Assessing Anesthetic Capacity in Low-Middle Income Countries (LMIC): Use of a novel questionnaire in Guatemala and Nicaragua to assess availability of pulse-oximetry and capnography

Introduction

- The WFSA has published international standards for the safe practice of anesthesia1 and the WHO has published the “WHO Model List of Essential Medicines”2 which include essential anesthesia and analgesia medications
- Given limited finances and available resources in LMIC, these recommendations are not always met
- A comprehensive assessment tool is necessary to assess current state of anesthetic capacity. This assessment can then serve to highlight disparities and prioritize future goals

Objective

- The goal of this study was to determine the anesthetic capacity in surgical hospitals in Guatemala and Nicaragua
- Specifically we highlight here the availability of intraoperative pulse-oximetry, recovery room pulse-oximetry, and capnography

Methods

- We developed a questionnaire to assess anesthetic capacity using minimum standard recommendations from the World Federation of Societies of Anaesthesiologists (WFSA) and World Health Organization (WHO)
- This questionnaire assessed available equipment, medications, personnel, training, and organization
- The questionnaire was completed via direct hospital site visits in Guatemala and Nicaragua
- Also distributed among anesthesia providers attending a Lifebox pulse-oximetry training session in Guatemala City, Guatemala; Managua, Nicaragua; and Leon, Nicaragua from November 11th to the 15th

Results

Guatemala - 42 anesthesia providers representing 35 hospitals were surveyed
- 68% of hospitals had intraoperative pulse-oximetry
- 23% sometimes had intraoperative pulse-oximetry
- 9% did not have intraoperative pulse-oximetry
- 23% had pulse-oximetry in the PACU
- 40% sometimes had pulse-oximetry in the PACU
- 37% did not have pulse-oximetry in the PACU
- 17% of hospitals had capnography
- 23% sometimes had capnography
- 60% did not have capnography.

Nicaragua - 57 anesthesia providers representing 25 hospitals were surveyed
- 84% of hospitals had intraoperative pulse-oximetry
- 12% sometimes had intraoperative pulse-oximetry
- 4% did not have intraoperative pulse-oximetry
- 63% had pulse-oximetry in the PACU
- 25% sometimes had pulse-oximetry in the PACU
- 12% did not have pulse-oximetry in the PACU
- 46% of hospitals had capnography
- 33% sometimes had capnography
- 21% did not have capnography.

Conclusion

- Availability of pulse-oximetry and capnography varied among hospitals surveyed in Guatemala and Nicaragua
- In both countries, most operating rooms had pulse-oximetry available
- Availability of monitoring equipment including pulse-oximetry is lower in post-operative recovery areas
- Capnography availability is limited and usually only available for laparoscopic or neurosurgical cases.

References


Acknowledgements

Support in part by grants from the Kwan Global Health Clinical Scholar Fund