The Operating Theatre Gridlock: how are decisions made on emergency surgical cases?

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Abstract

Objective: The scheduling of emergency or unplanned surgery constitutes an important area of research in health management. The ambiguity around the identification of clinical states, logistical factors and acceptable timeframes has the potential to stifle decision-making practices among hospital personnel, and have grave consequences for the hospital and patient care. The aim of the present study was to explain decision-making processes around emergency or unplanned surgical cases through an examination of priority-setting among relevant hospital personnel.

Design: The mixed methodology included: (1) the analysis of an unplanned surgical case, deemed to have been exposed to unsatisfactory decision-making practices; (2) consultation with key stakeholders involved in the aforementioned case; (3) the development of a comprehensive survey that reflected the issues raised by those consulted; and (4) the use of the survey in four hospitals.

Setting: The study was conducted in four public hospitals located in the Australian states of New South Wales and Queensland, as well as New Zealand.

Main outcome measures: The study employed two main outcome measures: (1) a semi-structured, open-ended interview schedule, which facilitated consultation with key stakeholders; and [2] a survey that explored clinical, logistical and time-related considerations that influence the scheduling of unplanned surgery.

Results: The four principal findings include: [1] there are divergent understandings of emergency surgery among those who schedule emergency surgery, which in turn, have the potential to spur conflict; [2] processes to prioritise and schedule emergency surgery are inconsistently understood; [3] a consideration of clinical state and logistical factors sometimes merge when priority-setting; and [4] clinical and logistical considerations might stratify priority assessment.

Conclusions: This study indicates that the fusion of clinical, logistical and time-related factors is pivotal in the scheduling of unplanned surgery. Secondly, it suggests that the scheduling of emergency surgery is complex and multifaceted, and warrants further exploration.

Key words: emergency surgery; operating theatres; hospitals; management; decision-making; scheduling.

Abbreviations: ATS – Australasian Triage Scale; CTAS – Canadian Triage Acuity Scale; MTS – Manchester Triage Scale.

Introduction

Behind the airlocks and surgical masks, the operating theatre environment is often perceived by outsiders as a mysterious and autonomous workshop. However, the operating theatre is a high-cost engine that powers much of the activity in a metropolitan referral hospital, which manages patient injuries that are classified serious to critical. [1] Decisions around the scheduling of surgical cases, particularly emergencies, have consequences not only for the operating theatre, but the hospital as a whole and the patients in its care.
The Operating Theatre Gridlock: how are decisions made on emergency surgical cases?

When managing unplanned surgical cases, there are many factors that influence the decision-making process; namely:
1. Clinical need for urgent and timely treatment;
2. The ambiguity that clouds the urgency of clinical needs;
3. The limited ability to plan effectively in an operating theatre because of the changing condition of individual patients and the changing demands on theatre space, instruments and other resources;
4. Potential disruption to elective surgery and the consequent effects on patients, their families and hospital personnel; and
5. Potential gridlock in patient throughput; not only within the operating theatre, but in the emergency department, the intensive care unit and the general wards. [2]

Hence, the efficient management of emergency surgical cases is of great importance to hospital management, government bodies and the wider community.

Despite research exploring medical decision-making practices, [3] few studies have examined the scheduling of emergency surgery. [4] This gap in knowledge is evident by the ad hoc management practices used in many hospitals for organising emergency surgery. [5] Consequently, this area has become a field of interest among hospital managers. It has stimulated the need to investigate decision-making practices in operating theatres and the use of urgency classification systems.

Findings are presented from an exploratory study in which decision-making practices around emergency or unplanned surgery were examined. This was achieved through consultation with clinicians involved in these processes. Before discussing these findings, a review of relevant literature is presented.

**Decision-making practices within healthcare**

The primary responsibility of healthcare professionals is to promote the well-being of their patients. They are expected to do what is best for the patient and advocate on the patient’s behalf. [6] Decision-making has an important role in other societal institutions, yet within healthcare it has a number of unique qualities. It involves a strong focus on restoring patient health; it is responsive to change in both the patient and in the hospital setting; time constraints cannot be negotiated; and there are often major personal consequences associated with the decisions made. This is especially evident in the operating theatre, and for this reason, the scheduling of surgery has been described as a complex activity, [7] a perpetually difficult problem due to an ever-changing environment, [8] and even as a political battle. [9] It appears that healthcare decision-making has a distinct footprint with great significance. [10]

Within the existing literature that explores medical decision-making practices, particularly in the context of surgery, [3] the normative model of decision-making appears to be decision theory. [11] Its ability to comprehensively consider information from diverse sources, especially in situations of great uncertainty, makes it particularly valuable – both theoretically and pragmatically.

