

Evaluation of unplanned admission following day surgery at a new surgical centre in London

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Abstract

Aim: Rates of unplanned admissions (UA) are often used as measure of quality and outcome of day surgery [1]. By means of a retrospective study to determine the reasons for UA following day surgery at a new surgical centre over its first 40 months and identifying measures which can be taken in an attempt to minimise these in the future.

Methods: This study includes all elective general surgery day cases performed at The Gateway Surgical Centre (GSC) from 20 October 2005 to 16 February 2009. All those with a UA were identified from registers and databases, and their case notes reviewed.

Results: Over the stated period, 2592 general surgery day cases were performed at GSC, of which 267 (10.3%) required ward admission. Reasons: surgical= 116 (43%), anaesthetic= 67 (25%), medical= 32 (12%), social= 32 (12%), other= 20 (7%). Most common specific

causes: wound drain in situ= 15%, post-operative nausea and vomiting (PONV)= 11%, no escort= 11%, not passed urine (NPU) post-operatively= 9%, past medical history (PMH)= 9%.

Discussion: UA due to PMH (n= 25), high BMI (n= 7) and unavailability of an escort post-operatively (n= 30) could have been avoided by better patient selection or improved patient education. Thus, 23% of UA could have easily been avoided. The number of UA could be reduced further by arrangements of care in the community where appropriate and introduction of protocols for post-operative symptom control and discharge.

Conclusion: Most UA occurred due to surgical reasons, the commonest being the patient having a wound drain in situ. A number of recommendations can be made to reduce the number of UA at GSC, thus lessening the burden of a UA for both the hospital and the patient.

Keywords: Day surgery; Unplanned admission.

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Introduction

Day surgery is an attractive option for patients as it allows them to return to their home and family the same day. It also avoids other anxieties associated with hospital stays, such as sharing facilities and the risk of contracting nosocomial infections. Studies have shown that patients who have day surgery tend to resume daily activities and return to work sooner than those who are admitted [2, 3]. Day surgery also benefits the hospital, enabling them to save resources by avoiding costs associated with ward admission and a greater availability of beds for patients with a greater need. Because of these advantages, the NHS plan [4] proposed that centres should aim for 75% of elective surgery to be performed as day cases.

The Gateway Surgical Centre (GSC) is a purpose-built centre opened in October 2005 as an extension to Newham University Hospital. It was the first NHS Treatment Centre to be built in North East London. The centre deals with elective cases in general surgery, urology, orthopaedics and gynaecology. Clinics also take place in the centre, such as pre-assessment, sports injuries and a fracture clinic. There is a 12-bed day case unit as well as a 30-bed inpatient ward, which is only suitable for clinically stable patients. Any unwell patients are transferred to the main hospital site, where more advanced monitoring and radiological investigations are available.

All day surgery patients are required to attend a pre-assessment clinic prior to their procedure. This is led by a nurse and house surgeon. Their general fitness for surgery is assessed, taking into account factors such as past medical history, examination findings and social circumstances. All patients have routine blood tests, and additional tests such as ECG, X-rays of the chest or C-spine may be requested based on the outcome of pre-assessment. Patients are referred to an

anaesthetist if considered appropriate, for example due to potential anaesthetic risk, significant past medical history or high BMI (>35). The structure of this clinic complies with current national guidelines [5-8].

The patient is expected to come to the day case unit on the day of surgery approximately one hour before the theatre list commences. They are then seen by the anaesthetist and surgeons who explain any potential risks and obtain consent from the patient. Following the procedure, the patient is taken to the recovery room until they regain consciousness. They are then brought back to the day care unit. Here their vital signs are monitored regularly until discharge.

There are no official discharge criteria proformas or scoring systems used at GSC. This decision is made by nursing staff based on clinical judgement. Patients are generally considered fit for discharge once they are fully alert, have had stable vital signs for 3 hours, are mobilising as appropriate, have passed urine, have good control of pain, nausea and vomiting, are not bleeding excessively from the wound site and have a responsible adult to accompany them home. In addition, some nursing staff expect the patient to be tolerating oral fluids prior to discharge. Patients are usually discharged within 3 hours of return from the recovery room. The day care unit closes at 9pm. Therefore, patients who are not fit for discharge by this time are admitted to the inpatient ward. Such cases are classed as unplanned admissions (UA) and indicate failure of the system, increase costs for the hospital and may be an inconvenience to the patient. Therefore, rates of UA are often used as measure of quality and outcome of day surgery [1].

