

CANCELLATION OF ELECTIVE OPERATIONS ON THE DAY OF SURGERY: THREE YEARS STUDYAsmita Karnalkar¹**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: OBJECTIVE: There are several studies suggesting decreased operating room efficiency caused by cancellations of the surgical procedures. It also affects patient satisfaction. This study was to analyse the reasons for cancellation of elective operations so that in future necessary actions can be taken to minimize number of unnecessary cancellations. **METHODS:** This was a retrospective study conducted in teaching hospital for 3 years from April 1, 2012 to March 31, 2015. The data was collected from postponement register and medical record department. The reasons for cancellations were classified as (1) structural factors (e.g., no hospital bed); (2) patient factors (e.g., patient unwell); and (3) process factors (e.g., scheduling error). **RESULTS:** During the study period, 11,208 patients were posted for elective procedures. 9.8 % patients were cancelled on the day of surgery. The frequency of cancellations was more in process related issues (47.9%). Cancellations due to structural factors and patient factors were 26.4% and 25.7% respectively. **CONCLUSION:** Although cancellations were only 9.8% of total elective operations, this can be reduced by anticipating and taking necessary steps that have been suggested. More thorough and detailed documentation is needed to achieve this. **KEYWORDS:** Elective surgical procedures, Operation room, Efficiency.

INTRODUCTION: The cost of health care delivery is increasing every day. Hence there is need for healthcare teams to encourage cost effectiveness in every aspect of patient care. It also leads to prolonged hospital stay and in many cases repetition of various aspects of pre-operative preparation. Apart from economic loss to hospital, causes patient dissatisfaction and decreased staff morale. It also increases patients therapeutic expense. Avoidance of cancellation of elective surgery, therefore should lead to reduction in the overall cost of treatment.

According to study performed in UK about 8% of scheduled elective operations are cancelled on the day of surgery.¹ On an average rate of booked elective operations being cancelled, before the surgery takes place, was 10 to 40%. The reasons of cancellation included many inter-related factors like absence of co-ordination among the surgeon and the anaesthesiologist, lack of communication between the patient and the hospital administration, medical condition of the patients not being adequately optimized.² There are various studies based on the retrospective analysis of medical records of patients stating the reasons for cancellations.^{3,4} These reasons can be inter-related according to Donabedian's framework i.e. structure, process and patient factors.⁵

This was a retrospective study in a medical teaching hospital. The aim was to assess the causes of cancellation of surgical procedures excluding emergency procedures which were scheduled on the day of surgery and to suggest measures so that there can be optimum

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utilization of manpower and resources. This in turn will help in making appropriate recommendations in the interest of patients to avoid such cancellations.

METHODS: This audit was performed at teaching hospital over 3 years period from 1 January 2012 to 31 December 2014. This is a retrospective study of operative procedures during that period which excluded emergency operations. Total 11, 208 patients were posted for elective operations. The operation list is prepared by the surgeons before 4 P.M. The surgeons refer the patient to be posted for elective operation to the pre-anesthesia clinic for evaluation by anesthesiologist. Patients who are immobile are assessed in the ward itself. Patients who require further opinion/evaluation are advised accordingly. Patients which are admitted after 5 P.M. and could not attend pre-anesthesia clinic are assessed on the morning of the surgery itself. This study was analysed by the findings from the postponement register in the operation room (OR). Other relevant data was collected from the respective files of the patients from the medical record department which included age, sex, date of admission, date of surgery, date of postponement, scheduled surgery, visit to the pre-anaesthesia clinic, any remark by anesthesiologist, reason for cancellation and whether patient got operated later or not. A cancelled surgery was defined as a surgery scheduled on the operation list which was cancelled on the day of surgery.

RESULTS: During the study period 11,208 patients were scheduled for elective surgery. Cancellation occurred in 10983(9.8%) cases. Patients whose preoperative assessment was done in the ward and in the preanesthesia clinic were 17% & 83% respectively. 67% patients of this group underwent preoperative assessment in the clinic at least 2 to 13 days before surgery. For remaining 33% of the patients pre-anesthesia assessment was done one day before the scheduled day of surgery. There was mean waiting time of 0 and 7 days between cancellation and surgery. Of these patients 97.7% got operated at the same hospital. The age of those patients whose operation was cancelled was between 5 months to 74 years. There were 24% males and 76% females. In all, 8109(74%) of case cancellation occurred for major operations & 2849 (26%) for minor procedures. The reason for cancellation was not documented in 24 patients (Table 1).

Reasons for Cancellation: The reasons for cancellation were classified as 1) Structural factors (e.g., no ICU bed); (2) patient factors (e.g., patient unwell); and (3) process factors. (e.g., insufficient work up). The frequency of cancellations was more in process related issues (47.9%) than structural issues (26.4%) and patient related issues (25.7%) The most common reason was insufficient work up. It was found that process related cancellation were 47.9% which is also observed in study by Schofield et al ¹. Structure related cases of cancellation were most common due to emergency procedures given priority.

In 25.3% of those cases the patients work up was not sufficient due to lack of co-ordination as advice by anesthesiologist was not followed. These patients had developed some cardiopulmonary changes for which there was need of further consultation and optimization of the medical status. 6% of patients either did not adhere to or were given wrong instructions e.g. regarding dietary restrictions, stopping anticoagulant.

