

# RELIABILITY OF CRITICAL EVENT REPORTING IN AN ANESTHESIA INFORMATION MANAGEMENT SYSTEM (AIMS)

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**Background:** Implementation of a secure clinical event system linked to an AIMS has been shown to double the capture of significant clinical events, yet no evidence exists that an AIMS alone improves event reporting. Emesis during induction is a quality improvement (QI) event (i.e. a significant clinical event) at our institution. The anesthesia provider should both record an emesis event in the AIMS and submit a continuous QI (CQI) report. We evaluated retrospectively the reporting of emesis during induction during a recent clinical trial performed at our institution.

**Methods:** Research assistants (RAs) recorded fasting gastric volumes and emesis during induction in 1000 day-surgery patients aged 2-12 years. Following IRB approval, we analyzed the anesthesia records of 995 of these patients and determined whether emesis was recorded in the AIMS record and a CQI report of the event was filed. Given the original study's parameters, emesis recorded by the RAs was a true indicator of the event and was used as the standard of comparison in order to determine the sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of the AIMS records and CQI reports.

**Results:** Of the 995 evaluated cases, RAs documented 8 instances of emesis during induction. Three of the emesis cases were recorded in the AIMS, while only one of the cases had a CQI report. Upon comparison of the AIMS record to the RA data, AIMS yielded a sensitivity of 38% (95% confidence interval [CI], 8.5% - 75.5%), a specificity of 100% (95% CI, 99.6% - 100%) and a PPV of 100% (CI, 29.2% - 100%). Comparing the CQI reports to the RA data, the sensitivity of CQI reporting was 13% (95% CI, 0.3% - 52.7%), the specificity was 100% (95% CI, 99.6% - 100%) and PPV was 100% (CI, 2.5% - 100%). Emesis during induction was too rare of an event for the NPV of AIMS and CQI to be realized in this retrospective analysis.

**Conclusion:** The low sensitivity of the AIMS record suggests that events dependent on user input (e.g. emesis during induction) may not be recorded reliably in the anesthesia record. CQI reports had even poorer sensitivity to detect clinical events—approximately one-third that of AIMS documentation. These results indicate under-reporting of significant clinical events and suggest that user-reported data extracted from the AIMS record may not be a reliable source

## References

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