

Monitoring during anesthesia

What monitoring makes sense during general anesthesia? This question is hard to answer and is depending on many different factors. The American Society of Anesthesiologists, ASA, has published a standard for intraoperative monitoring¹.

ASA standard

Standard 2: Oxygenation, ventilation, circulation and temperature shall be continuously evaluated

Oxygenation

- Oxygen analyzer for inspired gases
- Observation of the patient
- Pulse oximetry

Ventilation

- Auscultation
- Observation of the patient
- Observation of reservoir
- End-tidal carbon dioxide analysis

Circulation

- Continuous ECG display
- Heart rate and BP recorded every 5 min
- Auscultation of heart sound, palpation of pulse, pulse plethysmography, pulse oximetry, intra-arterial pressure tracing

Temperature

- Core and/or skin temperature

Quantitative monitoring of carbon dioxide content and/or volume of expired gas is strongly encouraged. However if an endotracheal tube or laryngeal mask airway is used, then correct positioning in the airway must be verified by continuous quantitative end-tidal carbon dioxide analysis. When ventilation is controlled by a mechanical ventilator, continuous monitoring with a device capable of detecting disconnection of the breathing system must also be used.²

The specific roles of several intraoperative monitors during general anesthesia were studied by analyzing 2000 incidents reported to the Australian Incident Monitoring Study³. The combination of

pulse oximetry (27%) and capnography (24%) detected more than half of the incidents that were detected by monitors.

The LifeSense monitor is a lightweight portable instrument that measures and displays carbon dioxide in expired air (ETCO₂), respiration rate, pulse rate and saturation. RespSense is similar but without the pulsoximeter. Both monitors have a high contrast backlit touchscreen display that also serves as a user-friendly touch panel where all settings and adjustments are made. Battery status, fault messages and trend-curves are also shown.

Both LifeSense and RespSense are sidestream monitors that can be connected to the endotracheal tube with a T-piece connection. The monitors can be used for anesthesia and comes then with a gas outlet and monitoring and alarm for inspiratory CO₂ (FiCO₂). The monitor fits in very well in a cost-effective anesthesia machine system as stand alone units.

References

¹ American Society of Anesthesiologists. Standard for basic intraoperative monitoring. Newsletter 1996

² Brodsky Jay B, What intraoperative monitoring makes sense? Chest 1999; 115:101S-105S

³ Webb RK, Van Der Walt JII, Runciman WB, et al. Which monitor? An analysis of 2000 incidents reports. Anaesth Intensive Care 1993; 21:502-542

