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Improving patient throughput for oral day case surgery. The efficacy of a nurse-led pre-admission clinic

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Abstract

In an attempt to reduce patient failures and cancelled operations on the day of admission for oral day case surgery, and to improve pre-operative patient assessment and education, a nurse-led pre-admission clinic (PAC) was introduced in April 1996. Day case patients were selected in cohorts from the waiting list and invited to attend the pre-admission clinic prior to finalising their operation dates. Clinics were run by experienced staff nurses and patients screened for medical or surgical problems that might preclude day case surgery; access to experienced anaesthetic or surgical opinion was arranged as necessary. During a 2 year period 908 patients were sent clinic appointments, but only 727 (80%) attended; of these 629 (69%) progressed to surgery, but 98 (11%) were deemed unsuitable for day case treatment usually because of medical or socio-domestic complications and were managed more appropriately elsewhere. Of the 181 non-attenders, 140 were ultimately removed from the waiting list. Pre-admission screening thus filtered out 279 patients who were either unsuitable for day case surgery or no longer interested in receiving treatment. Waiting times for surgery were reduced from over 12 months to less than 3.

Keywords: Day surgery; Pre-admission clinic; Nurse-led

1. Introduction

The Oral Surgery Day Case Unit at Newcastle Dental Hospital provides surgical and dental treatment under general anaesthesia for a wide range of patients. Whilst the majority of patients are fit and healthy adults attending for elective dento-alveolar surgery (such as the removal of impacted third molar teeth), a significant proportion are referred for paediatric oral surgery, specialist dental care due to medical and physical handicap, or to provide treatment for patients with dental phobias.

During a clinical audit of general anaesthetic services in the Dental Hospital in 1996, a number of problems were identified:

1. A substantial waiting list for treatment had developed, with some patients having to wait up to 2 years for specialist care.
2. Patients called from the waiting list sometimes failed to attend on the day of surgery, resulting in wasted operating time.
3. Some patients were deemed unsuitable for day case general anaesthesia on the day of surgery because of complicated medical or social histories, or because of recent changes in their medical conditions.
4. Many patients attended for day case surgery with a poor understanding of the day unit admission and operating procedures, with an inadequate or inappropriate escort and with no suitable post-discharge travel arrangements.

In an attempt to overcome these defciencies, a nurse-led pre-admission clinic (PAC) was introduced in April

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1996 for all patients attending for day case general anaesthetic treatment in the Oral Surgery Day Unit. The aims of the clinic were the following.

1. To obtain an up to date medical history and improve anaesthetic assessment of patients awaiting surgery.
2. To prepare patients more fully for their day surgery attendance.
3. To reduce the number of patients failing to attend on the day of surgery, thereby optimising the use of theatre facilities and reducing waiting times.
4. To prevent avoidable cancellations of operations by identifying unsuitable patients well in advance of the proposed date of surgery.
5. To provide the opportunity for additional health education of patients, for example in relation to smoking and alcohol habits.

2. Method

The clinic was designed to be run by an experienced senior staff nurse working in the oral surgery day unit, but access to consultant anaesthetic and/or oral surgery advice was readily available, if required, from clinicians working nearby.

Day case patients, who had been seen in out-patient consultation clinics and then listed for elective dento-alveolar surgery under general anaesthesia, were selected in cohorts from the waiting list and invited to attend the PAC prior to finalising a date for their operation. The most common operative procedures were surgical removal of impacted third molars and the extraction of teeth and roots. Patients were informed that they could not proceed to surgery without satisfactory pre-admission clinic attendance, and indeed that failure to attend might ultimately lead to their removal from the waiting list.

Initially, five patients were booked per clinic, with a 30 min assessment slot assigned to each, although as staff gained experience ten patients could be seen during each session. The following protocol was adopted:

1. A medical history was taken from the patient using a standard day case anaesthetic assessment sheet (Table 1), particularly to ensure that the patient was still suitable for day surgery and that no significant change had occurred in their medical history between initial consultation and PAC attendance.
2. If the patient was accepted for day surgery, the nurse confirmed details of the general anaesthetic planned, the anticipated pre- and post-operative care, and any likely complications. A pre-operative advice sheet summarising this information and outlining appropriate fasting times before surgery was provided.
3. The patient was given the opportunity to ask any questions relating to their care as a day patient.
4. Finally, if all the agreed criteria were met, an appointment for day surgery, convenient for both hospital and patient was arranged.