Aim

To determine the reasons for unplanned admission in general surgery day case patients over a 40-month period and make recommendations to reduce avoidable admissions in the future.

Patients and Methods

This is a retrospective study which includes all general surgery elective day cases carried out at GSC between 20th October 2005 and 19th February 2009. All UA were identified through databases and registers. The case notes of these patients were reviewed.

Results

A total of 2592 general surgery day cases were carried out at GSC between 20th October 2005 and 19th February 2009. Of these, 267 (10.3%) had an unplanned admission. The annual breakdown of these figures is shown in Table 1.

Table 1 Annual breakdown of unplanned admissions.

Year	No. of Cases	No. of UA	% of UA
2005 (from October)	181	15	8
2006	768	60	8
2007	795	106	13
2008	761	72	9
2009 (until February)	87	14	16
Total	2592	267	

The casemix for the patients who had an unplanned admission is summarised in Table 2. The age of these patients ranged from 18–88 years, with a mean age of 49.6 years. Of those with an unplanned admission, 52% (n= 139) were male and 48% (n= 128) female; BMI ranged from 18–54, with the mean BMI being 29 (not recorded for 2 patients) (Figure 1); 111 were classed as American Society of Anaesthesiologists' (ASA) I (43%), 116 (45%) ASA II and 33 (13%) ASA III (not recorded for 7 patients).

Table 2 Casemix of unplanned admissions.

Surgical procedure	N
Hernia repair	109 (7 bilateral)
Laparoscopic cholecystectomy	85
EUA Rectum	32
Breast surgery	11
Excision of lump	11
Varicose vein stripping	6
2 in 1 (eg lap chole + hernia repair)	6
Other	8

There were 116 (43%) patients admitted for surgical reasons (Table 3), 67 (25%) due to anaesthetic reasons (Table 4), 32 (12%) for medical reasons, 32 (12%) for social reasons and 20 (7%) for other reasons (Table 5). For 19 patients the procedure was more extensive than planned, 8 due to a planned laparoscopic procedure being converted into an open procedure, 4 due to intra-operative bleeding, 4 as the procedure was more difficult than expected, e.g. due to

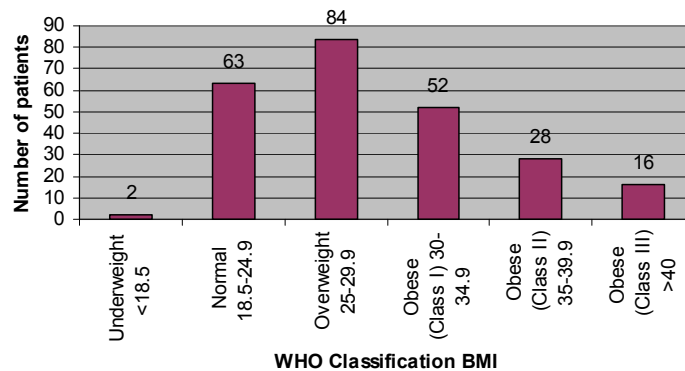


Figure 1 BMI of patients who had unplanned admissions.

Table 3 Surgical reasons for unplanned admission.

Surgical	n	%
Wound drain in situ	41	15
Not passed urine (NPU)	25	9
More extensive procedure than planned	19	7
Pain	18	7
Bleeding	3	1
Wound packing or dressing	3	1
Other	7	3
Total	116	43

Table 4 Anaesthetic reasons for unplanned admission.

Anaesthetic	n	%
Post-operative nausea or vomiting (PONV)	30	11
Drowsy	13	5
Abnormal vital signs	13	5
Spinal/epidural anaesthesia not worn off	7	3
Other	4	2
Total	67	25

Table 5 Medical, social and other reasons for unplanned admission.

	n	%
Medical		
Significant past medical history (PMH)	25	9
High BMI	7	3
Total	32	12
Social		
No escort	30	11
Patient request	2	1
Total	32	12
Other		
Patient returned late from theatre	18	7
Reason not known	2	1
Total	20	8

adhesions, and 3 as the defect was larger in size than predicted. Other surgical reasons included nasogastric tubes, intravenous antibiotics and unspecified surgeon's request. Other anaesthetic reasons were possible aspiration (n=2), the patient having to lie flat following a spinal anaesthesia and for observation for potential delirium tremens in an alcoholic patient. In the patients admitted for observation due to a high BMI, the BMI ranged from 35–46 and 4 of these patients were admitted overnight for oxygen therapy.

