Anesthesia Risk Alerts, an Effective Safety Intervention for High-Risk Patients

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Introduction

Barriers to collaboration have been identified across various industries. In the operating room (OR), patient safety may be compromised by a lack of trust or respect, misaligned goals, knowledge deficits, or poor communication skills. Standardized protocols improve clinical outcomes by reducing variability across the perioperative care continuum.

NAPA ANESTHESIA PATIENT SAFETY INSTITUTE

NAPA's anesthesia clinical outcomes database includes data from nearly 3 million patients each year. In 2019, NAPA created its own Patient Safety Organization (PSO), the NAPA Anesthesia Patient Safety Institute (NAPSI). NAPSI is one of only 100 PSOs federally certified by the Agency for Healthcare Research and Quality (AHRQ). Through its affiliation with NAPSI, the clinical entity of NAPA's anesthesia practice is able to use clinical outcomes data for analysis and performance improvement activities.

After examining adverse event analytics, NAPSI developed the ARA strategy to improve perioperative safety for high-risk patients. This standardized protocol incorporates risk assessment, clinical collaboration, and a defined decision-making process that optimizes analytical thinking and produces better clinical outcomes.

Leveraging data-driven research and professional best practices, the ARA program is an innovative quality improvement initiative that is reducing the incidence of serious adverse clinical events across NAPA's partner facilities, including nearly 500 hospitals and ASCs.

Methods

The ARA program recommends that prior to undergoing an anesthetic, every patient is assessed by the anesthesia clinician for five high-risk clinical scenarios. If one or more risks is present, the clinician performs the correlating mitigation strategy:

1. **Known/suspected difficult airway →** second practitioner present to assist for induction and emergence for all general endotracheal anesthetics
2. **High BMI (≥ 45) →** second practitioner present to assist for induction and emergence for all general anesthesia cases
3. **Pulmonary hypertension →** consultation about the case with a second clinician
4. **Risk category ASA status 4 or 5 →** consultation about the case with a second clinician
5. **OR fire risk →** follow fire mitigation protocols as prescribed by the local institution

Recommendations by the American Society of Anesthesiologists (ASA) and the Difficult Airway Society influenced mitigation strategies for the first two ARA scenarios.[1,2] The recommendation for a consultation for all patients identified as ASA status 4 or 5 is based on two risk mitigation principles related to human cognition processes. These mitigation strategies force the clinician to slow down the clinical decision-making process by collaborating with a clinical colleague.[3] It also utilizes the red/blue team challenge methodology which encourages members of the anesthesia team to safely question and challenge the anesthetic plans within the team environment.[4] The OR fire recommendations follow those put forth by the Anesthesia Patient Safety Foundation.[5]

Results

Since implementing the ARA program with robust training and education sustained by ongoing monitoring and feedback, compliance with both the assessment of all anesthesia cases for the five high-risk clinical scenarios and the performance of the recommended secondary action has risen to approximately 95%.

Preliminary analyses of critical adverse events related to both high-BMI patients and patients presenting as ASA 4 or 5 have shown a decrease in the number of relevant critical events over time.

Additionally, at NAPA's healthcare sites, the ARA program has led to more communication and collaboration between clinicians, regardless of skill level. Colleagues are more likely to ask for assistance and discuss even cases that are not identified as "high-risk" under the ARA program.

Recent research has identified the feeling of "not being listened to" as a major factor in clinician "burnout"—even more so than work/life balance[6]. Other studies have documented how "burnout" impacts the patient experience. ARA helps transform site cultures by breaking down organizational, cultural, and interpersonal barriers to workplace collaboration.

