Changing operating lists on the day of surgery – a Service Evaluation

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Abstract

This study aims to explore how often the operating list is changed on the day of surgery, and the reasons why this may occur. The purpose being to analyse the wider potential impact of changing the list on the day of surgery has on patient safety, patient satisfaction and theatre efficiency. Survey data was collected across a multi-specialty elective operating department. The findings demonstrated a significant ($P < 0.001$) change in operating lists occurred in 37.3% of sessions with a variety of potentially avoidable reasons. We concluded that improved organisation and communication before the planned session could reduce the occurrence of changes, increasing patient safety, theatre efficiency and potentially reducing incidents.

Introduction

Operating list management is an essential part of operating department management and requires effective organisation and careful planning for efficient administration of elective operating sessions. Finalisation of the operating list is complex and dependent on the individual unit and requires effective collaboration between all related departments for an agreed operating list order. Consideration needs to be taken for effective use of resources such as staffing and equipment, and for co-morbidities of the patient. This will enhance clinical efficiency and safety and prevent avoidable over running of elective operating lists (The Association of Anaesthetists of Great Britain and Ireland, 2003, The Association of Perioperative Practice 2016).

Patient safety and quality of care is paramount for all operating departments and there are continuous developments to ensure patient safety and policies are in place to prevent Never Events from occurring. Never Events are defined as ‘a serious, largely preventable patient safety incident that should not occur if the available preventative measures have been implemented by healthcare providers’ (Department of Health 2012). The World Health Organisation (WHO) checklist was introduced in 2008 to help prevent Never Events from occurring. This ensures the team brief undertaken prior to each operating list has a comprehensive understanding of the

requirements for the list (National Health Service, 2010). There is a potential at this stage for changing the list order, as new information may be relayed to the team that requires discussion on operating list position. All changes to the list on the day of surgery must be relayed immediately to all relevant departments to prevent confusion. All copies of the operating list must be amended with a recognisable form of identification and the original lists destroyed. If this protocol is not followed there is a possibility of compromising patient care and incidents occurring (The Association of Perioperative Practice 2016).

In 2016, 246 Never Events occurred (National Health Service 2017). All events require a root cause analysis to be performed to build a picture of the cause of the incident in order to learn lessons and to prevent the incident occurring again (National Health Service 2011). Research into the root cause analysis of Never Events has shown a relationship between a change of list on the day of surgery and a Never Event occurring (Barrington et al 2015, Booth et al 2015, Pandit et al 2017).

Literature Review

Islam et al (2015) conducted a study on how often the operating list follows planned order for elective maxillofacial operating lists. This is the first and only study for this particular subject, showing a gap in research in operating list management. This could be because changing the operating list on the day of surgery is insignificant and does not cause

issues to the operating department as long as standards are followed (The Association of Perioperative Practice 2016; The Association of Anaesthetists of Great Britain and Ireland, 2003). However due to Never Events still occurring despite the introduction of the WHO checklist the authors believe it is a valid research. The study focused on patient experience and if their position on the operating list changed. Results demonstrated that only 49% of the operating lists were found to run to the original list order. Being a retrospective study it is unable to investigate accurately the reasons as to why the patient was changed from the planned order.

Operating departments must strive to work efficiently without compromising patient safety. Pandit & Carey (2006) explored the duration of common elective operations in order to prevent over running and cancellations. 50% of operating lists were over booked, 50% overran and 34% a cancellation occurred due to over running. They identified that cancellations were being made due to poor organisation and overbooking of the operating list demonstrating the importance of operating list management.

Underestimating the severity of a patient's medical condition is a common cause of cancellation, illustrating how important a thorough pre-assessment is to prevent cancellation of patients (Pandit et al 2007, Rai & Pandit 2003). Pandit et al. (2012) reported that accurate list scheduling is likely to be an important factor in theatre efficiency, start times and turn over times will only influence the efficiency of the operating list, if it

is appropriately scheduled. If the operating list is re-scheduled on the day of surgery it could reduce efficiency due to a later start time and increased turn over time between cases. Collier et al (2009) also concluded that late start times are not an indicator for over running and instead careful planning of operating lists is required to maximize efficiency with regards to surgical difficulty, service requirements, and logistics of multiple cases.

