Patient
A.O.R.N. Journal Vol. 60 No. 5 pp. 754–760

This article covers the pathology of squint, the surgical procedures, pre-operative teaching and patient care. It concludes with post-operative care and discharge instructions. Good overview for anyone new to ophthalmics.

HUNG, P. (1992)

Pre-operative Fasting
Nursing Times Vol. 88 No. 48 pp. 57–60

A replication study of Stephanie Hamilton-Smith's research 'Nil by mouth' in 1972. A good section on related research. Findings related mainly to traditional routine and there was no uniformity with this practice. Seven out of 39 qualified nurses did try to individualise fasting regimes for patients. The fear of ever-changing operating lists was a significant factor which contributed to the patients' prolonged fasting (not an issue in DSU). However, it does go on to say that patients know they had to fast but that none had the reasons for the dietary restriction explained to them.

Conclusion — very little has changed in 20 years!

Recommendations — multidisciplinary negotiation — establishment of hospital policy

HUTCHINGS, P. (1995)

Advances in Anaesthesia, Some Recent Developments in Techniques for Short Stay Surgery
British Journal of Theatre Nursing Vol. 5 No. 1 pp. 13–15

An English article which covers much the same material as Galletly (1990) a New Zealand article

- Includes
- i.v. anaesthesia

inhalational agents
analgesia
the future (the search for drugs which reduce 'hang-over', better analgesics and longer acting L.A).

JAMES, J. (1995)

Day Care Admissions

Paediatric Nursing Vol. 7 No. 1 pp. 25–31

An article related to paediatrics. Covers four main areas —

- * The need for paediatrics day care facilities
- * the benefits to the child and family
- * suitable operations/treatments
- * principles of successful organisation for paediatric day care

JOSEPH, A.C. (1990)

Ambulatory Care: An Objective Assessment

Journal of Nursing Administration Vol. 20 No. 2 pp. 27–33

A review of existing literature led the author to realise that she had to create a new tool for categorising and qualifying nursing activities in ambulatory care. She discusses the history of the tool and how the 47 activities (originally identified by Verran and modified by Tighe) were sorted into the G.R.A.S.P. workload management categories of direct care, indirect care, unit related activities, personal time and 'other'. Its use was to develop staffing standards by identifying nursing tasks.

KEMPE, A.R. (1987)

Patient Education for the Ambulatory Surgery Patient
A.O.R.N. Journal Vol. 45 No. 2 pp. 501–504, 506–507

Patient assessment and the creation of a teaching plan for ambulatory surgery patients. The importance of interpersonal skills. The difference between teaching adults and children. A table showing advantages and disadvantages of different teaching strategies. The importance of nursing documentation.

KHADIM, N., PENNY, L., WRIGHT, S. and MATIN, M. (1991)

Setting up a Local Endoscopy Service

Nursing Standard Vol. 6 No. 10 pp. 24–26

This article discusses the advantages and disadvantages of setting up endoscopy provision for elderly care patients in the North of England. Not an SDU article but the layout could be beneficial for those setting up such a facility.

KLEINBECK, S. and HOFFART, N. (1994)

Outpatient Recovery after Laparoscopic Cholecystectomy

A.O.R.N. Journal Vol. 60 No. 3 pp. 394–402

A qualitative study of 19 patients who underwent day surgery laparoscopic cholecystectomy. They used semi-structured post-operative telephone interviews. They particularly looked at the patients return to usual self either by progressive activity or self-care management. It reveals patients views on their recovery and additionally discusses the implications for nurses when discharging these patients.

KUPFERER, S.S., UEBELE, J.A. and LEVIN, D.F. (1988)

Geriatric Ambulatory Surgery Patients — Assessing Cognitive Functions

A.O.R.N. Journal Vol. 47 No. 3 pp. 752–755, 758–762, 764–766

The authors discuss care of the elderly patient coming to SDU through assessing cognitive functions namely, memory, intelligence, thinking, learning and problem solving. It provides a simple outline care plan which could be used as a framework within units —
pre-operative
day of surgery
intra-operative
post-operative
day after surgery

LAURENT, C. (1991)

Time to go Home?

Nursing Times Vol. 87 No. 11 pp. 30–31

Looks at the common complaints made by parents in relation to paediatric day surgery. A brief summary of the Report 'Just for the Day'. The shortcomings of the present system for children and the need for growth and improvement in the future.