In the context of operating theatres, decision theory primarily manifests itself through two models; queuing theory [12] and the Poisson distribution model. [13] The former commonly operates on a first-come-first-served basis, whereby priority is determined by chronology. In the case of emergency surgery, where patient health outcomes are at-risk, this is illogical. [14]

In contrast, the Poisson distribution model operates with greater autonomy and is particularly apt for representing occurrences of a particular event, like emergency surgery, over time or space. [15] The model is premised on a number of assumptions. For instance, events like emergency surgeries can occur at any of a large number of places within the unit of measurement. These possibilities include the hospital; the emergencies do not happen too frequently; the probability that emergency surgery is required does not depend on time or the hospital itself; and the average number of emergency surgeries is constant. [16] The Poisson distribution model thus allows for the random arrival of patients; it assumes independence from other patient arrivals; and it supposes independence from the state of the hospital system. The model may be effective where emergency services are provided according to priority: ‘where patients in the queue are selected for care according to a set of clinical priorities’. [14] Consequently, the model has been used to inform the Australasian Triage Scale (ATS), [17] the Manchester Triage Scale (MTS), [18] as well as the Canadian Triage Acuity Scale (CTAS); [19] all of which are used in emergency departments to rate clinical urgency.

Despite its alleged value, the Poisson distribution model is restrictive because the underlying assumptions of the theory do not always hold in the real world. For example, the model assumes an infinite number of patients, or queue capacity, or no bounds on inter-arrival or treatment times, when it is quite apparent that these bounds exist in reality. Anecdotal evidence indicates inconsistent practices when managing emergency surgical cases. This is particularly the case when...
determining clinical priorities and when simultaneously admitting several patients who have comparable medical needs. Accordingly, some of those involved in the scheduling of emergency surgery experience frustration and conflict with co-workers.

It thus appears that triaging scales have a limited capacity to effectively manage the complexities often experienced by those involved in unplanned surgical scheduling. In an environment characterised by professional power, [20] the scales occasionally fail to synthesise clinical priority; logistical issues, such as efficient theatre utilisation and patient flow; continued access to public hospital services; and the political pressure to manage waiting lists within a paradigm of economic rationalism. [21] Consequently, planned surgery is delayed if not cancelled; hospital costs are inflated as theatres operate beyond funded sessions; staff morale is hindered with ongoing requests to work longer hours and manage increasing volumes of patients; and, most importantly, patient care is potentially jeopardised. It is therefore imperative that decision-making practices within the hospital setting be understood and improved accordingly. [2]

The importance of multi-actor decision-making in complex healthcare settings is recognised within existing literature. [22] In fact, models like the participative decision-making model are said to acknowledge hospitals as complex, multidimensional systems that are not static. For example, American research on effective, hospital-wide decision-making processes highlights the importance of including both clinical and non-clinical factors and actors. [23] The ideal hospital is described as a complex adaptive system where effective responses to the changing environment occur through rich connections made within the system. Connections between doctors, nurses and managers allow for creative solutions to develop as each have the opportunity to gain a collective understanding from one another.

However, an idyllic view of congenial working alliances fails to recognise the realities of commonplace decision-making processes within a complex healthcare system, characterised by hierarchical divisions of labour. [20] Furthermore, tension between the business and the practice of healthcare reminds us of the influential role of economics in clinical activities. Heightened interdependency between clinicians and managers has led to increasing conflict between decision-makers, driven, in part, by different perceptions of rationality. [24]

Thus, the scheduling of unplanned surgical cases is not contingent on clinical need alone. It involves the synthesis of multiple considerations including clinical priority, logistical factors (that is, the availability of resources, the use of these resources and subsequent impact on other patients), and acceptable timeframes. Research to understand decision-making processes around unplanned surgical cases is both timely and necessary.

