Paediatric Ambulatory Surgery Cancellations in a Caribbean Developing Country

Trevor Anatol FRCS[1] & Seetharaman Hariharan MD[2]

Abstract

The reasons and impact of cancellations of paediatric ambulatory surgeries in developing countries may be distinctive and information regarding the same is sparse.

Methodology: Data on all patients scheduled to have elective surgeries during the period of two years from January 2002 to December 2004 were retrospectively collected. An audit form was used to determine scheduled surgical procedures, cancelled procedures, reasons for cancellations. Demographic data such as age, ethnicity, family composition, occupation of the parents and information regarding the inconvenience caused were also collected. Both chart review and telephonic interviews were conducted for data collection.

Results: Of 3048 procedures scheduled during the study period, 917 (30.1 %) were cancelled. 174 cancellations were analysed in detail after power analysis. Common causes of cancellations were problems with supplies or staffing of the operating theatres (22.9%), administrative issues, being found medically unfit on the morning of surgery (21.7% each), unavailability of surgeon or anaesthetist (13.7%). Other reasons were patients not showing up (14%) due to concurrent medical illness, confusion about the date of surgery, withdrawal of parental consent, and a decision to have the surgery done elsewhere.

Discussion and conclusion: Inappropriate management of operating rooms and inadequate communication are the major issues causing cancellations of paediatric day-care surgery in our setting.

Authors' addresses: [1]Senior Lecturer in Paediatric Surgery, [2]Lecturer in Anaesthesia and Intensive Care, Department of Clinical Surgical Sciences, Faculty of Medical Sciences, Eric Williams Medical Sciences Complex, Trinidad, West Indies.

Corresponding Author: Trevor Anatol, Senior Lecturer in Paediatric Surgery, Department of Clinical Surgical Sciences, Faculty of Medical Sciences, Eric Williams Medical Sciences Complex, Trinidad, West Indies. *E-mail:* trevana@wow.net

Introduction

The frequent last-minute cancellation of cases scheduled for non-urgent surgery implies a serious deficiency in the quality of the clinical services, and gives rise to significant emotional and economic challenges to affected patients and their families [1]. The attendant wastage of limited resources, including manpower hours and preparations made for the conduct of these routine cases, may also erode the enthusiasm and work ethic of personnel providing these services. Where minors are the beneficiaries of these services, parents or guardians frequently take time off work to accompany children, and may suffer unexpected financial hardships as a result [2]. These considerations are of even greater importance to institutions in developing countries such as ours, subsisting largely on limited government subventions, striving to provide services for disadvantaged people with restricted earning power.

Yet many of the cancellations that affect outpatient clinics and surgical lists have been shown to be preventable by proper planning [3]. Since one cannot assume a universal explanation for this problem, the foundation of such planning requires knowledge of the reasons for such cancellations in every locality.

With this background, this study attempts to investigate the reasons for the cancellation of paediatric cases listed for surgery in the Same Day Surgery (SDS) unit of a tertiary care teaching hospital in Trinidad and Tobago and try and assess the impact of this turn of events on patients and guardians. The data hopefully would enable to formulate a policy for minimizing this occurrence in the future.

Hospital Setting

Eric Williams Medical Sciences Complex (EWMSC) is a teaching hospital which provides centralized paediatric surgical services for Trinidad and Tobago. The hospital is a public institution and no fee is charged for the services provided.

Children with non-acute surgical complaints are referred by their doctors, or from the Priority Care Facility (Casualty) of the hospital, which is a "walk-in" area, to the out-patient surgical clinics. After evaluation by the consultant surgeon, patients are given a date on the waiting list for surgery. Routine blood investigations are carried out within four weeks of the date scheduled for surgery. Pre-operative assessment to confirm fitness for surgery is done by the Anaesthetic Department at a designated clinic, the week before the scheduled date of surgery. A printed list of instructions is given to a responsible adult by the nursing personnel followed by discussion and explanation of the instructions. These instructions include specific details about the required duration of fasting, any specific preparations necessary and eventualities which should lead to the postponement of surgery for the child (usually unexpected illness).

The patients are admitted to the SDS unit on the morning of surgery, again assessed by the anaesthetist, and after the surgical procedure all (except who require unplanned admission to hospital) patients are discharged home on the same day from the SDS unit.

Methods

Approval to conduct the study was obtained from the Ethics Committees of the University of the West Indies and the hospital. All patients scheduled for elective surgery during the two-year period from 2002 through 2004 were included for the retrospective analysis.