LEIGH, B. (1995)

Day Case Surgery — The Paradoxical Revolution

British Journal of Health Care Management Vol. 1 No. 5 pp. 409–410

An article from a new management journal. It considers some of the problems of day surgery and the implications of these problems — for instance — poor delegation, failure of communication, the vital element of assessment, medical negligence. Bolam standard (as a point of law) is mentioned a couple of times.

LEWIN, J. and RAZIS, P. (1995)

Prescribing Practice of Take-Home Analgesia for Day Case Surgery

British Journal of Nursing Vol. 4 No. 18 pp. 1047–1051

An article regarding two 6-week audits looking at pain following day surgery and the drugs prescribed. The results and discussion concentrated on six points — level of pain, activities of living, information-giving, effectiveness, doctor contact and the perception of day surgery.

MACKINTOSH, C. (1994)

Do Nurses Provide Adequate Post-operative Relief?
British Journal of Nursing Vol. 3 No. 7 pp. 342–347

Although this study was based on inpatients, the surgical areas of treatment all correspond to those commonly performed in the DSU. Nurses still appear to lack basic drug knowledge and these problems have existed for 20 years +!

MARKANDAY, L. and PLATZER, H. (1994)

Brief Encounters

Nursing Times Vol. 90 No. 7 pp. 38–42

An in-depth look at pre-assessment for day surgery patients including the criteria, the use of a nursing model and pain control.

MILLAR, J.M. (1988)

Day Case Surgery — An Anaesthetic Perspective

NATNews Vol. 25 No. 2 pp. 17–18

Introduction outlining the development of Day Surgery from beginning of the century. Discussion of anaesthetic day surgery problems

- patient selection
- selection of operations
- pre-operative preparation
- organisation of the unit (including monitoring equipment)
- choice of drugs for G.A.
- criteria for discharge from recovery

MUDIE, S. (1992)

Evaluating Day Care

Nursing Vol. 5 No. 7 pp. 22–23

This article follows an eye unit which set up day case facilities alongside its normal 3-day inpatient service. Initially the first 100 patients were audited with a highly successful satisfaction rate. They then went on to develop a second audit tool which was used during the discharge interview. From the second tool, action was taken in the form of standard statements.

MURPHY, S. (1994)

Pre-operative Assessment for Day Surgery

Surgical Nurse Vol. 7 No. 3 pp. 6–9

Describes the creation of a pre-assessment clinic with the functions of such a clinic, recommendations/guidelines for utilisation of the clinic, how patient suitability is assessed and the benefits of such a clinic.

NATIONAL ASSOCIATION of THEATRE NURSES (1992)

Principles of Safe Practice in the Operating Theatre

Care of the Patient undergoing Day Surgery Harrogate: N.A.T.N.

These six pages comprise a new section of the NATN folder entitled 'Principles of Safe Practice in the Operat-

ing Theatre' which was published in 1992. It discusses seven specific areas for consideration including assessment, admission, peri-operative care, recovery and evaluation. It would have been helpful if it had cross-referenced with other articles in the same folder, e.g. electro-cautery precautions.

NEILL, S. (1995)

Fasting for Day Surgery: The Parental Role

Paediatric Nursing Vol. 7 No. 2 pp. 20–23

An excellent critical analysis of fasting for children undergoing day surgery. The following headings are pursued —

- * current fasting guidelines
 - * rationale for fasting
 - * shortening the fast with implications for practice
- The conclusion raises a number of issues worthy of further research.

NEWS (1993)

Treasury 'will not bail out NHS Trusts'

Nursing Standards Vol. 8 No. 10 p. 14

A prediction by a junior health minister about the future of day surgery: —

- ↑ minimal invasive techniques
- ↑ control by G.P.s
- ↓ beds
- ↓ length of stays

NEWS (1994)

Contributions (Various) from 2 day conference on Day

Surgery at Café Royal London on 22/23 February 1994

Nursing Times Vol. 90 No. 9 pp. 8–9

Contributions by:—

Moira Edmundson

Bernadette Friend Nick Black/Tom Sackville

Erica Lowry

Lynne Berry

Elizabeth Sutherland

OBERLE, K., ALLEN, M. and LYNKOWSKI, P. (1994)

Follow-up of Same Day Surgery Patients

A.O.R.N. Journal Vol. 59 No. 5 pp. 1016–1025

Concerns a telephone follow-up questionnaire in two sections (1st gathered personal data, 2nd about patients post-operative course on the 4th post-op day. A Likert type rating scale was used. Sample was 294 patients. Their conclusion was that patients require guidelines against which they can gauge their progress.