3. Results

Table 2 and Fig. 1 summarise PAC activity during the 2 year period, April 1996 to March 1998 (inclusive), emphasising that out of a total of 908 patients invited to attend the clinic only 727 (80%) attended, whilst ultimately only 629 (69%) actually proceeded to day surgery.

Fig. 2 contrasts the fate of clinic non-attenders between the first and second years of clinic activity: of the 116 patients who did not attend between April 1996 and March 1997 (from the 411 sent appointments), 75

Table 1
Pre-admission clinic nurse questionnaire

Hospital number:	Height:
Name:	Weight:
Address:	Age:
	Sex:
	Occupation:

1. Have you ever had an operation before requiring a general anaesthetic?
If YES, please state year and nature of operation(s)
2. Did you have any problems with the anaesthetic?
3. Have you had any serious illness in the past?
4. Do you get chest pains (or suffer from angina)?
5. Have you ever had a fit or convulsion?
6. Do you have blackouts or faint easily?
7. Do you suffer from asthma or bronchitis?
8. If you have asthma, have you taken aspirin without ill effect?
9. Do you suffer from high blood pressure?
10. Do you suffer from arthritis?
11. Do you have any blood disorders?
12. Do you bleed badly, or bruise without cause?
13. Have you ever been jaundiced (turned yellow)?
14. Do you have kidney disease?
15. Do you have diabetes (sugar in the urine)?
16. Do you have any problems with heartburn or indigestion?
17. Do you have a hiatus hernia?
18. *If female*, are you or could you be pregnant?
19. *If female*, are you taking the contraceptive pill?
20. Do you suffer from back problems?
21. Have you any allergies (e.g. to drugs, Elastoplast, etc.)?
22. Are you on any regular medication (including inhalers)? If YES, please give details
23. Have you taken steroids (tablets or inhaler) within the last 6 months, even if you are not taking them now?
24. Do you drink alcohol? If YES, approximately how many units each week?
25. Do you smoke? If YES, approximately how many cigarettes each day?
26. Has anybody in your family (a blood relative) ever had any problems with anaesthetics or operations?

Table 2
Pre-admission clinic activity (April 1996 to March 1998)

	Number of patients sent for	Number attending PAC	Number of non-attenders	Number progressing to surgery
April 1996–March 1997	411	295	116	233
April 1997–March 1998	497	432	65	396

(65%) were removed from the waiting list, whilst 41 requested a further appointment. During the corresponding period in year two (April 1997 to March 1998) only 65 patients (out of 497 sent for) failed to attend and all of these were ultimately removed from the waiting list.

Fig. 3 illustrates the reasons why clinic attenders did not proceed to surgery, and demonstrates that 48% required further investigation, 24% were deemed unsuitable to be day case patients and were subsequently admitted for overnight stay, 19% were managed satisfactorily without general anaesthesia, and a further 9% no longer required surgery or were pregnant when called to the clinic. Fig. 4 contrasts these unsuitable patients during the first and second years of pre-admission clinic activity, and confirms that whilst 62 patients seen between April 1996 and March 1997 were not eligible for day surgery, this figure dropped markedly (to 36) during the following year. The most striking decrease was in the category of patients requiring investigation prior to surgery.

4. Discussion

The PAC has been shown to be highly successful in surgical practice, facilitating efficient operating theatre utilisation, and was recommended by the Royal College of Surgeons of England as an important surgical management tool [1]. It has now been successfully introduced in a number of surgical specialities, including oral and maxillofacial surgery, orthopaedics, general surgery and ENT [2–6]

Previous experience of a PAC for in-patient oral surgery within a university teaching hospital environment demonstrated a nearly 90% successful admission rate for surgery following PAC attendance and allowed identification and resolution of numerous medical or social problems which might have precluded surgery. It simultaneously allowed waiting list validation and a reduction in waiting times for operation [2]. Similarly useful results have also resulted from the use of PACS for paediatric otolaryngological surgery [6].

More recently, the concept of nurse-led PAC has become popular. Reed et al. [4] reported improvement in both patient satisfaction with pre-operative information and a reduction in cancelled operations due to unforeseen medical problems following the introduction of a nurse-led assessment clinic for general surgical procedures.

The nurse-led PAC at the Newcastle Dental Hospital deals with patients referred from three distinct hospital specialities for day case treatment: oral and maxillofacial surgery (the principal user), paediatric dentistry and restorative dentistry. It is within the latter two categories that many medically or physically handicapped patients, or those with severe dental phobias unmanageable by other treatment or sedation techniques, commonly present and often require complex and protracted clinical management.