Miles (2016) argues that despite the introduction of the WHO checklist Never Events are still occurring. Re-arranging patients on the operating list as a result of having no beds available, patients not fasted or patient transport issues puts increased pressure on surgeons to perform an efficient service. All this contributes to the challenges for the team to remain organised and safe. If this is the case the results from Islam et al (2015) are concerning as they have the potential to compromise patient safety.

Methods

Ethical approval was granted from the University Ethics Panel (SREP) in September 2016. The organisations Director of Clinical Services and Theatre Manager gave approval for the study, no patient data was used in the data collection tool.

A Service Evaluation using a quantitative design informed the data collection process which was implemented from June to August 2016 in a private healthcare organisation that carries

out multi-speciality elective surgery. A quantitative study was used in order to gain statistical data on actual events. All theatre lists during the time period were included (n=233) with the exception of those with only one patient (n=40). The survey was completed each day during team brief and was completed by the team leader.

Data Collection

No pre-validated survey was available therefore the data collection survey was author designed. The survey was piloted, adapted and finalised by all authors to increase the validity and reliability of the survey. Details of data collected can be found in table 1.

Question 1	Has the operating list been changed? Yes? No?
Question 2	When was the change made? Before Team Brief At Team Brief Once the list has started?
Question 3	Has a new list with the change of order been printed on coloured paper? Yes? No?
Question 4 (Figure 1)	What is the speciality of surgery that caused the changed to the operating list?
Question 5 (Figure 2)	Who made the change? The surgeon, the anaesthetist, the ward, the operating department, or the x-ray department?

Question 6	If the change was a result of the operating department and/or the ward department, what was the reason for the change?

Table 1 Survey Questions

Question number 6 was categorised according to reasons these departments can changed the list order (Table 2), a – d are operating department reasons for changing the order, e – j are ward reasons. The survey allowed an expanded narrative on the reasons the operating list is changed which is used in the discussion.

a	Theatre instrumentation
b	Theatre equipment
c	Theatre staffing
d	Theatre efficiency
e	Results not available
F	Patient not admitted
g	Patient not fasted
h	Patient co-morbidity not recognised
I	Patient latex allergy not recognised
J	Ward efficiency

Table 2 Reasons for changing operating list order

Data analysis

193 surveys were completed and inputted into statistical software package (SPSS v22). Each variable was calculated as a percentage and transferred to Microsoft Excel to illustrate in graph form. A Chi-square test for independence explored the relationship to question number 1 to test the significance of how often the operating list is changed. The test compares the observed frequencies of the number of times each case occurs in each variable and the value that would be expected if there was no association between the two variables (Pallant, 2016).

Findings

The number of times the operating list was changed was 37.3% (P=0.000). The majority of changes were made during team brief 69.0% (n=49), a further 29.6% (n=21) before team brief and once the session had started 1.4% (n=1). An identifiable change of list was printed 97.2% (n=70) of times.

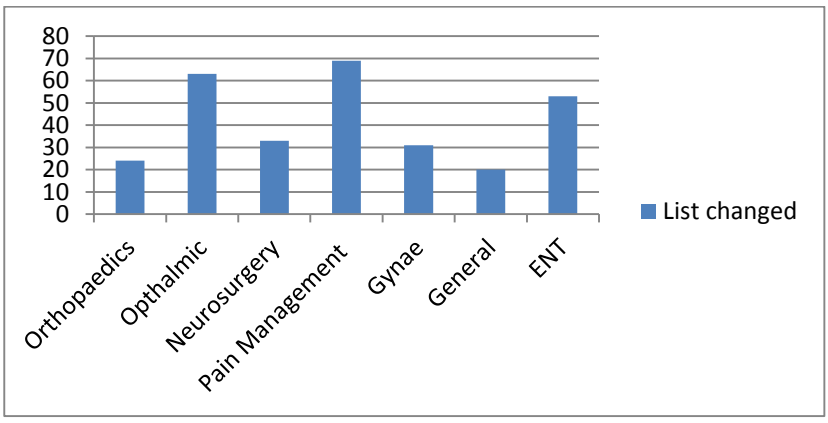

Figure 1 Bar chart of percentage of each speciality the operating list order has changed

