

Outpatient preanaesthesia evaluation clinics

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ABSTRACT

In recent years, there has been a paradigm shift from an inpatient to outpatient preanaesthesia evaluation. This has been driven by rising healthcare costs and the increasing popularity of ambulatory and same-day admission surgery. These outpatient preanaesthesia clinics play an important role in enhancing the cost-effectiveness of the perioperative process. This review describes the structure of modern outpatient preanaesthesia evaluation clinics, and the associated benefits, limitations and controversies.

Keywords: ambulatory surgery, anaesthesia, outpatient clinics, preadmission evaluation, preoperative care

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INTRODUCTION

Preanaesthesia evaluation is the process of clinical assessment that precedes the delivery of anaesthesia care for surgery and nonsurgical procedures⁽¹⁾. At a minimum, it includes an interview and examination of the patient, a review of previous medical, surgical and anaesthesia problems, a detailed account of current medication use, and provisions for obtaining and reviewing preoperative tests. Preanaesthesia evaluation is the responsibility of the anaesthetist. The goals are: to reduce the morbidity of surgery, increase the quality but decrease the cost of perioperative care, and return the patient to desirable functioning as quickly as possible⁽²⁾. With the current emphasis on cost-effectiveness, reduction in surgical delays and case cancellations are two of the most important goals of the preanaesthesia evaluation process.

CHANGING TRENDS IN THE PREANAESTHESIA EVALUATION PROCESS

Traditionally, elective surgical patients are admitted to hospital the day before surgery and undergo an anaesthetic assessment, risk optimisation and preoperative preparation as inpatients. This practice

is no longer routine in many parts of the world. One main disadvantage of inpatient preanaesthesia evaluation is its lack of cost-effectiveness. The presurgical stay is often poorly reimbursed by third-party payors in North America⁽³⁾. In addition, inpatient evaluation did not effectively eliminate day-of-surgery cancellations due to inadequate optimisation of comorbidities⁽⁴⁾ and administrative factors, such as an unsigned surgical consent form⁽⁵⁾.

The potential benefits of a preanaesthesia evaluation clinic (PEC) were proposed as early as 1949⁽⁶⁾. However, it was not until the 1980s that there was a paradigm shift to an outpatient mode of preanaesthesia screening, attributed to changes in health cost reimbursement in the USA and the growing popularity of ambulatory and same-day admission (SDA) surgery, up to 60% in the USA⁽⁷⁾.

Early PECs were mainly nurse-based⁽⁸⁾ or primary care physician-based^(9,10), with anaesthetist-led screening occurring on an *ad hoc* basis. Although improved efficiency of the perioperative process was reported^(8,9), the benefits were limited, due to a lack of organisation, administrative support and experienced personnel. Consequently, cost containment was only marginal⁽¹¹⁾. In the 1990s, there were the development and implementation of modern and efficient PECs in the USA⁽¹²⁻¹⁴⁾, Canada^(3,15), Australia⁽¹⁶⁾ and Europe^(17,18). Concurrent with this growth, there is increasing literature describing their organisation, utilisation, benefits and limitations.

STRUCTURE AND ACTIVITIES OF MODERN OUTPATIENT PECs

Physical requirements

The primary goal of a PEC is to provide a comprehensive anaesthesia service for surgeons and their presurgical patients at one centralised location⁽²⁾. It can be situated in the same hospital complex as other surgical specialty clinics. Proximity to the outpatient surgical clinics promotes easy accessibility and convenience, particularly if the clinic system allows patients to be assessed at the PEC on the same day as their surgical appointments. Alternatively, the PEC may be located

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Appendix: Sample of a self-administered health screening questionnaire.

Dear Patient:
We welcome the opportunity to participate in your medical care. To ensure maximum safety and efficiency, we ask that you provide accurate answers to the questions asked relating to your general state of health. Thank you for your help and we look forward to caring for you.