For detailed evaluation of the cancellations, a sample size was determined to give adequate power to the findings of the study, based on median figures for percentage cancellations derived from previous studies. A projected percentage of 13% was used for the calculation based on the formula:

$$No\ of\ subjects = t2\ \frac{(p)\ (1\text{-}p)}{d2}$$

where t is a constant (= 1.96 at the 95% confidence interval), p is the expected percentage of cancellations derived from the literature search (13%), and d is another constant defining the precision level or range within which the true value of the study population was estimated to lie. Thus, for a precision level of 5% (and d=0.05), the sample size was derived as 174 patients.

175 patients were randomly chosen from the total number of patients who were cancelled and after explanation of the purpose and format of the project, informed consent was sought from all responsible adults by phone. Consent forms were also posted out to the 175 candidates enrolled to the study which were signed and returned. Patient anonymity was preserved by excluding patient identification and contact information from the forms subjected to analysis.

An audit form was developed for the detailed assessment of the children who had cancellation of scheduled surgery in the SDS unit of the hospital. The audit form sought to identify data from all the 175 entrants to the study. Demographic and clinical data and reasons for cancellation were derived from chart review. Where further information was required, such as information regarding family composition, how the cancellations impacted the parent/guardian, data were collected by telephone interviews of the relevant parents or guardians.

Demographic features such as age, gender, ethnicity, social class (based on parents' occupations), and family structure, as well as the clinical diagnosis and time spent on the waiting list were recorded. The reasons for the cancellations were grouped into two – one group where parents/guardian were responsible for the cancellation and the second group where factors within the hospital were responsible for the cancellation.

Descriptive analyses and ANOVA analysis were done to infer the statistical significance of the various factors involved in cancellations.

Statistical analysis was done using Statistical Package for Social Sciences (SPSS) version 12 (Chicago IL, USA) software.

Results

During the three-year period of study from 2002 to 2004, a total of 3048 cases were scheduled for surgery, out of which 917 surgical procedures were cancelled; overall cancellation rate being 30.1%.

The majority of the affected children (46.3 %) were between one and five years old, just under two-thirds (65.7%) were male. A little more than half (54.5%) were of African ethnicity. More than one third (35.1%) were from single parent homes, most of the fathers (70.3%) were skilled or semi-skilled tradesmen and almost half of the mothers (45.5%) were homemakers. The demographic features of the children whose surgeries were cancelled are depicted in Table 1.

Analysis of the distribution of all the cancellations according to the surgical specialty involved revealed that the majority of cancellations occurred in the children scheduled for General surgical procedures 482 (52.6%), followed by Orthopaedic and Plastic Surgery cohorts (8.3 and 9.3% respectively) and the least in the ENT (4.6%) (Figure 1).

Although the overall cancellations were less when the parent's occupation was professional/managerial (Table 1), patients whose parent's occupation was professional/ managerial, the median waiting time was 166 days when compared to patients who had unskilled parents, which was 26 days.

Table 1 Demographic features of cancelled patients.

Variable		n (%)
Age	<1 year	20 (11.4)
	1-5	81 (46.3)
	6-10	59 (33.7)
	11-16	15 (8.6)
Gender	Male	115 (65.7)
	Female	60 (34.3)
Ethnicity	African descent	96 (54.9)
	East Indian descent	35 (20.0)
	Other	44 (25.1)
Family composition	Single parent	99 (57.9)
	Both parents	60 (35.1)
	Guardian	12 (7.0)
Occupation of father	Professional & Managerial	5 (3.4)
	Skilled	102 (70.3)
	Semi- or Unskilled	28 (19.3)
	Unemployed/Retired	7 (4.8)
Occupation of mother	Professional & Managerial	2 (1.2)
	Skilled	61 (36.6)
	Semi- or Unskilled	23 (13.8)
	Unemployed/Retired	76 (45.5)

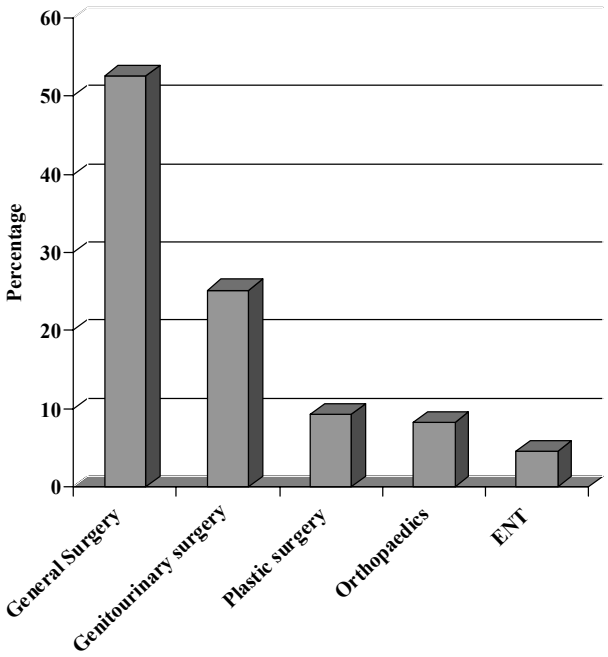

Figure 1 Distribution of cancelled cases by Specialty.