**Design**

A mixed methodology design was developed to comprehensively explore the attitudes and practices of professionals involved in the scheduling of unplanned surgery. First, to understand ineffectual practice, an unplanned surgical case that was deemed to have been exposed to unsatisfactory decision-making practices by hospital personnel and the patient, was analysed. Second, key stakeholders were consulted using semi-structured, open-ended interviews to understand the processes that contributed to the aforementioned case. Third, these opinions were collated and a survey instrument was developed to capture the attitudes and practices of professionals from a range of hospital settings who are involved in the scheduling of unplanned surgery. Fourth, a pilot survey was employed in four hospitals: two were located in New South Wales, one was located in Queensland, and one was located in New Zealand.

**Main outcome measures**

The research team requested one large hospital to describe an unplanned surgical case that involved an ad hoc scheduling process. It was important that the case typified the complexity of the problems regularly encountered by health managers and clinicians when scheduling emergency surgical cases. In the identified case, the outcome of the process was unsatisfactory to the surgeon, anaesthetists, operating theatre coordinator, hospital management and patient. The case provided the researchers with rich data from which to formulate a survey.

**Consultation with key stakeholders**

1. **Research tools**

A semi-structured, open-ended interview schedule was designed to explore the scheduling of unplanned surgery in general and in the aforementioned emergency case. Questions clustered around a number of themes; namely, current practices in the scheduling of unplanned surgery; the influence of clinical and time determinants; the influence of logistical or operational determinants; the role of interpersonal and interprofessional dynamics when
scheduling unplanned surgery; and methods to improve decision-making practices around the scheduling of unplanned surgery.

2. Ethical considerations
Approval to conduct each phase of the study was gained from the university ethics committee for human research, as well as the relevant area health service ethics committees. These bodies adhere to the National Health and Medical Research Council ethical standards.

3. Recruitment process
Eight key stakeholders involved in the aforementioned case study, including the surgeon, the case anaesthetist, the operating theatre manager, the clinical coordinator, the anaesthetic nurse unit manager, the operations manager, the recovery room manager and the patient, were invited to participate in a confidential interview. All consented to participate in the project.

4. Collection and analysis of data
Each interview was audio-taped and transcribed verbatim. Appropriate software was used to aid detailed coding and analysis of the research material, facilitating the interpretation process. An analysis of the research material allowed for themes to emerge, as the research participants constructed their own meanings of situations through the interview process. The research material was found to cluster around a number of core themes. To ensure consistency within each theme, codebooks were developed that included detailed descriptors of each theme, inclusion and exclusion criteria, and exemplars from the research material. Through a reflective, iterative process, theme content was interrogated to explore relationships between and within the themes. The process enabled the researchers to engage in a systematic method of analysis using an eclectic process, whilst remaining open to alternative explanations for the findings.[25]

Pilot survey
Informed by the preceding research phase, a survey was developed to explore the considerations that influence scheduling practices. These factors clustered around three core themes; namely, clinical considerations, logistical considerations and time. Convenience sampling was employed to select four public hospitals from New South Wales (2), Queensland (1) and New Zealand (1). Of the 48 surveys distributed to operating theatre personnel, 67% were completed (n=32). Given the small sample only descriptive analysis was possible.

Results

Interviews
Consultation with key stakeholders involved in the aforementioned case suggested that clinical priority is not the sole criterion for determining patient place in a surgery schedule. The decision-making process was also influenced by the availability of the surgeon and the operating capacity of the theatres at different times of day.

Furthermore, poor communication between hospital personnel and the ineffectual sharing of pertinent information (notably, unexpected delays) exacerbated a sense of frustration whilst waiting for surgery. In the case under consideration, theatre staff and the patient were not duly informed about the constraints around the surgeon’s availability. The consequent frustration was noted not only by hospital personnel, but also by the patient. However, the patient’s experience of the wait for surgery was not considered by the decision-makers.

The interviews also highlighted disparate perspectives between the operating theatre managers and the surgeon when scheduling emergency surgery. The operating theatre manager focussed on the equitable use of a fixed and limited operating capacity; however, the surgeon focussed on individual patient access to the theatre and the need for consultant supervision during surgery. Thus, while the manager adopted a broad, organisational view of the situation, the surgeon demonstrated concern for specific instances of patient care.

Collectively, the interview material suggests that the term ‘emergency surgery’ lacks a universal definition among those involved in the scheduling of such cases. The material also indicates that the decision-making process is influenced by a number of factors, including clinical considerations, logistical considerations and time.

