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Incidence and Classification of Nonroutine Events during Anesthesia Care

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Abstract

Background
A nonroutine event is any aspect of clinical care perceived by clinicians or trained observers as a deviation from optimal care based on the context of the clinical situation. The authors sought to delineate the incidence and nature of intraoperative nonroutine events during anesthesia care.

Methods
The authors prospectively collected audio, video, and relevant clinical information on 556 cases at three academic hospitals from 1998 to 2004. In addition to direct observation, anesthesia providers were surveyed for nonroutine event occurrence and details at the end of each study case. For the 511 cases with reviewable video, 400 cases had no reported nonroutine events and 111 cases had at least one nonroutine event reported. Each nonroutine event was analyzed by trained anesthesiologists. Rater reliability assessment, comparisons (nonroutine event *vs*. no event) of patient and case variables were performed.

Results
Of 511 cases, 111 (21.7%) contained 173 nonroutine events; 35.1% of event-containing cases had more than one nonroutine event. Of the 173 events, 69.4% were rated as

having patient impact and 12.7% involved patient injury. Longer case duration (25th *vs.* 75th percentile; odds ratio, 1.83; 95% CI, 1.15 to 2.93; *P* = 0.032) and presence of a comorbid diagnosis (odds ratio, 2.14; 95% CI, 1.35 to 3.40; *P* = 0.001) were associated with nonroutine events. Common contributory factors were related to the patient (63.6% [110 of 173]) and anesthesia provider (59.0% [102 of 173]) categories. The most common patient impact events involved the cardiovascular system (37.4% [64 of 171]), airway (33.3% [57 of 171]), and human factors, drugs, or equipment (31.0% [53 of 171]).

Conclusions
This study describes characteristics of intraoperative nonroutine events in a cohort of cases at three academic hospitals. Nonroutine event–containing cases were commonly associated with patient impact and injury. Thus, nonroutine event monitoring in conjunction with traditional error reporting may enhance our understanding of potential intraoperative failure modes to guide prospective safety interventions.

Editor's Perspective
What We Already Know about This Topic

- A nonroutine event is defined as any aspect of clinical care perceived by clinicians or observers as a deviation from optimal care for a patient in a clinical situation
- Nonroutine events are frequent and associated with increased clinician workload and patient physiologic disturbances

What This Article Tells Us That Is New

- Video recordings of 511 cases from 1998 to 2004 were viewed to identify nonroutine events, which occurred in 22% of cases, and some cases had multiple events
- One in fifteen patients had events associated with some degree of patient injury
- The most common contributory factors were related to provider, patient, or teaching/supervision

Topics:
anesthesia care, workload, video recording, safety, professional supervision, surgical procedures, operative, intraoperative care