Twenty-five children (14.3%) were not brought to the SDS unit on the scheduled date, nine because of concurrent medical illness, and the remainder for a variety of reasons, including confusion about the date scheduled for surgery, withdrawal of parental consent, and a decision to have the surgery done elsewhere. Of this 25, six parents/ guardians had informed the hospital of the changed circumstances.

The remaining 150 children (85.7%) were cancelled by the hospital, most frequently because of problems with supplies or staffing of the operating theatres (22.9%), administrative issues, or being found medically unfit on the morning of surgery (21.7% each). There was a problem with surgeon or anaesthetist availability in 24 cases (13.7%) (Table 2). Thus, only 47 cancellations (26.9%) could be categorized as unavoidable (due to patient illness).

Table 2 Overall reasons for cancellation.

Reason for cancellation	Frequency of cancellation (%)
Self-cancellations:	25 (14.3)
Child ill	9 (5.1)
Miscellaneous	16 (9. 2)
Hospital Cancellations:	150 (85.7)
Operating room problems	40 (22.9)
Administrative problems	38 (21.7)
Child unfit	38 (21.7)
Surgeon/anaesthetist unavailable	24 (13.7)
Miscellaneous	10 (5.7)

The vast majority (74.9%) of the children had been on the waiting list for less than three months before the cancellation, 30 (17.1%) had been waiting between three and six months, and 14 (8%) had been waiting for more than six months. The overall median waiting duration was 41 days (interquartile range: 15, 138). The duration of waiting was not significantly different between the demographic features and occupation of the parents (Table.3) (ANOVA, F= 0.529, p=0.59).

Of the 150 patients cancelled by the hospital, nearly two-thirds of the parents or guardians (98, 65.3%) had taken a day off work to accompany the child to the hospital.

Table 3 Waiting time for surgery related to demographic variables.

VARIABLE		Median duration (days)
Ethnicity	African descent	40
	East Indian descent	42
	Mixed	51
Family composition	Single parent	33
	Both parents	44
	Guardian	34.5
Occupation of parent	Professional & Managerial	166
	Skilled	23
	Semi- or Unskilled	26.5
	Unemployed/Retired	43

Discussion

Ambulatory surgery and its benefits have grown steadily, and more than 50 to 60% of all elective surgical cases are done by this approach even a decade ago [4]. The list of advantages in the paediatric setting is impressive, which includes early ambulation, less likelihood of nosocomial infections, psychological benefits like decreased separation anxiety, less emotional stress for children and reduced disruption of the family unit, as well as economic and cost-effective returns [3, 4].

Well-defined quality indicators are required to define the standards and improve the results of ambulatory surgery. These may be unique to every setting, although some reported common indicators are unplanned admissions, emergency department consultations, postoperative pain, length of time spent on the waiting list and unexpected cancellations [5]. Hence our study sought to elucidate the reasons for cancellations, duration of waiting and their impact on parents in our setting.

Our study revealed an unexpectedly high incidence of cancellations of paediatric surgical day-cases. A wide range of unplanned cancellations has been reported in literature varying between 4.5% and 33% [3, 6 – 9]. Pollard observed that studies reporting cancellations due to "no shows" and those due to administrative reasons reported rates of 13% to 20% [7]. A previous study from Barbados reported a rate of 9% cancellation due to "no show" [10]. Also, rates quoted in prospective studies are about twice reported by retrospective studies (13% versus 6.6%). Although we opted to use a median rate (13%) from previous reports to calculate the sample size for the present study [6, 11, 12], and retrospectively studied our patients, we eventually found an exceedingly high cancellation rate in our setting.

The majority of cancellations in this report, as in most others, was hospital initiated, and mainly due to problems with administration and supplies, staff availability and time over-runs (Table 3). Administrative problems have previously been recognized to be responsible for the largest single group of cancellations, with rates of 43% to 45% occurring in a Community Hospital and in a University Hospital respectively [11, 12]. Our hospital is a hybrid that provides services by hospital appointed surgeons alongside a smaller number of University appointed consultants.