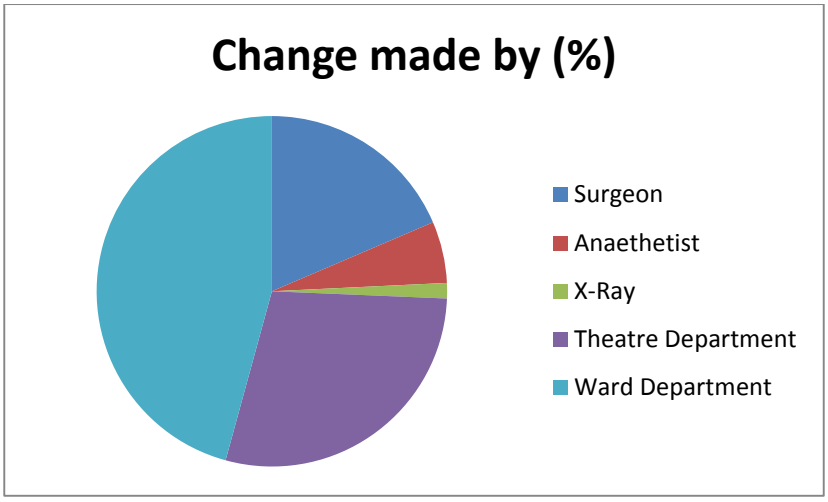

Figure 2 Pie chart of who made the decision to change the order of the operating list

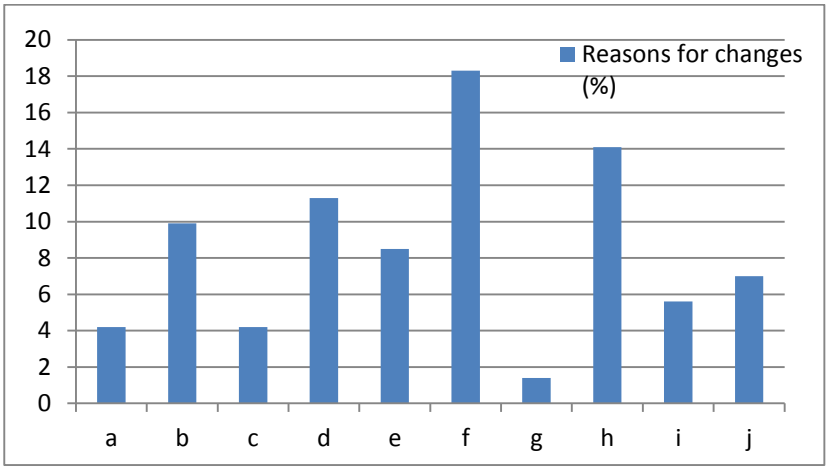

Figure 3 Bar chart illustrating reasons for changing the operating list order

Discussion

The percentage of times the list is changed (37.3%) compares to the Islam et al (2015) study of 49%. The most frequent changes are being made during the Team Brief (69.0%); indicating the importance of this stage of the WHO checklist, however most of these changes could have been avoided if the issues were highlighted the day before. There are issues that are recognised prior to the Team Brief (29.6%), changing

the list in advance gives the operating team more time to manage the change prior to the session starting and to inform all the relevant departments. There was also a small proportion (1.4%) of operating lists that were changed once the session had started. This could prove more of an issue with operating efficiency and increase the risk of an incident if the safety checks are not completed.

