

# Day of Surgery Cancellation in Urology at a Public Tertiary Hospital and a Private Specialist Hospital

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## Abstract

**Background:** There is a high variability in the reasons for cancellation of elective urological surgery cases. Case cancellation rate is expected to be high in the Public Health System with perceived inefficiencies compared to private facilities in the same developing economy. **Aims and Objectives:** This comparative analysis was to determine the case cancellation rate and the reasons for cancellation of elective urological surgeries in a public tertiary hospital and a private specialist hospital in Accra. This is intended to form a basis for interventions aimed at reducing the case cancellation rate. **Methods:** This was a retrospective analysis of prospectively collected data on Day of Surgery cancelled elective urological cases from September 2014 to October 2015 at the urology unit of the Korle-Bu Teaching Hospital (KBTH), a public Tertiary Hospital and the Trust Specialist Hospital (TSH), a privately managed hospital in Accra. The reasons for case cancellation were categorized into structural factors, patient factors and process factors. **Results:** There was no significant difference between the case cancellation rate for elective urological cases at KBTH and the TSH which were 20.8% and 17.1% respectively ( $p = 0.317$ ). For KBTH, the reasons for cancellation of elective urological cases were due to structural factors in 11/117 (9.4%), patient factors in 15/117 (12.8%) and process factors in 91/117 (77.8%) which was due mainly to surgery running late. At the TSH, the reasons were due to structural factors in 1/29 (3.4%), patient factors in 27/29 (93.1%) mainly due to patient not turning up and process factors in 1/29 (3.4%). **Conclusion:** The case cancellation rate of elective urological surgeries in both the Public Tertiary Hospital and the Private Specialist Hospital were high with no significant difference between the two. However, in the Public Tertiary Hospital, process factors predominated as the cause of these cancellations while patient factors were the predominant cause

in the privately managed facility. Exposure of theater managers in public facilities to management practices in privately run facilities should be encouraged to help improve the efficiency of the public facilities.

## Keywords

Elective Urological Surgery, Case Cancellation, Public Tertiary Hospital, Private Specialist Hospital

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## 1. Introduction

Elective surgical case cancellation refers to any surgical case that is booked into the operation theatre list on the day prior to surgery but is not operated upon as scheduled [1]. Unanticipated cancellation of scheduled elective operations leads to a decrease theatre efficiency, waste of theatre time and resources, increases hospital expenses and a potential revenue loss to the institution [2] [3] [4]. This is undesirable in low resource economies with limited health budgets. Case cancellations have also been noted to create financial burden for patients and their families as well as causing emotional stress and a negative perception of quality of care [3] [5] [6] [7]. There is a resultant patient dissatisfaction and decreased staff morale when cases are cancelled [4]. In the setting of a tertiary Teaching Hospital, high cancellations of elective surgeries also affect medical education, training and skills acquisition by Residents and other students in training. Elective surgical case cancellation rates as high as 13 % have been noted [8] and these rates vary with specialty with urology being one of the highest [9] [10]. The reasons for cancellation of elective surgical cases which may be patient-initiated or hospital-initiated are multifactorial [11] [12]. These reasons can also be assessed using the Donabedian's quality of care framework [13] which was also used by Leslie RJ *et al.* [8] and presents a relationship between Structure, Process and Patient outcomes. The factors may be categorized into (1) structural factors such as, limited operating rooms and full recovery ward; (2) patient factors such as patient not turning up or not adhering to pre-operative instructions; and (3) process factors such as surgery running late and mechanical faults with theatre equipment. Various interventions have been instituted in some centers aimed at reducing the Day of surgery case cancellation rates such as institution of pre-admission clinics aimed at optimizing patients for surgeries [14] [15]. Case cancellation rate has been noted to vary with the hospital size and the type of service offered [16]. Of interest in developing countries is the perceived inefficiencies in the Public health system compared to the Private set ups. Thus, the case cancellation rate as observed in the private health set up may defer from that of the public sector and might bring to the fore other local and regional interventions that might be useful in reducing the case cancellation rates. As far as we know, no study has compared the case cancellation rates between that of the Public Specialist/Tertiary Hospital and private Specialist Hospital that offer tertiary care

in the West Africa sub region. The objective of this study was to determine the reasons for elective urological case cancellation in a public tertiary hospital and a private specialist hospital in Accra so as to identify modifiable factors and differences that would provide a basis for intervention to reduce the case cancellation rates.

## 2. Materials and Methods

This study was a retrospective analysis of prospectively collected data on Day of Surgery cancelled elective urological cases from September 2014 to October 2015 a fourteen month period at the urology unit of the Korle-Bu Teaching Hospital (KBTH), a public tertiary hospital and the Trust Specialist Hospital (TSH), a privately managed hospital that offers tertiary services in Accra, Ghana.