An additional problem for dental hospital general anaesthesia services is a cultural one. Many patients, particularly infrequent attenders or phobic patients, perceive that ‘dental anaesthetics’ and oral surgery procedures are available immediately ‘on demand’ upon hospital attendance. Whilst this belief may often stem from the historic pattern of ‘chairside’ dental anaesthetics administered in general dental practice, there is also evidence to suggest that some confusion still exists in the minds of primary care clinicians over the appropriate referral mechanisms for modern day case anaesthesia in dentistry [7].

The nurse-led PAC acts as an important central resource where patients from a variety of backgrounds may be seen, informed, and educated in modern day surgery protocols and then appropriately managed in an efficient and professional manner.

During the 2 years analysed in this study, 908 patients were sent clinic appointments, but only 727 attended. During the first year of clinic activity, long waiting lists for treatment had built up and many patients were called after waiting in excess of 12 months. This may explain the higher number of patients, 28% that did not attend the clinic compared with only 13% who failed to do so during the second year.

In many cases the reason why patients failed to attend the PAC remains unclear, although amongst those waiting longest, change of address, resolution of acute symptoms, and having received alternative treatment elsewhere were common explanations.

Overall 629 patients proceeded successfully to surgery during the 2 year period; potentially 279 patient failures to attend on the day of surgery were avoided. Comparison between the first and second years of clinic

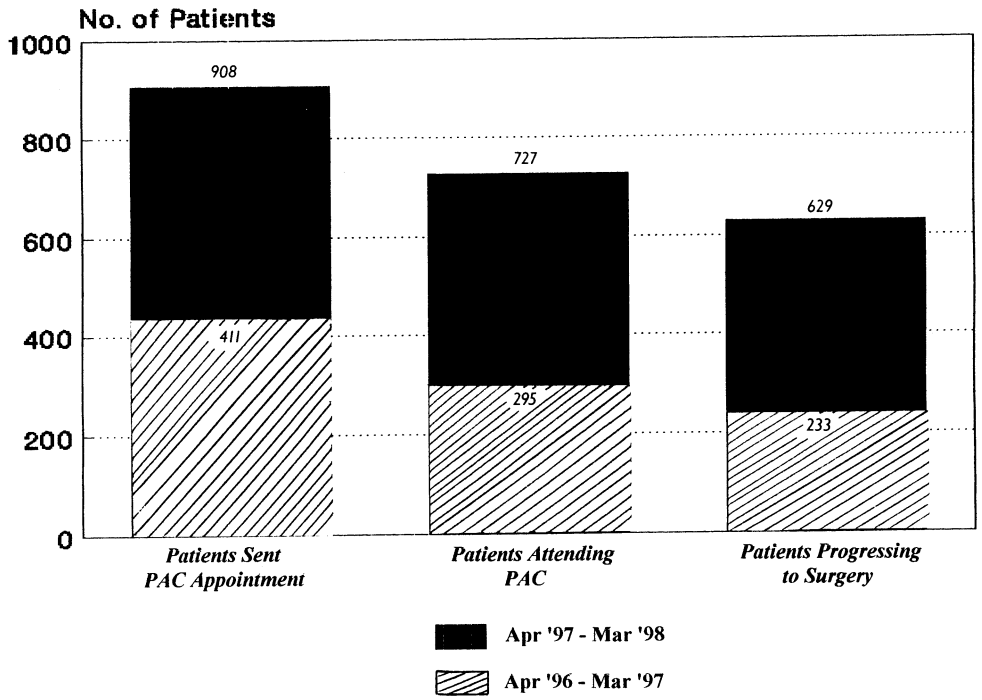

Fig. 1. The fate of patients sent pre-admission clinic (PAC) appointments.

activity again demonstrates a much higher percentage of patients proceeding to surgery in year two (396 out of 497 or 80%) compared with year one (233 out of 411 or 57%) presumably because of the shorter waiting times for treatment in the second year.

There is also a distinct difference in the fate of clinic non-attenders between the two years, with 100% of year two non-attenders removed from the waiting lists following failure to attend, whilst during the first year only 65% were removed with 35% given further clinic appointments. The fact that virtually none of the 35% of non-attenders ever attended or responded to clinic invitation ultimately allowed more efficient validation of the waiting lists during year two.