The three specialties which changed the operating list more than 50% of the time are Pain Management 69% (n=11/16), Ophthalmic 63% (n=19/30) and ENT 53% (n=8/15). Pain Management and Ophthalmic are specialties that have a higher number of patients due to the shorter duration of the procedures performed. The increased number of patients on the operating list could be the reason for the frequent changes of the operating list on the day of surgery. Thus emphasising that these operating lists require more planning time to ensure the list stays as the pre-planned order. Operating lists with a greater number of patients could have a greater risk of incidents occurring due to the quick nature of the procedure. If the operating list is correct at the time of printing this will reduce the chance incidents occurring. According to Neiley et al (2009) ophthalmic surgery is associated with the highest rate of complications. A study conducted on the WHO checklist for ophthalmic surgery concluded that the checklist is valuable in reducing errors and improving patient safety (Weingessel & Haas 2016). This indirectly highlights the importance of keeping to the original list order in ophthalmic surgery to

reduce the number of incidents. Patients requiring Pain Management and Ophthalmic surgical procedures are often aged over 60 with an increased chance of having one or more co-morbidities. If these co-morbidities are not recognised or under estimated in pre-assessment it will allow for the greater number of changes for these surgical specialties. This relates to the variables of co-morbidity (n=10, 14.1%) and latex allergy (n=4, 5.6%) not being recognised and results not being available (n=6, 8.5%) due to not carrying out a full pre-assessment as Pandit et al 2007 and Rai & Pandit, 2003 recognised. The patient not fasted (n=1, 1.4%) is unpredictable as this will only be brought to attention on admission. However this could be due to a lack of communication to the patient and can be linked back to a more thorough preoperative assessment in order for the patient to understand the importance of fasting prior to surgery. It is unclear from the Service Evaluation if these variables were not recognised from pre-operative assessment or if the issue lies between the communication methods when the operating list is managed. ENT (53%) is very similar to Islam et al (2015) study on maxillofacial surgery (49%). There is a crossover between the two specialties and the similarity in these results could show that there is a higher chance of altering the order of list in ENT and maxillofacial procedures. Further research would be required however to clarify this prediction.

Surgeon's operating list order preference (such as elderly and nervous patients listed first) (n=13 18.3%) can be prevented by improved communication between the operating lists manager and the consultant prior to the session. If there is a clinical reason for a patient to be listed early, then the surgeon should be notified to prevent any confusion on the day of surgery.

The patient not being admitted for surgery (n=13, 18%) is another major reason for changing the list order on the day of surgery. At times this was due to lack of time on the ward and day patients requiring less time to admit than inpatients. The patient may have had an incomplete or absent pre-assessment requiring more time to gather information. Other reasons in this category were avoidable by improved planning, as arrival time was not considered for each patient and patients arriving later in the session time were scheduled to go at the beginning of the list. At times the patient had not arrived on time which is unavoidable unless the wrong information was given to the patient by the administration team.

Operating department efficiency (n=8, 11.3%%) could be improved by planning for example, placing like for like procedures together to avoid unnecessary moving and handling of equipment and having to reorganise local and general anaesthetic patients if both theatres are utilising one anaesthetist.

Equipment issues (n=7, 9.9%) are not always predictable, for example loan equipment not arriving on time. This unpredictability is similar to instrumentation issues (n=3, 4.3%) where holes in the drapes where found in the morning or instrument trays were missing causing the operating department to borrow instrumentation trays from another hospital positioning the patient further down the list. This could be improved by preparation the day before the scheduled session.

Theatre staffing is a recognised reason for requiring careful operating list management (AfPP 2016) due to the skill mix required in a multi speciality unit; however this was less frequent than other operating department issues (n=3, 4.2%). The Service Evaluation does have its limitations, including possible bias from the operating department as all the surveys were completed by operating department staff.

Conclusion

The results of this Service Evaluation would be of use to any unit performing elective surgery especially if they are experiencing a high number of operating list changes on the day of surgery. It indicates the importance of reducing this practice and demonstrates ways of doing so by improved

operating list management and communication between departments and consultants the day before surgery.

A more rigorous operating list management system would avoid unnecessary changing of operating lists on the day of surgery. To improve patient safety the number of changes should be kept to a minimum and in turn, this will improve operating department efficiency and patient satisfaction. There is very little research on changing the order of the list on the day of surgery and the Service Evaluation has found this to be a frequent issue that could cause patient safety concerns and reduce efficiency. National policies recognise that there are concerns related to this practice; however there is very little data to gauge the extent. Wherever possible changing the operating list needs to be kept to a minimum and this practice can then be ruled out of root cause analysis of Never Events. Whether this will have an impact on reducing the Never Events that happen is unclear and further research does need to be conducted.

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