OMEROD, B. (1987)

Peri-operative Nursing Care of the Elderly Outpatient

Perioperative Nursing Quarterly Vol. 3 No. 2 pp. 22–26

An article considering the elderly day surgical patient. Covers the sociological aspects of an elderly population generally

- preoperative assessment
- intra-operative care
- post-operative care

PENN, S. (1990)

Day Surgery,
British Journal of Theatre Nursing Vol. 27 No. 10 pp. 3–4

A very good overview of the work of a day surgery unit — staffing, environment, patient selection, information and communication, recovery and discharge. Also briefly mentions the role of the nurse.

PETERSEN, C. (1992)

Post-operative Follow-up: Tracking Compliance and Complications
Seminars in Perioperative Nursing Vol. 1 No. 4 pp. 255–260

An American article on the importance of post-operative follow-up after discharge from ambulatory surgery. The article discusses the benefits of post-operative telephone calls and gives examples of guidelines to be followed and the relevant documentation.

PETTERSON, T. (1994)

How Readable are the Hospital Information Leaflets Available to Elderly Patients?
Age and Ageing 23 pp. 14–16

Excellent article explaining the use of the Gunning Fog Test of readability on hospital information leaflets (70). Of particular use are the tables on the second page — notably the one giving guidelines for good writing practice.

PIDCOCK, M. (1994)

It's a Family Affair
Nursing Standard Vol. 8 No. 34 pp. 20–22

The creation of a cardiology day care unit (8 bedded). Treatments are principally cardiac catheterisation and electrophysical studies. On admission a self-assessment is given to patients based on Orem's model. The nurses are multi-skilled to perform ECG, take blood and cannulate. Free rein for relatives. Creation of a health education nurse and patient satisfaction surveying.

POWNALL, M. (1995)

Pioneer Day Surgery Scheme Slims Down Procedures
British Journal of Health Care Management Vol. 1 No. 11 pp. 540–541

An overview of the South Staffordshire FASTRAK system of Day Surgery where patients can go in to the G.P. and come out with a date for day case surgery.

Tends to cover the advantages and not many of the disadvantages, e.g. patients could be coming to unfamiliar surroundings and staff.

RADFORD, P. (1990)

Physical and Emotional Care
Paediatric Nursing Vol. 2 No. 5 (?) June pp. 12–13

An article not specifically related to day surgery however it does address such paediatric issues as starving and pain relief.

RALPHS, D. (1994)

Is Day Surgery for You?
British Journal of Theatre Nursing Vol. 4 No. 1 pp. 4–8

An overview of day surgery from a patient perspective and includes the role of the nurse, pre-assessment and the link with discharge.

RAPER, J. (1992)

Practical Advice
Nursing Times Vol. 88 No. 36 pp. 26–27

Three day surgery case studies of patients who had returned to work and then found they were unable to cope. This occupation health nurse looked at common denominators of the patients referred to her in the previous 2 years. The one problematic area appeared to be upon discharge — the assumption being that a short stay in hospital necessitates only a short recuperation afterwards even when patients have undergone GA.

REID, S. (1992)

After the Big Sleep
Nursing Times Vol. 88 No. 36 p. 28

A discussion of numerous possible reasons why patients suffer post-operative fatigue

- the cocktail of drugs used for GA
- the length of starvation time
- anxiety
- blood loss = > anaemia
- diarrhoea following endoscopy

The particular issues surrounding day case patients who may assume they can resume their pre-operative lifestyle very quickly after surgery.

REYNOLDS, A. and MORGAN, M. (1991)

Day-to-day Image Problem
Health Service Journal Vol. 101 No. 5265 pp. 18–19

An examination of nurse's satisfaction with various aspects of day surgery work

- attractiveness of the hours
- job satisfaction (team work, relaxed atmosphere, provision of variety)

Two common attitudes held by nurses are that Day Surgery is (1) an easy option (light workload) (2) only lumps 'n' bumps. To conclude, it states that Day Surgery did not enhance career prospects.