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Category	Reason of Cancellation	No. (%)
1. Process related	Insufficient pre-operative work up	28.3
	Patient not NBM	02.5
	Surgeon overbooked	09.9
	Surgery running late	09.8
	Operating room problem	01.4
	Subtotal	51.9
2. Structural related	No water supply	00.6
	No ICU bed	00.7
	Inadequate linen	00.3
	Emergency operation inserted	15.6
	Equipment not available	02.2
	Subtotal	19.4
3. Patient related	Medical reasons	15.3
	Patient not admitted	05.4
	Patient continued anticoagulant	05.4
	Surgery no longer needed	01.2
	The patient developed infection	00.2
	Patient refused the surgery	00.6
	Relatives of patient not available	00.6
	Subtotal	28.7
	Total	10,959

Table 1

No detailed reason was available for 24 patients.

DISCUSSION: There is always considerable expenditure on operation room (O.R.) in hospital budget. It is necessary to utilize O.R. efficiently for optimum cost-benefit. Operation room efficiency is indicated by case cancellation rate on the day of surgery. Generally 5% is acceptable rate of case cancellation while considering efficient O.R.⁶ There are many studies related to surgical cancellations which have reported cancellation rates from 13% to 20%.⁷ Some studies have observed operating room cancellation rates to be less than 10% as they have considered different factors.⁸

In this study insufficient work up (28.3%) was the major cause of cancellation. This was due to the fact that most of the patients undergoing elective surgeries were elderly with one or more co-morbidity which gets diagnosed either on admission or medical condition is not revealed to the surgeon. In a study conducted by Ulla Ceasar et al, 12% cancellation were due to insufficient medical assessment.⁹ We can minimize these cancellations by giving proper instructions to the patient by nurse. When they are well informed, they feel more motivated, resulting in fewer cancellations. Patient related factors were 28.7% in this study while it was 29% in study by Ceasar et al. It has been suggested by Lee et al that including patient in the planning

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process to reduce patient related cancellations especially poor preoperative investigations.¹⁰ Dufek et al recommended improvement of protocol for preoperative patient evaluation improving the timeliness response by physician.¹¹

In most of studies related to cancellations, scheduling of elective surgery is taken into consideration while one of the common reason for cancelling elective surgery is emergency surgery given higher priority. This study showed that almost 15.6% of cancellations were due to emergency cases with higher priority. This can be avoided by providing separate trauma operation room. Havlid E et al have shown new pathway for planned patients thus reducing number of cancelation.¹² There should be separate waiting list for trauma surgeries as per national guidelines in U.K.¹⁴

It was further observed that 9.8 % cancellation were due to previous surgery taken long duration than expected and 9.9% due to overbooking the schedule, which was most common reason in other studies.¹⁴ This can be reduced by keeping in mind the estimated operating time while preparing the O.R. schedule list.¹⁵ In a study done by Eijkemans MJ et al, it has been shown that there was cancellation rate of 11% when time needed for operation was underestimated by 10 minutes while it was 6% if time was overestimated.¹⁶ For some surgeries, the total duration exceeded the usual surgical time due to an unexpected surgical complication, unavailability of sterilized instruments and technical problems in instruments which can be reduced by careful planning and effective communication within the surgical team.^{17,18} There is need to do more in depth assessment of process related issues.

All other structural related issues (3.8%) like availability of blood, water, electricity supply and linen supply can be managed by effective and good communication and coordination between different departments involved in functioning of OR. Proper administrative measures can be taken by appointing OR administrator. Usually anesthesiologists, in their function as OR managers are indispensable in the surgical team. In study by Robert Hanss et al, induction of anesthesia was performed by an additional team of anesthesiologist while the previous patient was in the O.R. It has been shown that overlapping induction increased productivity and profit.¹⁹

To reduce cancellation because the patient not getting admitted in hospital, which was 5.6% in this audit, Basson suggested an adjustment of patient scheduling to book the incompliant patients at the end of the surgical day.²⁰

The main difficulty encountered in this study is one that universally applies to any retrospective analysis – a lack of accurate information, though reasons of cancellations were documented adequately. Indeed in some instances, even if all the data was available, reasons for cancellation could feasibly be multi-factorial. There may also have been bias in assigning a reason to operations that were cancelled. This difference in rate of cancellation is seen depending on type of the study i.e. retrospective or prospective. Pollard et al showed a 6.6% cancellation rate in a retrospective study and in a prospective study the rate was 13% almost twice that seen in the retrospective study. Thus type of study should be taken in consideration while doing similar audits. There is a need to discuss planning and risk of anaesthesia with the patient and surgeon during preoperative evaluation to prevent day of surgery cancellation.

CONCLUSIONS: In this study most of the reasons of cancellations of elective operations were avoidable. Some factors are beyond control of OR manager. Tackling each problem in the

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process, starting from initial booking to patient notification, will lead to quality improvement. The reasons of cancellation are inter-related. Case cancellations can be reduced by improving preoperative assessment, increasing patient's involvement, requesting patient information on inter-current illnesses between preadmission and surgery, better interdepartmental coordination and defining more clearly the reasons for theatre over-runs in any future prospective study.

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