AGE	SEX <input type="checkbox"/> MALE <input type="checkbox"/> FEMALE	HEIGHT	WEIGHT
LIST ALL ALLERGIES		LIST ALL OPERATIONS YOU HAVE HAD	
LIST ALL MEDICATIONS YOU NOW TAKE		DATE	

	NO	YES	COMMENTS
ANESTHESIA			
1. Have you ever had an anesthetic?			
2. Have you ever had a problem with anesthesia?			
3. Has any one related to you ever had a problem with anesthesia?			
RESPIRATORY			
4. Do you smoke? If yes, how many packs per day and for how many years?			
5. Do you have a cough?			
6. Do you bring anything up when you cough?			
7. Have you had asthma?			
8. Do you have a cold?			
9. Have you ever had an abnormal chest x-ray?			
10. Have you ever had any difficulties breathing?			
11. Can you walk up two flights of stairs without getting a short of breath?			
12. Are you ever short of breath at night?			
CARDIOVASCULAR			
13. Do you have a heart murmur?			
14. Have you ever had a heart attack?			
15. Have you ever had angina or pain in the chest related to your heart?			
16. Have you ever had an abnormal EKG?			
17. Have you ever had high blood pressure?			

Questionnaire continues on reverse side

PT NO _____
NAME _____
DOB _____

University of Washington Academic Medical Center
Harborview Medical Center - UW Medical Center
University of Washington Physicians
Seattle, Washington
PATIENT HEALTH ASSESSMENT

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	NO	YES	COMMENTS
RENAL			
18. Have you ever had kidney disease?			
19. Have you ever been jaundiced?			
GI			
20. Have you ever had hepatitis?			
21. Do you have a hiatus hernia or get heartburn?			
22. Do you use alcohol? If so, how much and how often?			
23. Have you ever had a stroke?			
NEUROLOGICAL			
24. Do you have an arm or leg that becomes numb or weak?			
25. Have you ever had seizures, episodes of unconsciousness, or fainting?			
26. Do you have frequent headaches?			
27. Have you ever had an eye problem or problems with your vision?			
28. Do you have diabetes?			
29. Have you ever had thyroid problems?			
MUSCULO-SKELETAL			
30. Do you have back problems?			
31. Do you have arthritis?			
32. Do you have any physical disabilities?			
33. Do you have any bleeding tendencies?			
GENERAL			
34. Have you ever been anemic?			
35. Have you shed weight in the past two weeks? If so, how much?			
36. Do you have any chipped or loose teeth? Dentures, caps, bridges, teeth, braces?			
37. Have you ever been under the care of a psychiatrist?			
38. Is there anything else you feel you should tell us?			
FEMALES			
39. Could you be pregnant?			
DATE OF LAST PERIOD	CYCLE	LENGTH	CONTRACEPTIVE METHOD
NUMBER OF PREVIOUS PREGNANCIES	LIVE BIRTHS	ABORTIONS	STILL BIRNS
ANY OTHER COMMENTS			

PT NO _____
NAME _____
DOB _____

UW N 1066 REV NOV 01 - BACK

next to the operating room, as part of the perioperative service unit. The physical design of the clinic should provide adequate space demarcated into areas for registration and reception, admitting and financial services, patient interview and examination, patient and family preoperative education, facilities for phlebotomy and electrocardiogram testing and staff rest.

Personnel requirements

There is a trend towards anaesthetist-directed, nurse-led preanaesthesia evaluation^(11,15,16), driven by the need for cost-effectiveness. At the preanaesthesia clinic of the University of Washington Medical Center, a consultant anaesthetist is assigned to the clinic daily and is responsible for resolving any clinical problems. Medical officers from anaesthesia are also posted to the clinic as part of their training. This ensures that training in preanaesthesia evaluation and optimisation is continued. A medical director of the PEC is responsible for policy administration, service development and quality assurance. In most PECs, this director is an anaesthetist^(12,17). The literature suggests that PECs directed by anaesthetists are more cost-effective, in part due to cost-efficient practices in preoperative testing⁽¹⁴⁾. At the clinic, workload may vary at different times and flexibility in staffing is required. Staff can be redeployed between the clinic and other perioperative areas such as the post-

anaesthesia care unit, according to clinical and administrative needs.

Admission criteria of the clinic

Patients may present at the PEC either on a referral basis or as a mandatory visit at a suitable time interval prior to their scheduled surgery⁽¹²⁾. A hybrid system is used in some institutions where patients' responses to a preliminary screening questionnaire are forwarded to the PEC for review. Patients who are healthy and do not require further evaluation are allowed to "bypass" the PEC, eliminating unnecessary attendance.