Pilot survey
Survey respondents spoke of emergency surgery in highly variable ways. They offered understandings that were guided by policy rhetoric as well as those that were informed by experiential wisdom. Also variable was the ownership of the decision-making process. Some respondents awarded prime responsibility to the anaesthetist or the surgeon; others recognised value in a collaborative approach and awarded responsibility to a team of hospital personnel.

Several respondents applied institutional rules inconsistently. Despite the presence of hospital policy to guide scheduling practices, it appears these are used variably within a given hospital setting. One respondent stated,
‘The term emergency surgery is often inappropriately used.’ A fellow staff member concurred stating, ‘I’m not sure we have defined this… many of our added cases are… not a true emergency.’ Given these different opinions, there is potential for conflict between hospital personnel. Despite the availability of organisational policy, respondents conceptualised emergency conditions in dissimilar ways, which in turn, influenced the use of limited resources.

Interestingly, the definitions offered by the respondents reflect the themes identified through the earlier research phase. More specifically, the definitions highlighted the importance of clinical considerations, logistical considerations and time.

There were two approaches to scheduling unplanned surgery. The first involved a qualitative clinical approach, whereby a patient’s clinical condition formed the basis for stratification. The second involved quantitative time-based categories to specify the timeframe for surgery. Operationally, the two approaches had similar clinical endpoints; yet, they emphasised different factors in the clinical decision-making process.

The researchers were keen to understand how different conditions, some of which might be vague or associated with social dimensions, shape attitudes toward priority setting. A diverse range of 32 clinical states (that is, conditions a patient might present for unplanned surgery) were selected and respondents were asked to indicate the value awarded to these when deciding clinical priority.

Despite the rather generic description of the selected conditions, some stratification was evident among the responses. Table 1 indicates that haemodynamic instability, ischaemic visceral organs, cardiac injury, caesarean section

Table 1: Descriptive statistics for clinical states

<table>
<thead>
<tr>
<th>Condition</th>
<th>NUMBER</th>
<th>MEAN</th>
<th>STANDARD DEVIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threatened airway</td>
<td>32</td>
<td>1.22</td>
<td>0.420</td>
</tr>
<tr>
<td>LSCS foetal distress</td>
<td>30</td>
<td>1.37</td>
<td>1.299</td>
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<tr>
<td>Haemodynamic instability</td>
<td>32</td>
<td>1.66</td>
<td>1.260</td>
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<tr>
<td>Cardiac injury blunt</td>
<td>31</td>
<td>1.71</td>
<td>1.321</td>
</tr>
<tr>
<td>Ischaemic visceral organ</td>
<td>32</td>
<td>1.84</td>
<td>1.293</td>
</tr>
<tr>
<td>Ruptured visceral organ</td>
<td>32</td>
<td>1.84</td>
<td>1.110</td>
</tr>
<tr>
<td>Blood loss &gt;15%</td>
<td>32</td>
<td>2.00</td>
<td>1.437</td>
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<td>Ischaemic limb</td>
<td>32</td>
<td>2.00</td>
<td>1.320</td>
</tr>
<tr>
<td>Surgical bleeding</td>
<td>31</td>
<td>2.16</td>
<td>1.440</td>
</tr>
<tr>
<td>Vascular repairs</td>
<td>32</td>
<td>2.22</td>
<td>1.184</td>
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<tr>
<td>Central nervous system injury</td>
<td>32</td>
<td>2.32</td>
<td>1.956</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>2.33</td>
<td>0.577</td>
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<td>Systemic sepsis</td>
<td>32</td>
<td>2.50</td>
<td>1.344</td>
</tr>
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<td>LSCS maternal distress</td>
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<td>2.67</td>
<td>2.106</td>
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<td>Compound fracture</td>
<td>31</td>
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<td>1.413</td>
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<td>Threatened sensory loss</td>
<td>32</td>
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<td>1.489</td>
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<td>Threatened loss of mobility</td>
<td>32</td>
<td>3.31</td>
<td>2.023</td>
</tr>
<tr>
<td>Coagulopathy</td>
<td>30</td>
<td>3.63</td>
<td>1.921</td>
</tr>
<tr>
<td>Age</td>
<td>27</td>
<td>3.78</td>
<td>2.172</td>
</tr>
<tr>
<td>Unstable fracture</td>
<td>32</td>
<td>4.47</td>
<td>1.685</td>
</tr>
<tr>
<td>Severe pain</td>
<td>32</td>
<td>4.75</td>
<td>1.626</td>
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<tr>
<td>Contaminated wound</td>
<td>32</td>
<td>4.78</td>
<td>2.254</td>
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<tr>
<td>Unsuccessful suicide</td>
<td>28</td>
<td>5.36</td>
<td>2.164</td>
</tr>
<tr>
<td>Repair of tendons</td>
<td>32</td>
<td>5.53</td>
<td>2.048</td>
</tr>
<tr>
<td>Abscess drainage</td>
<td>31</td>
<td>5.65</td>
<td>1.743</td>
</tr>
<tr>
<td>Threatened cosmetic outcome</td>
<td>31</td>
<td>5.97</td>
<td>1.871</td>
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<tr>
<td>Known infectious risk</td>
<td>31</td>
<td>6.13</td>
<td>1.979</td>
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<tr>
<td>Terminal illness</td>
<td>31</td>
<td>6.35</td>
<td>2.009</td>
</tr>
<tr>
<td>Intravenous drug user</td>
<td>29</td>
<td>6.41</td>
<td>1.722</td>
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<tr>
<td>Closed fracture</td>
<td>32</td>
<td>6.50</td>
<td>1.685</td>
</tr>
<tr>
<td>Uncomplicated fracture</td>
<td>32</td>
<td>6.75</td>
<td>1.918</td>
</tr>
<tr>
<td>Diagnostic procedure</td>
<td>31</td>
<td>7.16</td>
<td>1.530</td>
</tr>
</tbody>
</table>

