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PRiSM study: A study of adverse events following discharge from the Post-Anaesthetic Care Unit

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Background

Failure to recognise and delay in responding to the deteriorating patient in the acute care setting may lead to an avoidable admission to critical care, longer hospital stay, as well as increased morbidity and even mortality (DeVita et al. 2010). The risk of moderate or severe harm following surgery has been shown to be 7.3% (NHS, 2010). The incidence of events in the immediate post-operative period is not known.

Aim

The aim of this study was to identify the frequency and nature of patient adverse events within 24 hours of discharge from the Post-Anaesthetic Care Unit (PACU).

Methods

STUDY DESIGN

A retrospective case-analysis from 1 January 2009 to 31 December 2009 of postoperative adverse events for surgical patients, where there was clinical deterioration within 24 hours of completion of surgery.

SETTING

The study sites were one large urban hospital, two outer metropolitan hospitals and one day surgery site in Melbourne, Victoria, Australia.

SAMPLE

Adult patients who underwent a surgical procedure requiring anaesthesia, and experienced an adverse event within 24 hours of completion of surgery. Patients who did not have a PACU admission were not included in the study.

DATA COLLECTION

Data were sourced from patient records, Victorian Health Incident Management System (VHIMS); ICU admission records and discharge summaries; MET and Code Blue call logs.

Results

From a total of 19,589 surgical procedures, 84 patients experienced 113 adverse events within 24 hours of PACU discharge (Table 1). These included unplanned ICU admissions, hospital transfers, return to theatre, delayed discharge and readmission (Figure 1). The most frequent complications were uncontrolled pain (22%), respiratory (20%; arrest, dyspnoea, hypoxaemia), hypotension (15%) or cardiac (14%; bradycardia, tachycardia, atrial fibrillation, heart failure) (Figure 2).

The prevalence rate of experiencing an adverse event or complication within 24 hours following surgery was 113/19,589 or 5.8 per 1000 procedures and the mortality rate was 0.01%.

The average length of stay in PACU for patients experiencing a complication or adverse event was 98 minutes (95%CI 76-119 min; range 10 mins to 8 hours 25 mins). The average length of hospital admission for these patients was 8.5 days (95%CI 6.5-10.6 days; range 1 day to 47 days).

Most patients were discharged from hospital to home (70/84, 84%), 9 (11%) were transferred to another hospital and 3 (3%) died.

Table 1: Number of surgical procedures for patients aged over 18 years, adverse events and prevalence rates for each hospital

<table>
<thead>
<tr>
<th>Hospital (Beds)</th>
<th>Surgical Procedures, Number (%)</th>
<th>Adverse Events, Number</th>
<th>Prevalence Rate (Events per 1,000 procedures)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (102)</td>
<td>5226 (27%)</td>
<td>44</td>
<td>8.4</td>
</tr>
<tr>
<td>B (308)</td>
<td>8122 (41%)</td>
<td>26</td>
<td>3.2</td>
</tr>
<tr>
<td>C (184)</td>
<td>5835 (30%)</td>
<td>41</td>
<td>7.0</td>
</tr>
<tr>
<td>D (day surgery)</td>
<td>406 (2%)</td>
<td>2</td>
<td>4.9</td>
</tr>
<tr>
<td>Total</td>
<td>19589 (100%)</td>
<td>113</td>
<td>5.8</td>
</tr>
</tbody>
</table>

Figure 1: Adverse Events within 24 hours of PACU Admission

Discussion

This study demonstrated an overall prevalence rate of experiencing an adverse event or complication within 24 hours following surgery of 5.8 per 1000 procedures and a mortality rate of 0.01%. The most common adverse events identified were unplanned ICU admission and discharge delay from PACU. One third of complications identified were due to respiratory and cardiac events, while another third were uncontrolled pain, nausea and vomiting. Very few of the events were captured in the health service incident reporting system.

Limitations

Identification of patients who experienced adverse events and complications was difficult, compromised by fragmentation of data sources and poor documentation in the medical record. Only those adverse events supported by evidence in the patient record were included in this study. Therefore the findings of this study should be regarded as a conservative estimate of prevalence rates.

Conclusions / Implications for practice

These findings highlight the importance of patient monitoring in the immediate post-operative period, in PACU and continuing on the ward. Further prospective studies of adverse events and predictors of clinical deterioration following anaesthesia and surgery are warranted.

References


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