The value of a health screening questionnaire for triage has been recognised⁽¹⁷⁾. These include a self-administered questionnaire (Appendix)^(17,19), structured interview⁽²⁰⁾ or computerised questionnaires^(12,21) such as the HealthQuiz (NELLCOR, Pleasanton, CA, USA). In a survey to determine the effectiveness of a screening questionnaire, anaesthetists felt that 6% (9 out of 146) of the patients who were "bypassed" after preliminary screening by a questionnaire should have been assessed at the clinic. This raises concerns that such screening tests may lack positive predictive value⁽¹⁷⁾. However, none of these "bypassed" patients had their surgeries cancelled. Four underwent surgery without a change in clinical plans while the others were delayed an average of only 6 minutes for further history-taking and preoperative testing. The value of

a health screening questionnaire as a means of patient data collection, identification of risk factors for anaesthesia and determination of timing of evaluation by the anaesthetist has also been recently validated⁽²²⁾.

Clinic activities

The PEC serves as a convenient, one-stop centre in which patients can have their surgical, anaesthesia and medical care coordinated and enhanced. Appointments can be scheduled to coincide with the day of their surgical outpatient visit so that multiple trips by patients are avoided. In practice, this may be difficult to achieve as it needs close collaboration and support among anaesthetists, surgeons, physicians, nursing staff and laboratory services. Issues that must be addressed to ensure smooth clinic operation include the timely reporting of results by laboratory and diagnostic imaging services, a system of medical referral for timely optimisation and an efficient appointment system.

Scheduling should ensure an even patient flow. To further enhance efficiency, the duration for each appointment can be allocated according to the anticipated duration of evaluation based on the medical complexity of the patients, determined upon completion of the health screening questionnaire. Typically, American Society of Anesthesiologists (ASA) physical class 1 and 2 patients require a shorter clinic visit time, compared to ASA class 3 and 4 patients.

The PEC should provide a relaxed, and yet private, atmosphere in which the following activities are carried out:

1. Preanaesthesia evaluation through review of the medical records and relevant history, examination and relevant ancillary testing, followed by risk optimisation through appropriate interventions and consultations.
2. Discussion of the risks and benefits of anaesthetic options and pain management strategies.
3. Alleviation of anxiety through counselling.
4. Patient and family education on topics such as fasting, medications to continue on the day of surgery, special nursing care requirements, anticipated duration of hospital stay, transportation issues and contingency for intercurrent illness.
5. Validation of consent and documentation of advanced medical directives (if any).
6. Reduction of day-of-surgery delay or no-show via telephone calls made on the day before surgery .

Recently, compelling evidence has been presented for the efficacy of perioperative beta-adrenergic blockers (BBs) in reducing the risks of cardiac events in patients with established or risk factors for coronary artery disease^(23,24). There is a move towards the development

and implementation of a clinical pathway for the administration of perioperative BBs⁽²⁵⁾. The PEC could facilitate this directly by providing a means of implementing the clinical pathway or indirectly by co-ordinating patient care with an internal medicine clinic⁽²⁶⁾. Other problems that may be effectively identified and addressed include sleep apnoea syndrome, difficult airway, chronic obstructive pulmonary disease, complex pain syndromes, risk of aspiration, risk of severe postoperative nausea and vomiting (PONV), and malignant hyperpyrexia.

Screening questionnaires for the sleep apnoea syndrome may be used to identify candidates for sleep studies and those who may benefit from training in the use of continuous positive airway pressure to prevent airway obstruction after surgery. Identification of patients with a "difficult airway" permits prior planning for availability of suitable equipment in the operating room for intubation. Patients identified with complex pain syndromes may be appropriately premedicated and services of a pain service initiated in advance of surgery. In some cases, plans can be made to provide continuous regional anaesthetic nerve blocks or other specialised techniques. Risks of aspiration may be reduced by providing patients with medications to be taken 24 hours prior to surgery to reduce gastric acidity and volume. Similarly, patients at risk of PONV may be premedicated with appropriate drugs (such as transdermal scopolamine)⁽²⁷⁾ to prevent emetic symptoms which may subsequently impair recovery and discharge on the day of surgery.