¹ 1 indicates highest priority and 9 indicates lowest priority
foetal distress, ruptured visceral organs and threatened airway were awarded highest priority. The table also indicates that respondents believed that items of lower priority include closed fractures, uncomplicated fractures, patients with known infectious diseases, patients who are intravenous drug users, and patients who are terminally ill.

Logistical or organisational factors help to determine how and when emergency surgery is performed. They involve the availability of staff, the availability of space and the availability of materials. To understand the influence of particular factors on the decision-making process, respondents were asked to indicate the value awarded to a diverse range of logistical considerations when scheduling emergency surgery. Table 2 indicates that the availability of appropriate surgical and anaesthetic staff, as well as efforts to optimise patient condition were awarded highest priority. The table also demonstrates the range of opinion among respondents; this suggests that logistical considerations, as opposed to clinical considerations, are prioritised with greater variation among hospital personnel.

Using the clinical conditions listed in Table 1, respondents were asked to indicate the ideal timeframes for surgery. As Table 3 illustrates, foetal distress and a threatened airway were awarded highest priority, while closed fractures and diagnostic procedures were deemed lowest priority.

### Table 2: Descriptive statistics for logistical considerations

<table>
<thead>
<tr>
<th></th>
<th>NUMBER</th>
<th>MEAN</th>
<th>STANDARD DEVIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimising patient’s co-morbid condition</td>
<td>32</td>
<td>2.38</td>
<td>1.212</td>
</tr>
<tr>
<td>Availability of surgical staff</td>
<td>32</td>
<td>2.44</td>
<td>1.216</td>
</tr>
<tr>
<td>Availability of anaesthetic staff</td>
<td>32</td>
<td>2.47</td>
<td>1.414</td>
</tr>
<tr>
<td>Availability of ICU bed</td>
<td>32</td>
<td>2.97</td>
<td>1.448</td>
</tr>
<tr>
<td>Availability of scrub nurses</td>
<td>32</td>
<td>3.06</td>
<td>1.605</td>
</tr>
<tr>
<td>Availability of instruments</td>
<td>32</td>
<td>3.25</td>
<td>1.524</td>
</tr>
<tr>
<td>Duration patient has been waiting for surgery</td>
<td>32</td>
<td>3.84</td>
<td>1.868</td>
</tr>
<tr>
<td>Completing consent</td>
<td>31</td>
<td>4.00</td>
<td>1.932</td>
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<tr>
<td>Age group</td>
<td>30</td>
<td>4.13</td>
<td>2.177</td>
</tr>
<tr>
<td>Previous delayed surgery</td>
<td>32</td>
<td>4.28</td>
<td>1.764</td>
</tr>
<tr>
<td>Surgical specialist available onsite</td>
<td>32</td>
<td>4.41</td>
<td>1.932</td>
</tr>
<tr>
<td>Cancelling elective surgery</td>
<td>31</td>
<td>4.45</td>
<td>2.142</td>
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<td>Availability of ward bed</td>
<td>32</td>
<td>4.63</td>
<td>1.996</td>
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<tr>
<td>Time of day</td>
<td>32</td>
<td>4.91</td>
<td>2.161</td>
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<td>Responding to patient opinion</td>
<td>32</td>
<td>5.72</td>
<td>2.247</td>
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<tr>
<td>Responding to anaesthetist opinion</td>
<td>30</td>
<td>5.97</td>
<td>2.539</td>
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<tr>
<td>Morbid patient obesity</td>
<td>31</td>
<td>5.97</td>
<td>2.183</td>
</tr>
<tr>
<td>Responding to surgeon opinion</td>
<td>32</td>
<td>6.00</td>
<td>2.463</td>
</tr>
<tr>
<td>Staff member at hospital</td>
<td>32</td>
<td>6.03</td>
