

ANESTHESIA ATTITUDES REGARDING METHODS OF MONITORING ADEQUACY OF VENTILATION

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Introduction: Multiple clinical organizational standards and recommendations recognize the importance of monitoring quality or ‘adequacy’ of ventilation during procedural sedation and when monitoring patients receiving post-operative opioids.^{i, ii, iii, iv, v, vi} The American Society of Anesthesiologists (ASA) states, “All patients receiving neuraxial opioids should be monitored for adequacy of ventilation (e.g., RR, depth of respiration, oxygenation, and level of consciousness).”ⁱ The Joint Commission on the Accreditation of Healthcare Organizations recommends “respiratory frequency and adequacy of pulmonary ventilation should be continually monitored in patients undergoing conscious sedation.”^{vi}

Multiple methods of measuring ventilation have been developed by healthcare manufacturers. The purpose of this work was to survey anesthesia attitudes toward various methods’ ability to actually measure ‘adequacy of ventilation’.

Methods: A survey of attendees was performed at the 2011 ASA Conference in Chicago. Surveys were self-administered using Apple iPads to access SurveyMonkey.com. Attendees responded to the question, “In your opinion, please rate each of the following in their ability to measure adequacy of ventilation” and given three choices as outlined below. Results were downloaded and assessed in Microsoft Excel.

Results: Primary country of practice for the survey was 85% US and 15% listed as ‘outside the US’. In all, 77% of respondents were anesthesiologists, 14% medical students or in residency, 5% respiratory therapists, 3% nurses, and 1% PhD or other doctoral degree.

Measure of Adequacy of Ventilation?	Provides measure of adequacy of ventilation	Provides indication of ventilation but not a measure of adequacy	Not a measure of ventilation	Response Count
Capnography	37 (64%)	21 (36%)	0 (0%)	58
Bioacoustic Respiratory Rate	5 (9%)	33 (61%)	16 (30%)	54
Impedance Respiratory Rate	8 (15%)	27 (49%)	20 (36%)	55
SpO ₂	12 (21%)	17 (30%)	28 (49%)	57

Conclusions: Of the 4 technologies surveyed, ASA attendees chose capnography as ‘provides a measure of adequacy of ventilation’ by a margin of more than 3 to 1 over SpO₂, more than 4 to 1 over impedance RR, and more than 9 to 1 over bioacoustic RR.

In choosing which methods are ‘not a measure of ventilation’:

- Nearly half (49%) chose that SpO₂ is not a measure of ventilation
- 36% chose that impedance RR is not a measure of ventilation
- 30% chose that bioacoustic RR is not a measure of ventilation
- 0% chose that capnography is not a measure of ventilation.

References

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- ii. Guideline: Sedation and anesthesia in GI endoscopy, *Gastrointestinal Endoscopy*, Volume 68, No. 5 : 2008; 815-826
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