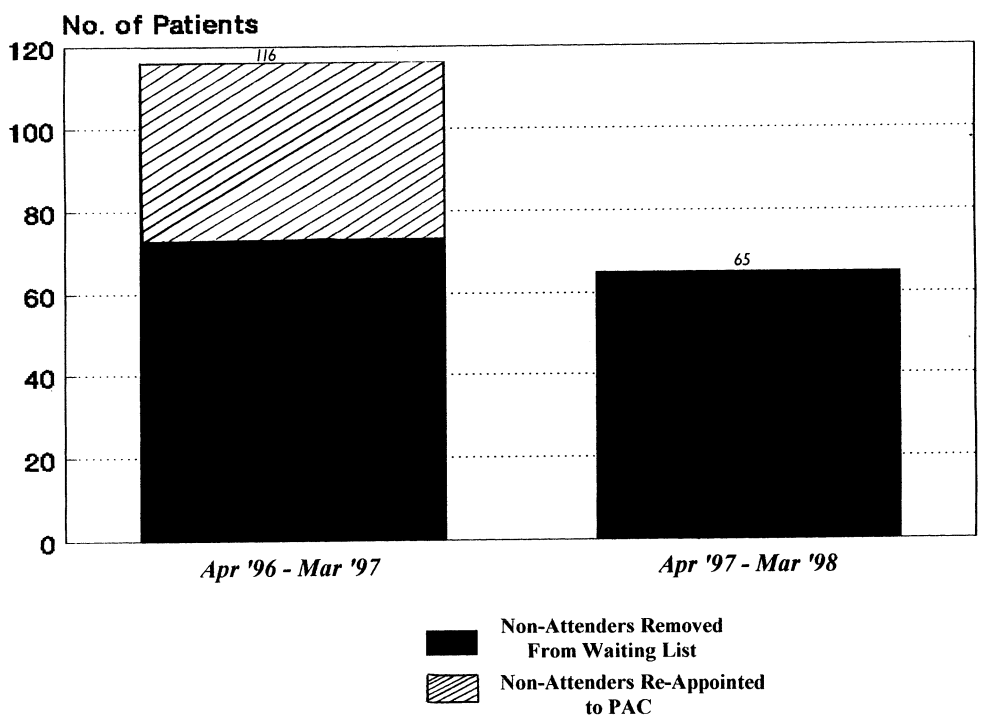

Fig. 2. The fate of PAC non-attenders.

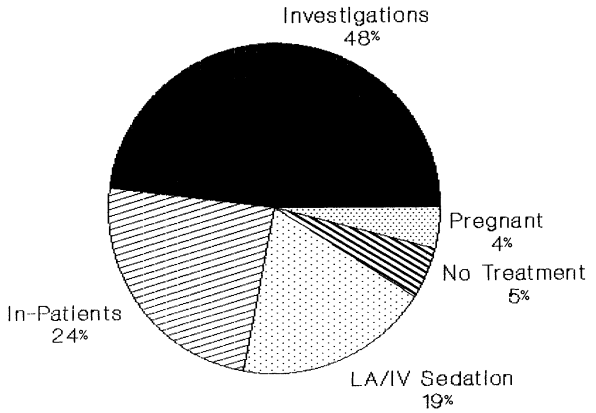

Fig. 3. Why do some PAC attenders not proceed to surgery?

It is interesting to note that 98 patients did not proceed to day stay surgery following pre-admission clinic attendance. In 48% of cases this was because the PAC protocol required further medical investigation to be carried out prior to surgery (usually haematological and biochemical tests, or an ECG). In a number of instances the patient's medical practitioner was contacted and asked to investigate a raised blood pressure or to answer queries relating to medication or the patient's previous medical history. During the second clinic year significantly fewer patients (14 compared with 33 in year one) required investigation prior to booking day surgery appointments, and it was felt that this improvement was due, in part at least, to PAC experience being fed back to clinicians.

Twenty four percent of patients (12 during year one, 11 during year two) were found to be unsuitable for day surgery due to socio-domestic problems precluding appropriate escort or post-operative care arrangements. It is disappointing that this small but persistent group of patients were not effectively identified and/or appropriately educated during initial consultation appointments, although their successful management at PAC obviously prevented avoidable cancellations occurring on the day of surgery.

Nineteen percent of patients were booked for surgery under local anaesthesia supplemented with intravenous sedation, rather than attending for day case general anaesthesia. During the first year, 13 patients were thus re-booked, reflecting their lack of awareness of suitable alternatives to treatment under general anaesthesia. During the second clinic year this figure had fallen to six, probably due to increased provision of intravenous sedation oral surgery sessions in the local anaesthetic department.