ROBINSON, H. (1994)

An Unorchestrated Encounter — A User's Account of Day Surgery

Surgical Nurse Vol. 7 No. 4 pp. 28–30

A patient's account of day surgery. He highlights his views, feelings and perceptions from when he first receives his letter of admission for arthroscopy through to his first post-operative night. A 'must' for all day surgery staff.

SHARKAR, S. (1995)

Hand Surgery

Surgical Nurse Vol. 8 No. 3 pp. 15–18

Most elective hand surgery can be performed on a day basis. It starts with definitions of four common procedures and the use of L.A. blocks. The surgical procedure for carpal tunnel decompression is given and follows on with post-operative recovery, follow-up and information.

SHAW, D. (1989)

Insight into Short Stays

New Zealand Nursing Journal

Concerns the setting up in New Zealand of a short stay ward. How nearly two-thirds of patients were for day surgery. The role of the pre-assessment clinic. Excellent second to last paragraph commenting on some good psychological reasons for day surgery.

SMITH, H. (1993)

Day Release Cataracts

Nursing Times Vol. 89 No. 39 pp. 29–32

Results of a study of 100 patients undergoing cataract surgery under L.A. It looks particularly at pain during the administration of the L.A. and during the peri-operative phase.

SMITH, J.P. Editorial (1991)

Children Could Benefit From an Expansion in Day Care Services in British Hospitals.

Journal of Advanced Nursing Vol. 16 pp. 767–768

Essentially this is an overview of the Rosemary Thornes report from the CCHS called 'Just for the Day: Children admitted to hospital for Day Treatment'. Of particular interest are the 12 standards recommended by the report for any planned package for children.

SMITH, S. (1992)

Tiresome Healing

Nursing Times Vol. 88 No. 36 pp. 24–26

This article poses some interesting thoughts about planned discharge from hospital especially for the so-called 'routine' surgery. It isolates the gulf between being well enough to be discharged from hospital and well enough to return to normal life. Information giving tends to be very broad rather than very specific so

patients tend to complain. Patients should be looked at as individuals, especially their normal life.

SMITHSON, B. (1993)

Setting up a Day Unit in Ophthalmology

Nursing Standard Vol. 7 No. 51 pp. 25–29

A good overview of what is required in creating day case surgery for this special group of patients.

SNELL, J. (1993)

Room Service

Nursing Times Vol. 89 No. 5 pp. 16–17

Highlights the patient hotel ward at Kingston Hospital. It looks at the cost-effectiveness in terms of savings on nursing staff, the freeing of acute beds and no rigid systems for the patient to follow. It concludes with names of other hospitals following suit — St. Mary's Paddington, Guys and Liverpool.

STANFIELD, V. (1987)

Peri-operative Education: Changing to Meet Short-stay Needs.

Journal of Post Anaesthesia Nursing Vol. 2 No. 2 pp. 74–77

The change which occurred in one USA hospital in a 10 year period from in-patient admissions to out-patient admissions. She refers to the time constraints upon patient education and the need for quality information to be given. Her trials of various programmes — pre-surgical group education; video presentation; C.C.T.V. Eventually they combined a booklet with the C.C.T.V. video.

STEELMAN, V. (1990)

Intra-operative Therapy: Effects on Anxiety and BP. A.O.R.N. Journal Vol. 52 No. 5 pp. 1026–1034

A study of 43 day patients, one group had intra-operative music and the other did not. Tranquil music was delivered by headphones. Results were that music was as effective as verbal distraction to lower anxiety AND decreased both systolic and diastolic BP which distraction did not.

STEPHENSON, M. (1988)

The Case for Day Care Surgery

Nursing Times Vol. 84 No. 4 pp. 37–38

An article outlining initially the importance of post-operative observations in the recovery of day surgery patients. However, these are seen as not being performed for their own sake but for ascertaining a patient's readiness for discharge. This is followed by an examination of the nurse's role in day surgery, notably patient information-giving.

STEPHENSON, M.E. (1990)

Discharge Criteria in Day Surgery

Journal of Advanced Nursing Vol. 15 pp. 601–613

Seven categories are proposed to guide nurse's decision making. These are:

1. Mental state
2. Mobility
3. Pain
4. Eating and drinking
5. Elimination
6. Information/Education
7. Social factors

SUTHERLAND, E. (1991)

All in a Day's Work

Nursing Times Vol. 87 No. 11 pp. 26–30

Based on provision of SDU at Addenbrooke's, Hospital, Cambridge. Mentions individualised care based on the orem self-care model of nursing. She discusses the expectations which patients have — some of which are unrealistic. Nurse–patient communication with use of care plan highlights relationships between anxiety and pre-op information. Involves a discussion of skill mix in the unit — both nursing and medical (also clerical staff).