When a risk of malignant hyperpyrexia is identified, plans may be made to ensure delivery of a "safe, non-triggering anaesthetic" and availability of dantrolene to treat an episode. If latex allergy is identified, the availability of appropriate latex-free equipment can be ensured. For women who are breastfeeding, appropriate counselling can be provided with regard to "breast pumping" at home and before surgery. These are but a few examples of protocols and guidelines that can be initiated through a PEC to enhance patient safety and reduce delays by anticipation of special requirements in the perioperative period.

Timing of preanaesthesia evaluation

In general, patients are screened at the PEC from two to 30 days or more before their scheduled date of surgery. There is no strong evidence in the literature on the optimal timing for preanaesthesia evaluation. In the practice advisory on preanaesthesia evaluation developed by the ASA Task Force on preanaesthesia evaluation, it was recommended that preanaesthesia evaluations be performed prior to the day of surgery for patients with high severity of disease and/or

undergoing procedures of high surgical invasiveness⁽¹⁾. Hence, factors that should be used to guide the timing of preanaesthesia evaluation are: patient demographics and clinical conditions, the type and invasiveness of the procedure, and availability of resources provided by the specific practice environment. As noted previously, preliminary screening of a patient's health questionnaire by the PEC may be useful in determining the timing of outpatient evaluation.

BENEFITS OF OUTPATIENT PECS

There is a growing body of literature describing the extensive benefits associated with the development of PECS in North America, Europe and Australia.

As a prerequisite for ambulatory and SDA surgery

Outpatient preanaesthesia evaluation is a prerequisite for the safe administration of anaesthesia for ambulatory and SDA surgery. The development of a PEC has been shown to facilitate the smooth and rapid transition from inpatient to outpatient surgery at a government-funded hospital, without causing a concomitant increase in perioperative mortality and major morbidity among outpatients⁽²⁸⁾. Its implementation has also allowed medically-complex patients to undergo invasive procedures, such as carotid endarterectomy (CEA) and lower extremity revascularisation (LER), as SDA surgery⁽²⁹⁾. After the implementation of outpatient preanaesthesia screening, rates of SDA surgery for CEA and LER increased from 0% in the control period to 62% and 50%, respectively, in the study period, without adverse effect on patient outcome. The average preoperative length of stay also decreased significantly from 7 (± 5.6) to 1.9 (± 5.0) days and 9 (± 7.9) to 2.8 (± 4.2) days in the CEA and LER groups, respectively, with considerable hospital cost savings of US\$59,000 for that period.

Reduction in day-of-surgery delay or cancellation

Delay or cancellation within 24 hours of planned surgery is highly undesirable as it causes patient distress⁽³⁰⁾, disrupts bed management, reduces operating room efficiency, and increases costs incurred by having to maintain a facility that is essentially not generating productivity. Depending on the definition of cancellation, rates as high as 10% to 20% have been reported^(12,15,31). There are many causes of cancellation of elective surgery. Reasons frequently cited include insufficient operating room time⁽³²⁾, sudden acute illness⁽³²⁾ and failure to comply with nil per os (NPO) status⁽³³⁾. While a preoperative assessment performed weeks to days ahead of the scheduled surgery may not have a primary effect on these causes, outpatient education on the importance of early

reporting of illness and the reinforcement of NPO guidelines could theoretically reduce the frequency of cancellations related to these causes.

Several studies have found significant reduction in the cancellation rates after implementation of outpatient preanaesthesia evaluation services^(12-14-16,18). Fischer reported a decrease in the rate of day-of-surgery cancellation from 1.96% in the year before implementation of the anaesthesia preoperative evaluation clinic to 0.21% in the year following its implementation at the Stanford University Hospital⁽¹²⁾. However, it was not stated whether this reduction was associated with cost savings for the hospital.

In another study, the implementation of an anaesthetist-directed preanaesthesia evaluation centre at a government-funded Veterans Affairs Hospital resulted in a decrease in the cancellation rate of outpatient surgery from 26% to 6.6% during the first 6 months of its establishment⁽¹³⁾. Macarthur et al also noted that patients who attended their hospital's preoperative clinic had a cancellation rate five times lower than those seen only in the surgeon's office⁽³¹⁾. A simple measure, such as preoperative phone calls, can effectively reduce the incidence of first-case delays in paediatric day surgery⁽³⁴⁾.