Length of stay (Figure 2) ranged between 1–59 days with a mean of 2.63 days (not recorded for 17 patients). Most patients just had an overnight stay (n= 205). Five patients were discharged later on the same day but after being transferred to the inpatient ward. Only 20 patients (16%) were admitted for more than 2 nights. The main reasons were urinary retention, wound drains and cases where planned laparoscopic procedures were converted to open procedures. Only 5 patients were admitted for more than 4 nights. These were due to significant intra-operative or postoperative complications and these patients were transferred over to the main hospital site.

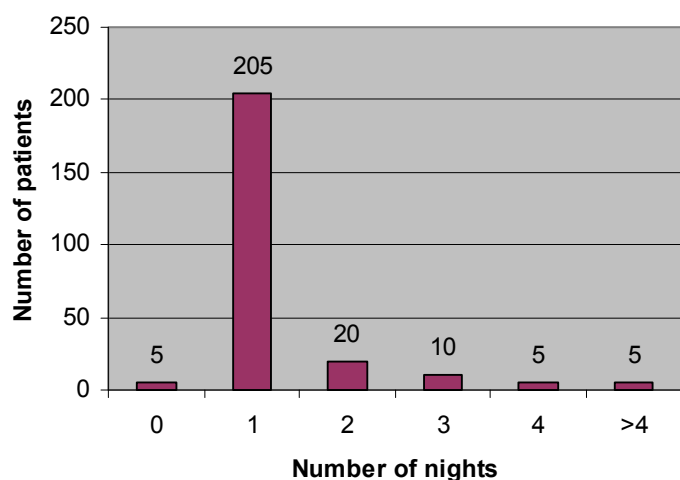


Figure 2 Length of stay for unplanned admissions.

Out of the patients who had an unplanned admission, 17 (6%) were readmitted within 2 months. Reasons were abscess or collection (n= 7), wound infection (n= 4), pain (n=2), PR bleeding following EUA of the rectum (n= 1) and other reasons not directly related to surgical procedure (n=3).

Discussion

The overall percentage of unplanned admission following general surgery day cases at GSC between October 2005 and February 2009 was 10.3% (i.e 1 in 10 patients). Other studies have shown the overall rate of unplanned admission to be 0.28%– 5.9% [3, 9–17], although one multi-centre study found the rate to range from 0.9–9.4% at different centres [17]. In comparison, the figure in our study appears rather high. This could be due to the fact that GSC has inpatient facilities and is based within the grounds of a district general hospital. Therefore, even those that may not be particularly suitable for day cases may be put on the list as, if required, they can easily be admitted. At stand-alone day case units this is probably not the case.

Most unplanned admissions were due to surgical reasons (43%), corresponding with findings in other studies where the value ranged from 38–75% [11–14]. Twenty-five per cent of unplanned admissions were due to anaesthetic reasons, which is comparable with studies where the rate was found to be mainly between 25–28% [11–13] with one study showing 9% [14]. In our study, 12% of unplanned admissions were due to social reasons, which falls within the range found in other studies of 5–20% [12–14]. Another 12% of admissions

were due to medical reasons, which is similar to other studies where they accounted for 17% [12, 13]. We can see from Table 1 that there has been no significant difference in the percentage of unplanned admissions over the years. However, what we can comment on is that the rate is not decreasing. Therefore, action needs to be taken in order to aim to reduce this number in the coming years.

The main reason for unplanned admission was the patient having a wound drain in situ (n= 41). If nurses received training to care for these drains in the community then such patients could go home with their drains and not require admission for this reason. Wound packing or dressings should also be managed by district nurses in the community and should not require admission. This appears to be the case as the last admission for this reason was in October 2007.

The next most common reason for admission was PONV (11%), which accounted for 6–17% in other studies [10, 12, 13, 15, 17]. This should be minimised by optimal use of peri-operative anti-emetics. The requirement to be tolerating oral fluids prior to discharge has been criticised and it is thought that this may induce nausea and vomiting [5, 18–20]. It has been suggested that patients should be allowed to go home regardless with appropriate advice on PONV and the risks of dehydration [5].

Admissions for pain management (7%) have decreased over the years, with only 2 admissions for this reason in 2008. This is likely to be due to better use of perioperative analgesia and this should be maintained to keep the number of admissions due to this reason low. In other studies this has ranged from 3–26% [10, 12, 13, 15, 17]. There is no set protocol used at GSC for prophylaxis for PONV and postoperative pain management, and anti-emetics and analgesics are selected at the anaesthetist's discretion. The importance of having clinical pathways in place for these has been highlighted [12] and the introduction of such protocols could help reduce the number of admissions for this reason.

