

## **A Design Analysis of SAMBA's PONV Guidelines for Perioperative Clinical Decision Support**

**Presenting Author:** Dr. Brian Rothman, MD, Vanderbilt University, Department of Anesthesiology

**Co-Author:** Dr. Michael Bernell, MD, Vanderbilt University, Department of Anesthesiology.

**Introduction:** Postoperative nausea and vomiting (PONV) is a significant perioperative issue facing patients and healthcare systems in ambulatory and inpatient settings. Risk factors may place surgical patients at a 20-80% likelihood of PONV. While the Society for Ambulatory Anesthesia (SAMBA) recently established a new set of expert guidelines, little literature exists that addresses practical implementation aspects of information availability within the context of perioperative medical decision-making in a modern perioperative information management system.

**Methods:** The SAMBA guidelines incorporate Apfel's simplified risk score to estimate risk for PONV, which include female gender, history of PONV or motion sickness, nonsmoker status, and postoperative opioids as risk factors. We reviewed Vanderbilt's Perioperative Information Management System (VPIMS) to identify all locations where data related to each risk factor were collected. Then, we considered provider workflow and the timing of data entry to identify when each risk factor would be known, and when it would be available within VPIMS. Next, we evaluated interventions and anesthetic techniques that may decrease risk, such as adequate hydration and avoidance of nitrous oxide, volatile anesthetics, and opioids. Finally, we identified opportunities and potential gaps for delivering clinical decision support within VPIMS.

**Results:** Each risk factor was identified within VPIMS. Gender is known before admission and is available from our ADT feed. We identified a gap for transgender patients, as our ADT does not currently address differences between patients' genetic makeup, gender identity and anatomy. A history of PONV could be identified from the patient's preoperative assessment or from documented nausea during a previous PACU visit. Motion sickness could only be found in the preoperative assessment. Tobacco use is documented both in the preoperative assessment and in the preoperative nursing documentation. Finally, postoperative opioid use in the PACU is found in the postoperative nursing documentation, and the surgical postoperative orders could identify potential post-PACU opioid use. While all these data are ultimately available, they may not be available contemporaneously. We expect that VPIMS will have the most complete data available for medical decision-making during the intraoperative period which enables decision support to suggest avoiding nitrous oxide and ensuring adequate hydration. Documentation latency would be an obstacle in providing decision support relevant to pre-operating room decisions, such as avoiding volatile anesthetic and employing regional anesthesia. Most significantly, risk

factor underestimation from latency could result in missed opportunities to initiate a preoperative multimodal pain regimen, potentially impacting outcomes.

**Conclusion:** Reducing PONV through clinical decision support in accordance to the SAMBA guidelines is possible. However, perioperative information management systems must support and encourage the collection of these data in a discrete and contemporaneous fashion. Documentation latency leads to underestimation of risk factors, which may create missed opportunities to employ risk reduction techniques. Ultimately, delivering clinical decision support with the right information to the right person, at the right place, at the right time may decrease the incidence of PONV and improve outcomes.