Reduction in excessive preoperative testing

It has been estimated that 60% to 75% of preoperative tests ordered are medically unnecessary^(36,37). In an asymptomatic patient with no risk factors, routine testing has not been shown to change perioperative care or have an impact on patient outcome. Indiscriminate testing can do more harm than good. It increases risk of iatrogenic injury arising from unnecessary testing or treatment when a borderline or false-positive result is obtained.

In a study that examined the adverse effects of preoperative chest radiographs (CXR) on 606 patients⁽³⁷⁾, 386 CXRs were ordered without proper indications, and of which the discovery of only one abnormality (an elevated hemidiaphragm) could have resulted in improved care. On the other hand, the discovery of lung shadows on three of these "routine" CXRs led to further invasive testing, including a thoracotomy, with no discovery of disease but at the expense of considerable morbidity to the three patients, including a pneumothorax.

Harm to the patient may also arise when a false-positive result distracts the physician from detecting or pursuing a clinically more significant problem. Further testing may also be undertaken, causing unnecessary delay or cancellation of the planned surgery. Increased testing also constitutes medico-legal risk to the physician as a result of failure of

notation of or follow-up on abnormal findings. Studies show that 30% to 95% of all unexpected abnormalities found on preoperative testing were not noted on the chart before surgery⁽²⁾. Lastly, unnecessary testing increases healthcare costs. It has been projected that up to US\$1.3 billion could potentially be saved in the US annually if unnecessary preoperative testing were to be eliminated⁽³⁵⁾.

To reduce indiscriminate preoperative testing, guidelines such as those in the literature^(38,39) and recommendations of the ASA task force on preanaesthesia evaluation⁽¹⁾ could be utilised. The latter advocates the individualisation of testing based on the invasiveness of the surgical procedure and medical condition of the patient, as determined by the ASA physical status classification. However, studies show that ingrained test-ordering behaviour of physicians is difficult to change⁽⁴⁰⁾ and educational efforts alone are inadequate⁽⁴¹⁾. More substantial cost-savings can be obtained when test-ordering is delegated to PECs directed by anaesthetists^(12-14,42). Fischer reported a 55% reduction in hospital costs which translated into one-year hospital cost-savings of US\$1 million when excessive preoperative testing was curtailed following the implementation of the preanaesthesia clinic at Stanford University Hospital⁽¹²⁾.

The establishment of a PEC reduces excessive testing in the following ways:

1. It provides an appropriate setting and time for a detailed preanaesthesia evaluation which is used to guide preoperative testing⁽³⁷⁾. The computerised health screening programme (HealthQuiz) incorporates an algorithm-based decision-making function which could be utilised to guide testing⁽⁴³⁾.
2. It allows for the establishment of consensus guidelines among anaesthetists on the indications for preoperative testing.
3. It empowers the clinic to cancel tests deemed unnecessary by consensus guidelines.

In reducing unnecessary testing, there is a danger that medically-indicated tests could be omitted⁽³⁵⁾. It is imperative that cost-effectiveness in preoperative testing is attained without compromising patient safety.

Reduction in length of hospital stay

Surgical patients want to be in hospital for as short a time as possible⁽¹⁶⁾. Variations in the duration of hospital stay are often related to differences in practice patterns⁽⁴⁴⁾ and are not evidence-based. In a retrospective analysis of actual costs and charges related to perioperative costs of surgical patients in a university hospital in the US, perioperative ward expenditures accounted for over 30% of total hospital costs incurred⁽⁴⁵⁾.

Where healthcare resources are allocated by case mix and diagnosis-related groups, a reduced hospital stay could result in cost-savings.

A PEC can shorten hospital stay by allowing patients to undergo SDA or ambulatory surgery, and by discharge planning during the clinic visit. Meeting a patient's needs for information before surgery has been shown to produce patients who are ready to leave the hospital earlier^(46,47). In one study, patients scheduled for elective total hip replacement who were given additional preparatory information preoperatively, postoperatively and pre-discharge required less postoperative analgesia and had earlier mobilisation and discharge times, compared to those who received only routine advice and support⁽⁴⁶⁾. In another study, the psycho-educational preparation of patients before surgery was also shown to reduce postoperative length of stay⁽⁴⁷⁾.

