

Does Ring-Fencing Improve Efficiency in an Orthopaedic Day Case Unit?

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Abstract

Aim: To examine if ring fencing or isolation of day case beds from the main hospital improves the efficiency of the day case unit by reducing cancellations.

Methods: Two years of data were analysed, the first when the unit was within the main hospital and the second when it was isolated.

Keywords: Day case; Ambulatory surgery; Utilisation; Efficiency.

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Results: There was no significant difference in the overall cancellation.

There were a significantly greater number of cases cancelled on the day due to the non-availability of beds ($p < 0.001$) in the main hospital unit.

Conclusion: Isolation or ring fencing of day case beds can reduce cancellations.

Introduction

Cancellation on the day of surgery remains a major cause of failure to complete planned day case surgery [1]. Previous audits within the United Bristol Healthcare Trust had identified high rates of failure to complete cases within the day case unit. This study was devised to ascertain the reasons behind this. During the aforementioned previous audits, high rates of non-completion had been thought to be due to "DNAs" (did not attend), or failure to attend by the patient for surgery. We analysed the reasons for failure to complete surgery more closely and compared two years worth of data to identify any trends.

During the course of 2004–2005 the day case unit was based within the main hospital of the trust, the Bristol Royal Infirmary. During the course of the year 2005–2006, the day case unit was moved to St Michael's Hospital to allow refurbishment and development of the main unit. This provided us with the opportunity to analyse these two separate blocks of data to determine if there was an advantage to having a geographically isolated day case unit. During the course of the year 2004–2005 the day case unit operated out of a day case ward. In times of bed pressure this ward could be opened at night by the Clinical Site Manager to act as an overflow for acute admissions. The resultant effect was a lack of beds to admit patients to in the morning and hence the cancellation of cases. For the period 2005–2006 when the unit was based at St Michael's Hospital which does not accept acute admissions for general surgery, general medicine or orthopaedics this did not occur as the day case bed area could not be opened at night to act as an overflow.

Materials & Methods

The original planned lists for day case surgery for orthopaedics are printed out each day before the list commences by the day case coordinators. Hard copies of these lists are filed. During the course of the list, the follow up for the completed case is noted next to that case on these hard copies. Cases that are not completed are marked as such and sometimes a reason is recorded. We analysed the lists for the two years as above and collected information on:

- Cases planned for the list
- Details of the cases planned and patient demographics

- Consultant in charge of the list
- AM or PM list
- Number of successfully completed cases
- Reasons for cancellation where noted.

To complete the data, the hospital computer system was interrogated to ascertain the reasons for cancellation and to confirm the follow up data was correct. Both the Swift Op and PAS systems were interrogated. The data from the computerised theatre record (Swift Op) was cross-referenced with the hospital attendance data, the hospital appointment records and the appointment episode data (PAS). The day case coordinators use the appointment episode data to keep notes on reasons for cancellation or delay in surgery and this proved extremely useful in establishing the reasons for delay or cancellation. Where there were discrepancies between these records the main hospital notes were pulled to check once again the reason for cancellation.

The data was then collated into spreadsheet format for analysis and the data reproduced in table and graphical format for display purposes. The differences in cancellation rates were analysed for statistical significance using Fisher's exact test and the results recorded. Statistical analyses were performed using MedCalc for Windows, version 9.2.0.0 (MedCalc Software, Mariakerke, Belgium).

Results

A. Central day surgery unit

In the 12 months of 2004 to 2005, whilst the day case unit was located in the main building of the Bristol Royal Infirmary, there were 747 cases performed. There were 99 (11.7%) cancellations during this period. There were 186 orthopaedic day case lists performed with a mean number of cases per list of 4.5 (range 1 to 7).

B. Ring fenced day surgery unit

Whilst the day case unit was located in a geographically separate unit, there were 716 cases performed with a 101 (12.4%) cancellations. There were 190 orthopaedic day case lists performed with a mean number of cases of 4.3 (range 1 to 8).

The number of cases cancelled by category of cancellation and the percentage of the total number of cancellations are shown in the Tables 1 and 2.

We have demonstrated there was a highly significant difference in the cancellation rate due to no bed being available ($p < 0.001$), see Table 3. In three other groups significance was reached at a 95% confidence level ($p = 0.05$). These were cases cancelled for social reasons, cases cancelled due to insufficient time on the list and DNAs. In the case

of insufficient time on the list, the numbers were very small and a Fisher's exact test was required to calculate a p value for this category, as can be seen from the table it was impossible to calculate 95% confidence intervals or relative risk for these figures. Cancellations for social reasons and DNAs were less highly significant than those due to no bed being available.