In both years there were small numbers of patients who either no longer required surgery or were pregnant when called to attend the pre-admission clinic. Whilst there are no appropriate means to select out this small sub-group, the pre-admission clinic again acted as a useful filter in preventing these unsuitable patients from receiving dates for surgery.

Although it was anticipated that there might be some resistance to a nurse-led clinic of this type, no significant problems emerged during the first 2 years of clinic activity and indeed, improved communication and better understanding between the clinicians and day unit nursing staff have led to substantial benefits in patient management, and an extended role for the nursing staff.

An occasional disadvantage arose when communica-

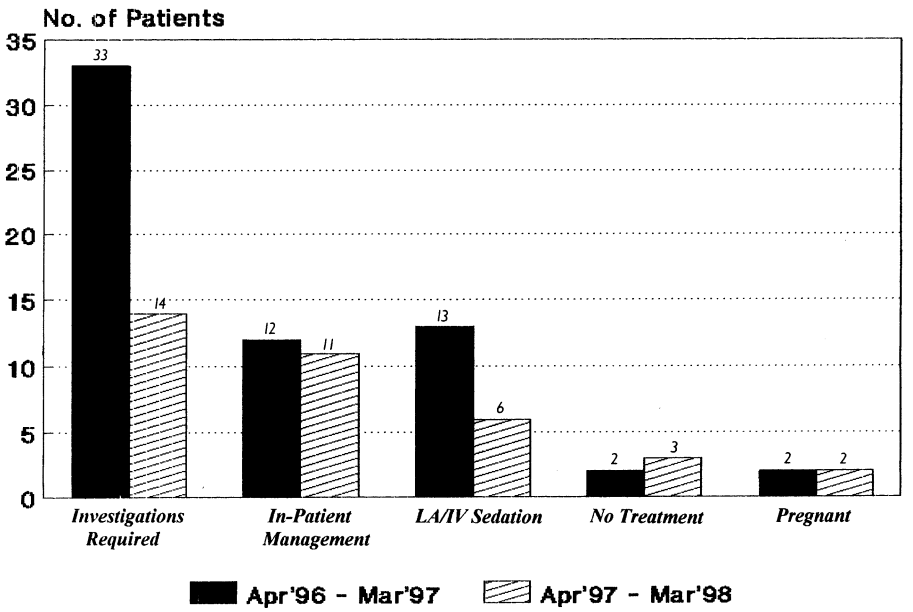

Fig. 4. Comparison of PAC attenders not proceeding to surgery between year one (1996/1997) and year two (1997/1998) of clinic activity.

tion with patients' general medical practitioners or other hospital specialists was required, as delays were inevitably introduced into the pre-admission process before surgery dates could be confirmed.

Overall the nurse-led pre-admission clinic has proved a successful and versatile tool in both the management and validation of day surgery theatre lists, and in improving the quality of patient care within a University Dental Hospital setting. From its initiation as a 3 month trial in 1996, it has become an integral component of clinical care in the day case unit.

Future developments of the clinic are planned, and include running the PAC alongside consultation clinics in oral and maxillo-facial surgery so that patients may be seen and booked for surgery directly following diagnosis and treatment planning. Proposals are also in hand to increase the number of clinics per week, and to audit patients' experiences of pre-admission by means of postal questionnaires post-operatively.

References

[1] The Royal College of Surgeons of England. Guidlines for the management of surgical waiting lists. June 1991.

[2] Thomson PJ. Reducing failure rates for in-patient oral surgery. The use of a pre-admission clinic. Br Dental J 1991;170:59–60.

[3] Thomson PJ. The role of an orthopaedic pre-operative clinic (letter). Ann R Coll Surg Engl (Supplement) 1995;77:276.

[4] Reed M, Wright S, Armitage F. Nurse-led general surgical pre-operative assessment clinic. J R Coll Surg Edinburgh 1997;42:310–313.

[5] Whiteley MS, Wilmott K, Galland RB. A specialist nurse can replace pre-registration house officers in the surgical pre-admission clinic. Ann R Coll Surg Engl (Supplement) 1997;79:257–260.

[6] Vowles RH, Jefferis AF, Smith C. An assessment clinic for routine paediatric otolaryngological surgery. Ann R Coll Surg Engl (Supplement) 1997;79:103–106.

[7] Landes DP, Clayton-Smith AJ. The role of pre-general anaesthetic assessment for patients referred by general dental practitioners to the community dental service. Commun Dental Health 1996;13:169–171.