<td>2.307</td>
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<tr>
<td>Duration surgeon has been waiting onsite for surgery</td>
<td>31</td>
<td>6.13</td>
<td>2.306</td>
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<tr>
<td>Responding to nurse opinion</td>
<td>31</td>
<td>6.19</td>
<td>2.358</td>
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<tr>
<td>Demands from patient / family</td>
<td>31</td>
<td>6.42</td>
<td>1.876</td>
</tr>
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</table>

1 indicates highest priority and 9 indicates lowest priority
Table 3: Descriptive statistics for timeframes for surgery in minutes

<table>
<thead>
<tr>
<th>Condition</th>
<th>Number</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>LSCS foetal distress</td>
<td>23</td>
<td>20.22</td>
<td>15.989</td>
</tr>
<tr>
<td>Threatened airway</td>
<td>22</td>
<td>23.64</td>
<td>28.710</td>
</tr>
<tr>
<td>Cardiac injury blunt</td>
<td>22</td>
<td>43.64</td>
<td>73.601</td>
</tr>
<tr>
<td>Blood loss &gt;15%</td>
<td>24</td>
<td>49.79</td>
<td>52.076</td>
</tr>
<tr>
<td>LSCS maternal distress</td>
<td>23</td>
<td>50.43</td>
<td>52.091</td>
</tr>
<tr>
<td>Ruptured visceral organ</td>
<td>25</td>
<td>51.40</td>
<td>36.927</td>
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<tr>
<td>Haemo-dynamic instability</td>
<td>25</td>
<td>52.40</td>
<td>49.077</td>
</tr>
<tr>
<td>Ischaemic visceral organ</td>
<td>25</td>
<td>55.00</td>
<td>33.166</td>
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<tr>
<td>Surgical bleeding</td>
<td>27</td>
<td>55.37</td>
<td>48.792</td>
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<tr>
<td>Ischaemic limb</td>
<td>25</td>
<td>60.20</td>
<td>70.570</td>
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<td>Central nervous system injury</td>
<td>22</td>
<td>92.05</td>
<td>89.318</td>
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<td>Systemic sepsis</td>
<td>26</td>
<td>130.19</td>
<td>150.203</td>
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<td>Compound fracture</td>
<td>27</td>
<td>176.67</td>
<td>145.391</td>
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<td>Vascular repairs</td>
<td>26</td>
<td>195.00</td>
<td>554.000</td>
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<td>Severe pain</td>
<td>23</td>
<td>261.52</td>
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<td>Unstable fracture</td>
<td>26</td>
<td>267.12</td>
<td>308.286</td>
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<td>Threatened sensory loss</td>
<td>27</td>
<td>276.11</td>
<td>391.182</td>
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<td>Unsuccessful suicide</td>
<td>21</td>
<td>290.95</td>
<td>309.308</td>
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<td>Threatened loss of mobility</td>
<td>26</td>
<td>298.27</td>
<td>453.076</td>
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<tr>
<td>Contaminated wound</td>
<td>27</td>
<td>330.00</td>
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<td>Terminal illness</td>
<td>22</td>
<td>527.73</td>
<td>529.777</td>
</tr>
<tr>
<td>Repair of tendons</td>
<td>27</td>
<td>529.15</td>
<td>665.937</td>
</tr>
<tr>
<td>Abscess drainage</td>
<td>24</td>
<td>537.17</td>
<td>621.850</td>
</tr>
<tr>
<td>Threatened cosmetic outcome</td>
<td>23</td>
<td>556.30</td>
<td>601.003</td>
</tr>
<tr>
<td>Uncomplicated fracture</td>
<td>26</td>
<td>574.69</td>
<td>628.993</td>
</tr>
<tr>
<td>Closed fracture</td>
<td>26</td>
<td>585.77</td>
<td>619.549</td>
</tr>
<tr>
<td>Diagnostic procedure</td>
<td>24</td>
<td>666.25</td>
<td>539.709</td>
</tr>
</tbody>
</table>