Scheduled elective urological cases at these centers as per theater list submitted to the theaters, ward and departmental administration over the period under consideration were retrieved and documented. The record books for documenting any cases that were cancelled including the reasons for the cancellation were also obtained for analysis. The reason for cancellation was documented by the receiving theater nurse (reception nurse desk). However since no coding has been made at the two institutions, it is stated as best as understood by the receiving nurse. The consultants in charge were interviewed for any additional information they could recall. For this study, Elective Urological surgical case cancellation was defined as any case that was booked into the operation theatre list that had been circulated to departmental administration, the admission wards, anaesthetic department, the theater and the recovery wards on the day prior to surgery but was not operated upon on the day of surgery as scheduled. The reasons were categorized into structural factors, patient factors and process factors.

Ethical clearance and permission was granted from KBTH and TSH before the study and publication of the findings thereafter.

Emergency cases were excluded from this study.

The data were analyzed using the Statistical Service Package for the Social Sciences (SSPS) version 21 and presented as descriptive statistics using ratios and percentages. Categorical data were compared using the chi square test.

## 3. Results

A total number of 673 elective urological cases were scheduled at the Korle Bu Teaching Hospital over the period of which 140 cases were cancelled with a case cancellation rate of 20.8%. At the Trust Specialist Hospital, a total of 211 cases were scheduled for surgery and 36 cases cancelled giving a case cancellation rate of 17.1%. The difference was not significant ( $p = 0.317$ ) (Table 1).

Analysis of the factors resulting in case cancellation of elective urology surgeries at the KBTH, a public facility, revealed that process factors were the commonest cause with surgeries running late as a result of late start of procedures or delays in case turn around being most encountered 91/117 (77.8%) (Table 2).

Analysis of the factors resulting in case cancellation of elective urology surgeries

**Table 1.** Table depicting scheduled Elective Urologic Surgeries and case cancellation rate.

Hospital	Scheduled cases	Cancelled cases	Case Cancellation Rate (%)
Korle Bu Teaching Hospital (KBTH)	673	140	20.8
Trust Specialist Hospital (TSH)	211	36	17.1

**Table 2.** Reasons for Case cancellation at the Korle Bu Teaching Hospital (KBTH) [n = 117].

Structural factors	No.	Patient Factors	No.	Process factors	No.
Full recovery ward/step down bed	2	Medical reasons—Pending dialysis	2	Surgery running late	70
No ICU bed	2	Medical reasons—uncontrolled hypertension	4	No blood	7
Pulse oximeters defective	7	Medical Reasons—acute asthma	1	Low Hb	4
Lack of running water	2	Patient not fit	1	Patient not NPO	2
Unstable electricity	1	Patient refuse procedure	1	Incomplete work up	6
Theater logistics/equipment break down	1	Patient did not show up	2	No anaesthesia available	1
		Done previously as emergency	-	Failed regional anaesthesia	1
				Moved to another date surgeons office	-
Total (%)	15 (12.8)		11 (9.4)		91 (77.8)

at the KBTH, a public facility, revealed that process factors were the commonest cause with surgeries running late as a result of late start of procedures or delays in case turn around being most encountered 91/117 (77.8%) (**Table 2**).

The reasons for the cancellation of 23 cases were not stated, hence excluded from data analysis giving a reporting rate of 83.6%. In the TSH, a privately managed facility, patient factors as related to the patients inability to mobilize the needed funds in time or delays in getting pre-approval by insurance companies were the commonest cause 27/29 (93.1%) (**Table 3**).

Of the type of surgeries that were cancelled, major surgeries were the commonest cancelled at the KBTH while endoscopic procedures were commonest cancelled at the TSH (**Table 4**).

#### 4. Discussion

Getting patients ready for surgery involves preparation that requires mobilization of resources by both the health facility and the patient. Thus, getting the surgery carried out on time allows for effective utilization of the available resources and improved patient outcomes [2]. It also enhances patient satisfaction and help boost staff morale [4]. As has been noted, cancellation rates vary with

**Table 3.** Reasons for case cancellation at the Trust Specialist Hospital (TSH) [n = 36].

Structural Factors	No.	Patient Factors	No.	Process Factors	No.
Full recovery ward/ step down bed	-	Medical reasons— Pending dialysis	-	Surgery running late	-
No ICU bed	-	Medical reasons— uncontrolled hypertension	1	No blood	-
Pulse oximeters defective	-	Medical Reasons— acute asthma		low haemoglobin	-
Lack of running water	-	Patient not fit	1	patient not Nil per Os	-
Unstable electricity		Patient refuse procedure	1	Incomplete work up	-
Theater logistics/ equipment break down	1	Patient did not show up	30	No anaesthesia available	-
		Done previously as emergency	1	Failed regional anaesthesia	-
				Moved to another date surgeons office	1
Total (%)	1 (2.7)		34 (94.4)		1 (2.7)