Other cancellation rates reported vary widely from 3.3% to 23.1% [3, 5-15]. Underlying reasons are multifarious, but appear to include the type of clientele served, financing, the level of development of the hospital, and issues of access and staffing. Our figure is far in excess of these values for reasons that are not quite obvious from the present study.

Another suggested influence on cancellation rates is the specialty involved. A lower cancellation rates in Orthopaedic and Plastic surgery in the present study may be perhaps due to the reason that some day-case procedures such as fixation of fractures and burn dressings, which belong to these units, might be expected to be given priority over other elective General surgical problems in the face of pressure for operating time. A previous study showed that cancellations in out-patient Urological surgery were significantly more compared to Orthopaedic and General surgery [6], while in our situation, General surgery surpassed Urology (Figure 1).

A previous study reported that 38.5 % to 50% of either parent of the patient had to take time off work, compared to 65 % in the present study [16]. This may be perhaps another reason for the longer waiting duration for children who had parents with professional/ managerial occupation. Additionally, in the present study, telephonic interviews revealed that there were considerable expenditures incurred by the parents such as the cost of transportation to hospital, babysitting

expenses and overnight lodging expenses for children coming from the sister isle of Tobago. The issue of the emotional and economic effect of cancellations on the involved families has been recognized to be of importance in a previous report [16].

The problem of self-cancellation has been addressed by many studies. Certain demographic factors have been reported to have influenced this factor, such as belonging to an ethnic minority group, possessing a lower educational and economic background, or being members of a younger age group [3, 8, 17]. Our study also suggests a parallel effect of ethnicity, family structure and socio-economic status on the cancellation rate. However, the proportion of cancellations in East Indian ethnic composition (20%) falls well short of the representation of this group in the population as a whole (40.3%) [18]. This may reflect an advantage in economic circumstances, or a cultural preference by this group to seek private medical care.

Many cancellations in the present study were due to upper respiratory infections (URI), of the patient. Even among those children who unexpectedly developed intercurrent illness, majority of the cancellations were initiated by the hospital and only few were by the parents or guardians. There has been controversy whether childhood URI-like symptoms, not accompanied by fever or pulmonary signs, should lead to automatic deferral of surgery. A tendency has been described for more recently qualified anaesthetists to desist from routinely canceling patients with URI-like symptoms [19, 20]. Also, a recent review has found that blanket cancellation for this reason is no more in vogue [21]. Educating parents to contact the hospital when they first note URI-like symptoms in the child is an obvious method of allowing last-minute cancellation and re-organization of the operating room schedule [3].

One method of curtailment in cancellation rate may be improved pre-operative evaluation. The introduction of hospital pre-operative clinics has been shown to reduce inadequate preoperative preparation [3]. Earlier evaluation might allow more time for addressing identified problems and give an opportunity for rescheduling, perhaps from a pool of easily contactable patients on stand-by [7]. In our hospital, despite having a designated Pre-anaesthetic Clinic, there have been many last-minute cancellations. Cancellation rates have been found to be similar whether these assessments are done within 24 hours or up to one month prior to surgery [3, 7, 22–24]. An earlier study in our setting showed that the Pre-anaesthetic Clinic has probably contributed to the low rate of unplanned admissions following day-care surgery [25].

Many interventions are likely to help in reducing unplanned cancellations in time to allow rescheduling of procedures. Strategies such as pre-admission testing visit by nursing staff in the same day surgery unit led to a reduction in delays and cancellations and increased nursing job satisfaction [20]. Preoperative telephone screening is another overture shown to be useful [13, 22]. In fact, a telephone call by the nurse the day before surgery to determine changes in the child's health status has become a mandatory part of the protocol of several units [26].

In our situation, many parents could not be contacted by telephone, which is again the limitation unique to the developing world. There are problems with communication, both with respect of the actual number of accessible working phones and the administrative and economic challenge of making contact with guardians. A similar situation has been previously described [27].

There were some limitations to the present study. The absence of a control group due to the retrospective nature of the study, did not allow valid comparisons. Also because of administrative reasons, constant staff shortage as well as motivation, no interventions could be made to see whether this has made any improvement. Nevertheless, it is possible to propose suggestions when the problems are known to avoid cancellations in future, as has been done in a recent study [28]. In a similar vein, it could be reasonably concluded from the results of the present study that in our setting, administrative efforts might be usefully directed to attention basic issues of adequate staffing and supplies, the formulation of an improved schedule design which could accommodate these shortcomings at short notice when they do occur, and more effective communication with parents and children.

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