



Change in staff anesthesiologists' opinions of an Anesthesia Information Management System (AIMS)

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Abstract

Following introduction of an Anesthesia Information Management System (AIMS) at a tertiary care, academic health sciences centre, a quality assurance initiative was conducted to assess staff opinions of the AIMS using a previously published, anonymous survey tool at 1 and 5 years following AIMS introduction. At 5 years compared to 1 year after implementation of AIMS, the majority (18 of 24, 75%) of responses to the survey questions had a statistically significant change ($P < 0.05$) in the proportion of respondents favoring AIMS compared to the 1 year survey. Domains noted to be more favorable 5 years compared to 1 year after AIMS introduction included patient safety in the Operating Rooms and Post-Anesthesia Care Unit, quality of handover and overall documentation, and communication amongst healthcare workers. The ideal time period at which to assess AIMS after introduction is not clear.

Keywords Anesthesia record · Electronic · Patient safety · Information management system

Evaluation of anesthesiologists' opinions after introduction of an Anesthesia Information Management System (AIMS) is often limited to assessment several months after AIMS rollout. Longer term follow up, experience, and opinions of staff anesthesiologists after AIMS implementation are not commonly reported beyond 1 year. As part of a quality assurance initiative at a large tertiary care, academic health sciences centre, we sought staff anesthesiologists' opinions of AIMS 1 and 5 years post-AIMS implementation via an anonymous, electronic survey. Following review by our local research ethics board, conduct of this quality assurance, anonymous survey met the ethical standards of our organization. The 24-question survey, based on a previously published version [1] was administered to staff anesthesiologists who practiced in the era of paper charts (pre-AIMS)

and post-AIMS implementation at our institution. Anesthesiologists who joined the Department after AIMS introduction were not included in either the 1 or 5 year surveys.

One year post-AIMS, 43 of 66 (65%) staff anesthesiologists responded to the survey. Five years post-AIMS, 39 of 57 (68%) eligible staff anesthesiologists completed the survey. In contrast to the 1 year responses, at 5 years the majority of respondents demonstrated positive opinions regarding AIMS effect on: workload, attention to patient care, workplace stress, medicolegal risk, interaction with learners, patient safety in perioperative period [Operating Room (OR) and Post-Anesthesia Care Unit (PACU)], and communication amongst OR health care providers. Specifically at 5 years compared to 1 year, AIMS improved perceived:

- Patient safety in the OR (61 vs. 28%, $P = 0.002$), patient safety in the PACU (77 vs. 33%, $P = 0.0001$), and overall patient safety in the perioperative environment (71 vs. 28%, $P = 0.0001$);
- Communication amongst healthcare workers in the OR (59 vs. 23%, $P = 0.001$);
- Medicolegal risk (64 vs. 38%, $P = 0.02$);
- Detail of documented anesthesia care in usual circumstances (92 vs. 74%, $P = 0.04$);
- Detail of documented anesthesia care in times of crisis/impending crisis (82 vs 58%, $P = 0.02$);

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- Quality of handover in the OR between anesthesia care providers (59 vs. 23%, $P=0.001$).

Other findings included the proportion of anesthesiologists who prefer to use a paper chart. At 5 years, the proportion of anesthesiologists who preferred a paper chart was significantly reduced compared to 1 year (12 vs. 44%, $P=0.002$) after AIMS introduction. Furthermore, an overall sense of AIMS being positive for patients (1 year, 42% vs. 5 years, 87%, $P<0.001$) and for the Department (1 year, 60% vs. 5 years, 89%, $P=0.003$) was demonstrated. Taken together, 5 years after AIMS implementation using the same questionnaire administered 1 year post-AIMS, the majority of survey questions (18 of 24, 75%) had a statistically significant change ($P<0.05$) in the proportion of respondents favoring AIMS compared to the 1 year survey.

In conclusion, a change in staff anesthesiologists' impression of AIMS was noted in several aspects of care, including patient safety and communication, with improved opinions of AIMS at 5 years compared to 1 year post-AIMS introduction. The majority of survey questions (75%) had a statistically significant change in responses with more respondents favoring AIMS at 5 years compared to 1 year after implementation of AIMS. The time at which a change in

anesthesiologists' opinion of AIMS may occur has not been reported or investigated. The ideal time at which to obtain anesthesiologist opinion following AIMS introduction is unclear. Our results demonstrate that a change in findings may be possible based on the time selected for assessment of an AIMS. As Anesthesia Information Management Systems become more prevalent in contemporary perioperative practice, we encourage others to consider longer and/or repeated time horizons upon which assessment of an AIMS is conducted.

Compliance with ethical standards

Conflict of interest None of the authors have any commercial or non-commercial affiliations or conflicts of interest related to the manuscript. None of the authors have received consultancies related to the opinions or matters presented in the manuscript.

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