**Table 4.** Cancelled Case types.

Case types	Korle Bu Teaching Hospital (KBTH) No. (%)	Trust Specialist Hospital (TSH) No. (%)
Major Surgeries	77 (55)	3 (8.3)
Endoscopies	50 (35.7)	17 (47.2)
Minor Surgeries	13 (9.3)	16 (44.4)
Total	140 (100)	36 (100)

the size of the hospital facility as well as the surgical specialty; with urological cases, ENT and cardiothoracic surgeries noted to have high cancellation rates [9] [10] [17]. For elective urological surgeries the case cancellation rate was 20.8% at the public Tertiary Hospital (KBTH) compared to 17.1% at the privately managed health facility (TSH). This figures are however high compared to up to 13% stated by Leslie *et al.* [8] There was however no significant difference between the case cancellation rate between the public tertiary hospital and the privately run specialist hospital that carries out the same range of elective urological surgeries ( $p = 0.317$ ). Although there is no consensus on the acceptable rate of case cancellation when evaluating the efficiency of theatre facilities, a case cancellation rate of less than 5% is generally recommended. In New South Wales, Australia, the benchmark for booked patient cancellations on the day of surgery (for any reason) was less than 2%. Cancellation due to a medical condition was set at less than 1% and for patients not attending on the day of surgery it was less than 0.5% [18]. The figures recorded in this study indicate a rather inefficient management of the theaters in both facilities compared to the benchmarks.

Process factors were the commonest cause of elective urological case cancellation at the public tertiary hospital (77.8%). This is in variance with studies in advanced economies that found process factors as second to structural (facility) factors as most common cause of surgical case cancellations; 17% in the study by Chiu *et al.* [17]. Process factors are modifiable and hence provide opportunity for interventions to reduce case cancellations related to these factors at the KBTH where the commonest process factor for case cancellations was surgery running late (70/91). This is attributed to late starting of the surgery theater sections and a rather prolonged turnaround time leading to inability to complete the scheduled list resulting in case cancellations. The re-activation of previously installed software to monitor work flow in the theaters may be warranted at the KBTH as well as its installation in other public tertiary hospitals to help identify and address the delays in initiating theater sections and also reduce the turnaround time in order to minimize the occurrence of theater running late. Incomplete patient work up (6/91) was however not prominent as a process factor for case cancellation. This may be attributed to the hospital having instituted a pre-surgery anaesthetic clinic since 2000 that had led to improvements in optimizing patients for surgery. This type of intervention (pre-surgery anaesthetic clinic) is practiced in other institutions aimed at reducing the case cancellation rates with improvements recorded [8] [14] [15]. Structural factors accounted for 12.8% of the case cancellations compared to 29.5% in a study by Huda [4]. Defective pulse oximeters accounted for most of the structural issues at the KBTH.

On the other hand, in the privately managed TSH, patient factors dominated (94.4%) with the patients not showing up being a predominant cause. This may be attributed to delays or inability to raise the needed funds in time for the procedures, the cost of which tend to be higher than pertains in the public facilities. For the patients on health insurance, there were delays in obtaining pre-surgery approval from the insurance companies that was meant to indicate their preparedness to pay for the cost of the surgery. Scheduling of patients for elective urological surgeries that takes these delays into account might help reduce the case cancellation rates in the privately managed facilities as most of these surgeries were done eventually. Worthy of note is the finding that structural factors and process factors (2.7% and 2.7% respectively) were not important causes of case cancellation in this privately managed facility. This may be attributed to the TSH having adopted the pre-surgery assessment model as well as its efficient management of the theaters. Surgery running late was not a feature as a cause of case cancellation compared to the public tertiary facility. Exposure of theater managers in public facilities to management practices in privately managed facilities by way of internship should be encouraged to help improve the efficiency of the public facilities.

## 5. Conclusions

The case cancellation rate of elective urological surgeries in both the public tertiary hospital and the private specialist hospital were high with no significant difference

between the two. However, while in the public hospital, process factors mainly due to theater running late predominated as the cause of these cancellations, patient factors from patients not showing up was the predominant cause in the privately run facility and was related to obtaining funding for the procedures.

We recommend exposure of theater managers in public facilities to management practices in privately run facilities in order to improve efficiency in public facilities.

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