Reduction in the rate of surgical complications

An association between length of hospitalisation and the risk of nosocomial infection has been reported^(48,49). Decreasing hospital stay through ambulatory and SDA surgery, and improved discharge planning, may reduce nosocomial infection rates. Caplan et al reported a 70% reduction in the rate of surgical wound infection from 16.3% to 5% when the hospital's elective surgical service was re-engineered to include outpatient preoperative assessment and SDA surgery⁽⁵⁰⁾. This study suggested that the risk reduction could be due to the reduced exposure to a factor that occurs early in the admission, such as hospital microbial flora.

Reduction in subspecialty consults

A PEC can reduce the use of costly subspecialty consults without affecting patient outcome. The implementation of more stringent consultation algorithms through a high volume, tertiary care PEC led to a significantly reduced rate of preoperative cardiology consultations⁽⁵¹⁾. Alternatively, having a PEC staffed by physicians who are trained in both internal medicine and anaesthesia could further enhance the provision of high quality patient care with hospital cost savings⁽¹²⁾.

Charges for PEC reviews

As routine preanaesthesia evaluations are not usually eligible for remuneration, it remains debatable whether patients should be billed for PEC consults. It may appear justifiable to bill patients for anaesthesia consultations that are delivered with a high level of expertise, and which subsequently enable patients to avoid the cost of an unnecessary overnight stay

in hospital. Locally, it is our experience that payment for such an outpatient preanaesthesia evaluation service is more acceptable to patients when the charges could be incorporated into the inpatient hospital bill, with provision for utilisation of the Medisave or other insurance payment schemes.

Resident education and research

Unlike the traditional operating room-based approach of anaesthesia training, perioperative medicine is patient-oriented and focused on the continuum of patient care. The PEC provides anaesthesia trainees with training experience in preanaesthesia assessment and optimisation, patient education, and participation in clinical research pertaining to the implementation of protocols, clinical pathways and quality assurance.

CONTROVERSIES FACING OUTPATIENT PECs

Is it mandatory to provide outpatient preanaesthesia assessment for every surgical patient?

To date, there is no published data comparing the cost-benefit ratio of routine versus selective evaluation of patients at an outpatient preoperative screening facility. In a comparative study of early versus day-of-surgery preanaesthesia evaluation of 63 ASA 1 and 2 patients undergoing ambulatory gynaecological procedures, no intergroup difference could be identified in the anaesthetic and analgesic requirements, anxiety levels, surgical and recovery times, postoperative complications and satisfaction scores⁽⁵²⁾. This suggests that healthy, ASA 1 and 2 ambulatory surgical patients may not benefit from any reduction of preoperative anxiety that could be achieved by visiting the anaesthetist prior to the day of surgery. Day-of-surgery delay and cancellation rates were not examined in that study.

Multiple factors could influence the choice of routine versus selective evaluation at the PEC. It would be cost-effective to evaluate only selected patients who truly require it. A system of patient stratification is necessary to facilitate the implementation of cost-effective selective evaluation. One method is the use of a referral-based system. In the absence of proper guidelines, referrals initiated at the discretion of the primary physician may either result in unwarranted evaluation or risk missing important medical conditions.

The health screening questionnaire has been validated as a useful tool for determining the need and timing for PEC evaluation, the level of expertise required in the evaluation and the risks of anaesthesia^(17,22). Based on a predetermined set of criteria, patients can be classified into one of three categories: requiring no further review or review via a telephone interview; requiring preanaesthesia

evaluation at the clinic; requiring review of questionnaire by an anaesthetist, pending further action. In some settings, this has allowed up to 90% of patients to bypass the PEC, resulting in savings in time and resources.

In a typical health screening questionnaire designed to detect conditions previously shown to be associated with perioperative adverse events⁽⁵³⁾, a high level of concordance was demonstrated between the responses to the questionnaire and information obtained in a structured interview with an experienced anaesthetist⁽²²⁾. In PECs where nurses increasingly carry out preoperative screening⁽⁵⁴⁾, the health screening questionnaire plays a valuable role in enhancing patient safety by identifying patients who require further evaluation and optimisation by an anaesthetist, internist or cardiologist. Recently, the telephone preanaesthetic screening system has been incorporated into a computer programme to allow non-medically trained personnel to carry out computerised telephone preanaesthesia screening⁽⁵⁵⁾.