SUTHERLAND, R. (1994)

Is This the Way Forward?

British Journal of Theatre Nursing Vol. 4 No. 1 pp. 12–13

A different perspective on the role of the nurse in day surgery. Also discusses an induction programme for new members of staff.

SWISHER, M.L. (1991)

A System Analysis of Ambulatory Surgery Healthcare Nursing Management Vol. 22 No. 5 pp. 96Y, 96BB, 96FF

Starts with a brief history of Day Surgery. Growth of Day Surgery in USA and main reasons why it has occurred — insurance companies, other controlling agencies, patient satisfaction. The core role played by nurses in Day Surgery.

TASKER, M. (1993)

Day Case Adenoidectomy for Children

Paediatric Nursing Vol. 5 No. 2 pp. 18–19

A description of the role of a paediatric specialist nurse who visits children and their parents prior to day case adenoidectomy in their own homes. It demonstrates the pre-operative information given — as in post-operative instruction. Evaluation is given by the specialist nurse and also the parents of the children.

TATTAM, A. (1992)

Rise in Day Surgery Triggers Health Problems among Staff

Nursing Times Vol. 88 No. 45 p. 8

Brief article highlighting the problems of using Glutaraldehyde. In my personal opinion (DHG) this highlights not the problems of the disinfectant but the lack of education and training to Day Surgery staff. The R.C.N. identification of increased patient throughput and therefore a greater risk on staff is correct, thus the need for education and supervision has great implications.

THORNES, R. (1991)

All in a Days Work

Paediatric Nursing Vol. 3 No. 1 pp. 7–8

This covers the care of paediatric day patients in in-patient paediatric wards (where they were described by one sister as 'lodgers'). Emphasis is placed on parents need for more detailed pre-operation preparation information. It suggests a planned package of care for day case admissions with 12 Quality Standards.

VASQUEZ, M.A. (1992)

From Theory to Practice: Orem's Self-Care Nursing Model and Ambulatory Care

Journal of Post Anaesthesia Vol. 7 No. 4 pp. 251–255

A description of Orem's Theory and related Model of Nursing. Nursing practice using Orem's model with examples of its use in the Ambulatory Care Setting.

WHILE, A.E. and CRAWFORD, J. (1992)

Paediatric Day Surgery

Nursing Times Vol. 88 No. 39 pp. 43–45

A study of 10 children undergoing general day surgery operations. Very clear tabulated data on —

- Information given to patients on admission procedure
- Length of instructed and actual fasting times
- Features of the post-operative period
- Discharge advice received by parents

WHILE, A. and WILCOX, V. (1994)

Paediatric Day Surgery: Day Case Unit Admission Compared With General Paediatric Ward Admission

Journal of Advanced Nursing Vol. 19 pp. 52–57

This small study looks at the principle areas of information-giving and the role of the paediatric trained nurse in both DSU and on in-patient wards.

WHITEHEAD, C. (1989)

How Fit is Fit?

British Journal of Theatre Nursing Vol. 26 No. 8 p. 13

A discussion regarding the fitness of patients to be discharged from the recovery area of DSU. The need for definitions of terms like street-fit. The differences between physiologically fit and socially fit. The author says "who is making the final decision and by what criteria" to discharge patients. The ethico-legal aspects are also touched upon.

WILLIAMS, M. and BRETT, S.P. (1989)

Discharge Surveys

A.O.R.N. Journal Vol. 49 No. 5 pp. 1371–1373; 1376–1378; 1380

The authors from a North Carolina Hospital state that patient satisfaction surveys should not just be used for quality assurance monitoring. They developed a discharge survey which was completed by patients 1 week after discharge. All information was collected and recorded along with any required nursing follow-up,

using a tracking calendar. This material was analysed quarterly.

WISEMAN, S.J. (1990)

Patient Advocacy: The Essence of Perioperative Nursing in Ambulatory Surgery

A.O.R.N. Journal Vol. 51 No. 3 pp. 754–762

A very good article reviewing the patient advocacy role from history → role perception → characteristics → role conflict → role accomplishment → goals.