Table 1 Reason for cancellation of cases in the period 2004–2005 (central day unit).

Reason for Cancellation	Number of cases	Proportion of cancelled cases (%)	Proportion of total cases (%)
No Bed	41	41.4	4.85
Medical	20	20.2	2.36
Procedure not required	9	9.1	1.06
Administrative error	11	11.1	1.30
Social	5	5.1	0.59
Insufficient Time	0	0	0
Other	3	3.0	0.35
DNA	10	10.1	1.18
Total	99		11.70

Table 2 Reason for cancellation of cases in the period 2005–2006 (ring fenced day unit).

Reason for Cancellation	Number of cases	Proportion of cancelled cases (%)	Proportion of total cases (%)
No Bed	0	0	0
Medical	19	18.8	2.33
Procedure not Required	16	15.8	1.96
Administrative Error	20	19.8	2.45
Social	15	4.9	1.84
Insufficient Time	5	5.0	0.61
Other	1	1.0	0.12
DNA	25	24.8	3.06
Total	101		12.36

Table 3 Statistical analysis of cancellation data using Fisher's Exact Test.

Reason for Cancellation	95% CI	Relative Risk	p value
No Bed	1.88 to 2.06	1.97	<0.0001
Medical	0.74 to 1.37	1.01	1.000
Procedure not Required	0.42 to 1.20	0.71	0.161
Administrative Error	0.43 to 1.12	0.70	0.104
Social	0.23 to 1.05	0.49	0.024
Insufficient Time	$-\infty$ to ∞	0.00	0.029
Other	0.84 to 2.60	1.47	0.624
DNA	0.33 to 0.95	0.56	0.01
Totals	0.84 to 1.13	0.97	0.765

Discussion

High cancellation rates lead to decreased efficiency and throughput of the day case unit. This in turn has economic implications for the Trust as a whole. It is our aim to target factors, of which we have control, which may influence the number of cancellations. Obviously some factors are harder for us to control than others.

Previous audits in our department had identified a high rate of non-completion of booked cases on the orthopaedic day case lists. It had been our personal observation that capacity was being lost to emergency admissions decreasing the availability of bed space in our unit. This is a common problem as the demand on beds increases [2]. The use of ring fencing elective beds has previously been shown to reduce the number of cancellations [3].

It is to be expected that during a time of significant upheaval for a department, such as relocation, cancellation rates may rise. We did demonstrate a rise in the number of cancellations due to social factors ($p=0.024$) and DNAs ($p=0.01$). We analysed the recorded reasons for cancellation in each of these cases. If the reason for cancellation was predictable and identifiable at the pre-operative assessment stage the cancellations were included in the administrative errors group for which there was no significant difference. Examples of cases in the social cancellation group included unwell relative or close friend on the day of surgery and recent bereavement. For patients that failed to attend (DNAs) we could not obtain reasons for this in the majority as the patient also failed to attend subsequent follow up appointments. We did also demonstrate a highly significant difference ($p<0.0001$) in the number of 9 cancellations due to the availability of beds. The same partial booking system was in place for both locations in an attempt to tackle patients failing to attend for surgery.

Our results show that 41.4% of cancellations in our main day case unit for orthopaedic surgery were due to lack of bed availability when there was no ring fencing in place. Day case activity needs to be managed separately from the emergency workload of an acute trust. In an ideal situation day case activity should be functionally separate from other activity in the same hospital. This will allow optimisation of service provision.

If ring fencing had been in place, or there was a separate day case unit during the period 2004 to 2005 we could reasonably expect the cancellation rate to fall from 99 to 58 cases out of the 846 booked. This would result in a cancellation rate of 6.9%, which is a marked improvement on the 11.7% cancellation rate actually seen during this period when beds were not ring fenced.

Our system of partial booking has obviously not managed to eliminate the problem of patients failing to attend for surgery. In one case the "DNA" was due to a patient walking out half way through a list and refusing to wait for surgery. In the remainder of our cases the reason for the DNA was not known and if the patient was sent a follow up appointment, they also failed to attend this. There will always be a proportion of patients that fail to attend for surgery [4]. In our system of partial booking, all patients had confirmed they would be attending for surgery. A more robust system could involve contacting patients in the week prior to their surgery. Unfortunately this would have significant administrative and cost implications. It would also possibly create the situation where patients are cancelled due to being not contactable in the week prior to surgery but subsequently attending.

Conclusion

We feel our data supports the use of ring fencing of elective day case beds in order to improve day case unit efficiency. In a system that fosters an internal healthcare market, factors such as this are likely to become ever more significant in determining the success or failure of an organisation.

References

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