Interestingly, when stratified by time, the succession of clinical conditions reflects the clinical priorities presented in Table 1; this suggests internal consistency when clinical considerations are prioritised. However, the standard variations were generally high, indicating that time values are assessed quite differently between individuals.

Additionally, respondents were asked to indicate the type of delays they experience when waiting to perform emergency surgery, and the regularity of such delays. It appears that all respondents have experienced delay when waiting to perform emergency surgery. Most respondents had waited for the availability of theatre time or theatre space; the completion of elective cases; and the availability of surgeons.

According to the respondents, a number of logistical factors complicate efficient theatre management and thus, the scheduling of emergency surgery. These include the availability of a theatre and/or equipment; the availability of surgeons, anaesthetists and/or nurses; conflicting needs among hospital personnel for operating time; and the role of the surgical registrar in performing the surgery.

To overcome these issues, some respondents called for greater uniformity in the scheduling of emergency surgery. The development of consistent urgency codes to determine scheduling priorities could become part of a minimum dataset, allowing clinical care to be standardised across all area health services. To assess performance, some of the respondents advised that indicators could include average differences between admission time and procedure start time, and average differences between requests for surgery and procedure start time by urgency.

**Conclusion**

This exploratory research resulted in a survey tool asking questions about clinical, logistical and acceptable timeframes for scheduling unplanned surgical cases. The decision-making process that surrounds the scheduling of emergency (unplanned) surgery provides the focus for examining the prioritisation of clinical states, logistical
factors and acceptable timeframes. Priority-setting was explored through an analysis of an emergency surgical case that was ad hoc, and consultation with key stakeholders involved in the case. This process helped to develop a survey that was used to capture the attitudes and practices of hospital personnel involved in the scheduling of emergency surgery.

An examination of the surgical case suggested that the factors that hinder the scheduling of emergency surgery include planned non-elective surgery, emergency theatre sessions during conventional business hours, and ineffectual communication between hospital personnel and the patient.

A survey of hospital personnel involved in the scheduling of emergency surgery yielded four principal findings; namely:
1. There are divergent understandings of emergency surgery among those involved in the scheduling of emergency surgery, which has the potential to spur conflict;
2. Processes to prioritise and schedule emergency surgery are inconsistently understood, even within the same hospital;
3. A consideration of clinical state and logistical factors sometimes merge when priority-setting; and
4. Clinical and logistical considerations may stratify the assessment of priority.

However, the study presented here is not without limitations. Most notable is the limited survey sample size. Other limitations include the use of one scenario to inform the development of the survey, as well as the interpretive nature of analysing interview data.

Nevertheless, this pilot study adds to existing literature on medical decision-making processes; particularly around unplanned surgery. It affirms that the synthesis of clinical considerations, logistical factors and accepted timeframes is important. It also suggests that the scheduling of emergency surgery is complex and multifaceted, and thus warrants further research. Specific areas for future research include an examination of the incidence of poor scheduling practices; the drivers to achieving effective practices; the way in which triage assists the scheduling of operating theatre time; and whether a balance can be achieved between the competing priorities within a hospital setting.

The present study may help to improve the scheduling of unplanned surgery. Research like this, which serves to inform relevant policy, has the potential to reduce some of the current challenges that hospitals must manage, including clinical outcomes among patients, potential professional negligence, and operating theatre gridlocks.

Competing Interests
The authors declare that they have no competing interests.

References
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