Critical Events for Patients with BMI ≥ 45 and Under General Anesthesia

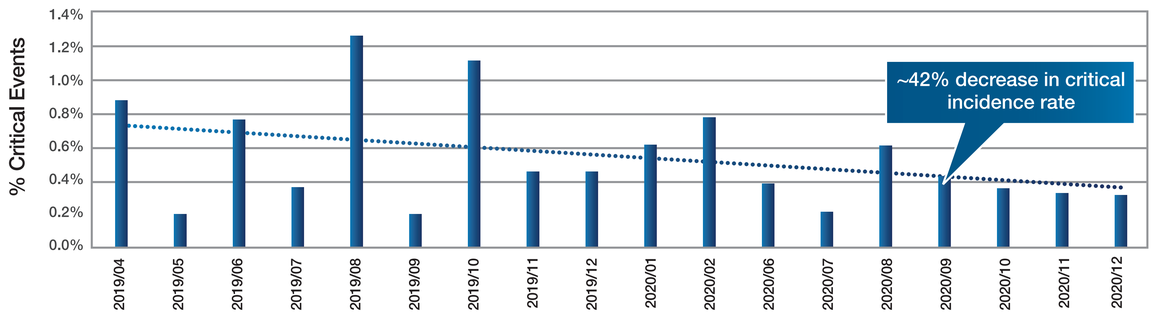

Figure 1. *Critical events include intubation or reintubation in PACU, Cardiac arrest, Unable to intubate, Surgical airway required, Aspiration, Negative pressure pulmonary edema, Unplanned reintubation, Post-op mechanical ventilation, Myocardial ischemia requiring intervention, Myocardial infarction, Cardiac arrest (with CPR), Cerebrovascular accident, Hypoxemic brain injury/coma, Death.*

Critical Events among ASA ≥ 4 Patients Pre-ARA and Post-ARA Implementation

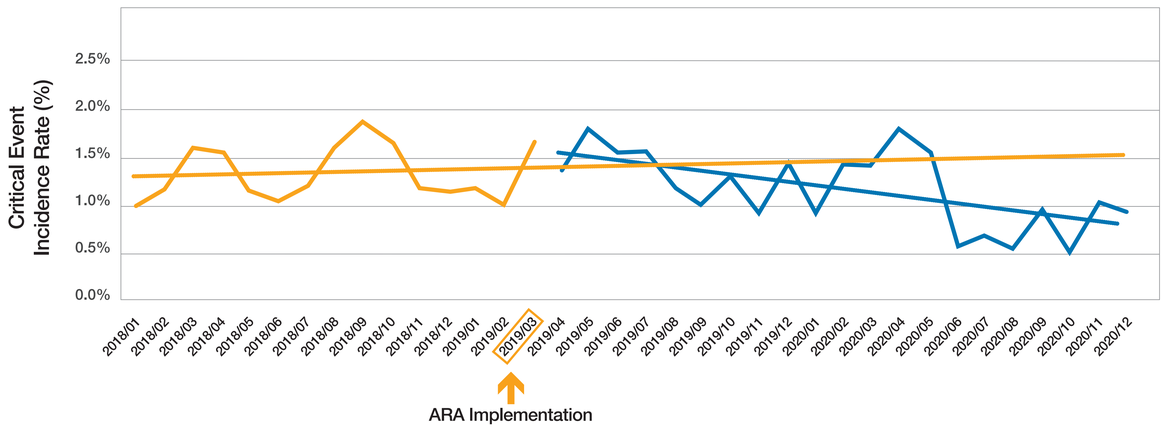

Figure 2. *Critical events include airway fire anaphylaxis, aspiration, cardiac arrest (with CPR), death, fire, hypoxemic brain injury/coma, incorrect surgical site/side/patient, malignant hyperthermia, medication error, myocardial infarction, negative pressure pulmonary edema, OR fire.*

Conclusions

The ARA program leverages clinical outcomes reporting with research, risk assessment, and clinical education to effectuate a change management approach to improving patient safety. ARA also utilizes novel approaches to patient safety adopted from other fields, including medical decision-making, cognitive errors, dual process model of reasoning, and blue team/red team challenge methodology.

Organizations that are committed to creating cultures of safety can replicate and/or customize the ARA program to meet their needs:

- Analyze clinical metrics for adverse events to understand specific challenges.
- Upon identifying high-risk situations leading to specific adverse events, use a standardized protocol to encourage clinicians to assess all patients for these high-risk scenarios, and identify risk mitigation strategies to help clinicians prevent these adverse events.
- Launch ARA or any comparable program with robust education that informs clinicians as to the rationale and goal of the program.
- Institutional clinical leaders must champion the program to inspire adoption and adherence.
- A robust data collection tool must be created to track compliance with both the assessment and performance of the high-risk scenarios and their accompanying mitigation strategies.
- Quality leaders and/or site Chiefs must monitor compliance with both aspects of the program. Adverse event data must be continually tracked to determine if the program has had an effect on decreasing the incidence of adverse events, as well as any safety culture changes within the internal department.

The intrinsic collaborative nature of the ARA protocol makes it an effective tool to foster a workplace environment in which anesthesia clinicians, surgeons, nurses, and medical staff cooperate. Collaborative perioperative cultures have been shown to improve patient care and quality outcomes.

As a Quality Improvement initiative, ARA impacts the patient safety and quality arena by significantly and measurably reducing the incidence of critical events in high-risk patients. The evidence shows that ARA saves lives.

References

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