Comparison of Adverse Events Frequency in Pediatric Operating Room Determined by Operating Hour

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A total of 20,822 pediatric anesthesia cases were performed and recorded into the Adverse Event Reporting System from October 1, 2009 to December 31, 2011 and no case was excluded from the analysis.

There were 19,643 Regular Hour and 1,179 Off Hour cases performed. A significant percentage of the Off Hour cases were emergency/add on cases, which involved sicker, ASA class 3 and above, and more complex patients. The incidence of ASA 4 and 5 children were higher in Off Hour cases compared to Regular Hour, 25% compared to 6%, (p<0.001) but the incidence of bronchospasm, laryngospasm, unexpected difficult intubation, chest compression, and accidental extubation was not significantly different.

Studies linking surgical and medical errors with physicians’ sleep and work hours have reinforced the benefit of ACGME’s instituted standard for limitation in resident work hours and enforced rest period. However, few data has elucidated the relationship between time of operating hour and patient safety. Our study indicated that while there is a rise in patient complexity in the operations performed out of regular working hours, the incidence of adverse events remain the same.

Methods

Following Institutional Review Board approval, all pediatric anesthetic cases during the period of interest were examined for adverse events. Any patient receiving anesthetic care at the Children’s Hospital at Columbia University Medical Center is assessed for adverse outcomes and an independent report is recorded in our database regardless of an actual occurrence of an adverse event.

Anesthesiology residents, fellows, nurse anesthetists, and faculty complete a report for each anesthesia case after the conclusion of the case, which includes the type of surgery, time of operation, anesthetic provider’s training level, post-operative vitals, and occurrence of adverse events.

We divided the cases into “Regular Hour” and “Off Hour” cases; “Regular Hour” cases were performed during weekdays from 07:15 to 18:00 and “Off Hour” cases were performed during weekdays from 18:00 to 07:15 and during the weekends. Chi square tests were used for statistical analysis with a p-value of <0.05 considered statistically significant.

Introduction

There are many factors that may contribute to the occurrence of adverse events (AE) during anesthesia. We theorized that the time of operation is one of the critical factors that may influence the frequency of adverse events; one hypothesis being the lack of resources and hospital staffing after regular work hours is a contributing factor. We utilized our adverse event reporting database to identify and analyze the incidence of adverse events from October 1, 2009 to December 31, 2011.

Figure 1. Percentage of Cases by ASA Class

![Percentage of Cases by ASA Class](image)

Result / Discussion

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Bibliography