Another common reason for admission was the patient not having passed urine postoperatively (9%). In other studies this has been shown to be one of the less common reasons for admission [10–13, 15, 17]. This is possibly due to the fact that passing urine is part of the discharge criteria at GSC. It has been suggested that patients need not be admitted purely due to the fact that they have not passed urine post-operatively [5, 21]. Only those at high risk of urinary retention should be required to pass urine prior to discharge, for example, those who have undergone inguinal, pelvic or urological surgery, spinal or epidural anaesthesia, peri-operative catheterisation or those with a history of urinary retention or prostate hypertrophy [3, 5, 22].

This raises the point of developing official discharge criteria at GSC based on current guidelines and scoring systems. Discharge criteria set out by the Royal College of Surgeons [23] focus on social aspects, such as a safe environment at home with appropriate facilities and avoidance of any risk activities. This was extended by the British Association of Day Surgery [24] with added emphasis on symptom control.

There are several scoring systems available to assess fitness for discharge. The most commonly used are the Post Anaesthesia Recovery Score for Day Surgery [25] and more recently the Post Anaesthesia Discharge Scoring System (PADSS) [22], which includes the patient's post-operative symptom control, vital signs and activity.

Admissions to the inpatient ward could also be decreased if the day unit was open until later than 9pm. At this time patients are often not ready to go home, possibly because they have returned late from theatre, but become suitable for discharge later on in the evening. This could apply to patients who are transferred to the inpatient ward due to pain, PONV, NPU or drowsiness. These problems may have resolved later on the same day but the patient would have had to stay overnight as there was no one available to assess them for discharge.

Resident Medical Officers (RMO) are available at GSC. However, they are extremely busy out of hours and are probably more likely to give assessment for discharge lower priority than other tasks such as cannulation and management of active symptoms. Patients are more likely to be asked to stay overnight and wait till the morning ward round for their doctors to assess them for discharge. Out of the patients who had an unplanned admission, 5 were discharged later the same day. These are likely to have been patients who were persistent with nursing staff to arrange for them to be discharged.

In some cases, unplanned admission following day surgery is inevitable and unpredictable. Nevertheless, every effort should be made to keep this number at a minimum. Unplanned admissions which could have been avoided by preoperative identification are those due to significant past medical history (n= 25), high BMI (n=7) or unavailability of an escort (n= 25). Thus, 23% (n= 62) of unplanned admissions could have been easily avoided by better patient selection or better patient education.

According to various national guidelines, fitness for a procedure should be based on the patient's current state of health during pre-operative assessment and not determined by factors such as ASA class, BMI or age [5, 8]. However, the Royal College of Surgeons Guidelines for Day Case Surgery [23] state that patients with a BMI greater than 30 are unsuitable candidates for day surgery. Studies have shown that, despite this, many centres continue to perform day surgery on patients with a BMI greater than 30 [26]. Although there is no absolute limit identified, late complications are more likely in patients with a BMI greater than 40 [5].

It can be noted from Figure 2 that most patients who had unplanned admissions were either overweight or obese. Patients with significant past medical history or high BMI should not be considered for day surgery as well as those who are known in advance to have no escort available on the day of surgery. The importance of having a responsible adult to accompany the patient home following surgery should be highlighted at the pre-assessment clinic. It should also be checked on the day of surgery, and if the patient does not have an escort, they should be encouraged to arrange for one to avoid admission.

Conclusion

There have been 2592 general surgery day case procedures carried out at Gateway Surgical Centre between October 2005 and February 2009. Out of these, 267 (10.3%) of patients had an unplanned admission. Most unplanned admissions were due to surgical reasons (43%). The most common specific reasons were: 1) wound drain (15%), 2) PONV (11%) and no escort (11%), 3) NPU (9%) and observation due to significant PMH (9%). Patients with significant PMH, BMI >35 or no escort should not be considered for day surgery. If these had been considered pre-operatively, 62 (23%) of the unplanned admissions could have been avoided. The number of unplanned admissions can be reduced further by introduction of protocols for discharge and post-operative symptom control, and involvement of district nurses for care in the community where appropriate.

Further Study

This study could be expanded by re-evaluating the data for all general surgery day case patients rather than just those who had unplanned admissions. This way factors more likely to lead to unplanned admission could be investigated. This audit could also be repeated after these recommended changes have been enforced to determine

whether they have indeed helped to reduce the number of unplanned admissions.

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