In another study, a hybrid model using a health screening questionnaire and direct referrals from surgeons appears effective in identifying patients who require further preanaesthesia management at a PEC, with a sensitivity of 95% and specificity of 79%⁽¹⁷⁾. In that study, the hybrid use of the health screening questionnaire with surgeon-initiated referrals was compared with the evaluation of patients by an anaesthetist.

Previous studies have suggested that the ASA physical status classification can also be a useful predictor of postoperative outcome with regard to mortality rate related to certain surgical procedures⁽⁵⁶⁾ and adverse perioperative outcomes⁽⁵⁷⁾. Further research is needed to delineate the role of ASA physical status as a tool for the triage of patients for preanaesthesia evaluation.

Should the attending anaesthetist for the surgical procedure perform the preanaesthesia evaluation?

Traditionally, it has been the standard of care that the anaesthetist who administers anaesthesia for surgery visits the patient preoperatively to perform the preanaesthesia evaluation. This practice may no longer be practical or cost-effective. In recognition of this paradigm shift, the Association of Anaesthetists in Great Britain and Ireland now recommends the provision of preoperative screening by a team led by an appropriately trained nurse in a preanaesthesia evaluation clinic⁽⁵⁸⁾.

Having an anaesthetist-directed but nurse-led PEC appears feasible without compromising patient safety^(12,13,16,17). To avoid conflict in management, protocols and consensus guidelines pertaining to

various aspects of anaesthesia care should be developed. A system of communication should also be established between the PEC and the attending anaesthetists in the operating room to alert them of potential management issues, such as sleep apnoea syndrome, difficult airway, complex pain syndromes, gastro-oesophageal reflux disease, PONV, malignant hyperpyrexia and latex allergy. Some care may be required to avoid prematurely committing patients to a particular anaesthetic regimen that may not be acceptable to the anaesthetist who would subsequently be administering the anaesthesia. This may be avoided to some extent, by describing different anaesthetic options available, with the stipulation that the final discussion would be made on the day of surgery.

Is funding for the development and maintenance of the outpatient PEC justified?

Funding is needed for the development and maintenance of PEC facilities, equipment, personnel salaries and specialist sessional time (where applicable). It may be difficult to justify the funding of the PEC to hospital administrators as the process of preanaesthesia evaluation, in itself, does not usually generate revenue for the hospital. However, the experience of most modern PECs suggests that indirect financial gains from a cost-effective clinic can be enormous when the benefits of reducing surgical delay⁽³⁴⁾ or cancellation^(12-16,18), unnecessary preoperative testing^(12-14,42), nosocomial infection rate⁽⁵⁰⁾ and length of hospital stay^(12,16,18,28,29) are considered. Most importantly, the PEC is a necessary prerequisite for the safe implementation of ambulatory and SDA surgery by hospital administrators^(28,29). The increased surgical bed availability resulting from more efficient bed management could spur new initiatives that increase hospital productivity. To secure funding successfully, a comprehensive and well-researched business proposal may be necessary, highlighting the multiple benefits of the clinic.

CONCLUSION

The development of a high quality, cost-effective PEC requires close collaboration between hospital administrators and the departments of anaesthesia, surgery and nursing. Success in its implementation needs effort, time and money, defined organisational goals, changes in support resources, and intradepartmental teamwork. There is a global need to contain rising healthcare costs resulting from ageing populations, limitations of government resources, and the increased costs of medical innovations. Many of the concepts and methods pertaining to the North American model

of a modern PEC can be applied favourably to other healthcare systems, modified for different economic, political and social characteristics. In Singapore, where ambulatory procedures have nearly doubled in the last five years to 52% of total procedures in 2002⁽⁵⁹⁾, it is surprising that there has not been a concurrent growth of PECs⁽⁶⁰⁾. With the emergence of the severe acute respiratory syndrome⁽⁶¹⁾, there is an increased need for ambulatory surgery and short hospital stays for elective surgery through the implementation of an efficient PEC.

In a recent editorial, the need to organise PECs was reiterated⁽⁶²⁾. In countries where the concept of an outpatient preanaesthesia evaluation process remains nebulous, now is the time to evaluate this strategy for cost containment.

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