

## Incidence of Pediatric Patient Safety Events in EPIC Quick Event Notes and Comparison to Quality Reporting System Documentation: A Retrospective Review

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### Introduction

- Anesthesia Information Management Systems (AIMS) presents benefits and challenges to accurate, efficient, and appropriate documentation.
- Many hospital quality initiatives rely on standardized **Quality Reporting Systems (QRS)** to establish benchmarks and track progress, which may go underreported.
- We hypothesized Quick Events Notes would be a source for identifying and characterizing under-documented QRS events.

### Methods

- Procedural data from a randomly selected convenience sample of 1000 cases with Quick Event Notes documentation at a major tertiary pediatric hospital.
- Notes were coded as containing event information sufficient for documentation in the departmental AIMS Perioperative Event QRS or not.
- The primary outcome was the proportion of anesthetics with Quick Event Notes describing reportable events.

### Results

Table 1: Proportion of Cases with Events Documented in QRS and Quick Event Notes

	Reportable Event in Quick Event Note	NO Reportable Even in Quick Event Note	Total
Event Documentation in QRS*	19	10	29
NO Event Documentation in QRS	98	873	971
<b>Total</b>	<b>117</b>	<b>883</b>	<b>1000</b>

\*Quality Reporting System; Standardized, departmental

Table 2: Distribution of QRS Undocumented Events Within Quick Event Notes

	ASA 1	ASA 2	ASA 3	ASA 4	ASA 5	Cases w/ Quick Event Note w/ Undocumented QRS Event	Total Cases	Percentage Missed (%)
Anesthesiology		1		1		2	5	40.0
Audiology			1			1	1	100.0
Cardiology		1	5	1		7	95	7.4
CV Surgery			1	6		7	59	11.9
Dentistry	1					1	14	7.1
Dermatology	1					1	7	14.3
ENT	1	6	8	1		16	130	12.3
Gastroenterology		1	1			2	41	4.9
Hematology/Oncology							7	0.0
Medical Imaging	3	7	11	2		23	167	13.8
Neurology		3	4			7	8	87.5
Neurosurgery							58	0.0
Ophthalmology	1		4			5	21	23.8
Oral Surgery							1	0.0
Orthopedics	1					1	78	1.3
Pediatric Surgery	5	1	5	2		13	161	8.1
Plastic Surgery	1	3	1			5	51	9.8
Pulmonary							4	0.0
Rheumatology							1	0.0
Transplant				1	1	2	7	28.6
Urology	3	2				5	84	6.0
<b>Grand Total</b>	<b>17</b>	<b>25</b>	<b>41</b>	<b>14</b>	<b>1</b>	<b>98</b>	<b>1000</b>	<b>9.8</b>

Table 3: Distribution of Events in Quick Event Notes Undocumented in the QRS

	ASA 1	ASA 2	ASA 3	ASA 4	ASA 5	Total
Airway Event	6	9	7	3		25
Arterial Puncture/Cannulation		1				1
Bronchospasm		2	4			6
Bronchospasm O2 Req	1		2			3
Cancellation After Induction		1				1
Cardiac Arrhythmia	1	1	6	4		12
Catheter Related Events		1				1
Dental Event		1				1
Difficult Airway		1				1
Difficult Intubation			1			1
Difficult IV Access	1	1	3			5
Emergence Delirium			1			1
Equipment Issue	4	1	5	3		13
Extravasation of Vascular Access		2	3	1		6
Hypotension		1	2	2	1	6
Hypoxemia	2	2	8	3		15
Laryngospasm	2	1				3
Laryngospasm O2 Req			2			2
Miscellaneous Event		1	2	1		4
Nausea or Vomiting	2	1	2			5
Non-Allergic Drug Reaction		2	3			5
Post Extubation Stridor		2				2
Regional Anesthesia Event	1					1
Resp Arrest/Distress				1		1
Soft Tissue/Muscle Breakdown			1			1
Tissue Event			1			1
Unanticipated ICU Admission			5			5
Unplanned Extubation	1	2	1	1		5
Unplanned Postop Intubation			1			1
Unplanned Reintubation			1			1
<b>Total</b>	<b>21</b>	<b>34</b>	<b>60</b>	<b>19</b>	<b>1</b>	<b>135</b>

### Results Continued

- 25,657 anesthetics were identified of which 4,456 (17.4%) contained Quick Event Notes
- Of 1,000 cases containing Quick Notes, 117 (11.7%) cases contained a QRS-eligible event(s), of which 98/117 (83%) cases did not have the event(s) documented in the QRS (Table 1)
- Most common undocumented QRS event included:
  - Patient Demographics: ASA 3 patients (41/98, 42%)
  - Procedural Demographics: Neurology (87.5%), Transplant procedures (28.6%), and Ophthalmology (23.8%)
  - Events: Airway Events (18%), Hypoxemia (11%), and Equipment Issues (9.6%)

### Conclusion/Discussion

- Conclusion:** Departmental review of EPIC Quick Event Notes demonstrated a high rate of QRS under-documentation which could serve as a potential source for measuring quality reporting compliance.
- We identified a significant number of QRS eligible events documented in EPIC Quick Event Notes.
- We postulate a lack of regular audit processes of free-texted documentation contributed to QRS under-reporting
- Potential mediators of provider behavior to improve documentation include clinician education and development of clinical decision support (CDS) systems<sup>2</sup> designed to provide real-time alerts based on keywords found in Quick Event Notes
- This audit provided insight into reviewing, redefining, and characterization of severity of QRS items such as 'Airway Event' (double documentation), 'Hypoxemia' (duration/SpO<sub>2</sub>), 'Equipment Issue' (patient harm yes/no)

### References

Simpao A, Rheman M. Anesthesia Information Management Systems. *Anesth Analg*. 2018 Jul;127(1):90-94.  
 Epstein RH, Dexter F, Patel N. Influencing Anesthesia Provider Behavior Using Anesthesia Information Management System Data for Near Real-time alerts and Post Hoc Reports. *Anesth Analg*. 2015 Sept;121(3):678-92.