A Systematic Review and Multi-Level Meta-Regression Analyzing Time Trends of Specific Cause of Death Preoperative Mortality Ratios: A Protocol and Methodological Framework

Kevin, McIntyre, Janet, Martin
Department of Epidemiology and Biostatistics, Schulich School of Medicine and Dentistry, The University of Western Ontario; Department of Anesthesia and Perioperative Medicine and Clinical Epidemiology, Schulich School of Medicine and Dentistry, The University of Western Ontario

Introduction: The introduction of the perioperative mortality ratio (POMR) as an indicator for surgical safety has led to an increase in the reporting of POMR in studies. However, we are not aware of any evidence synthesis on the cause of death (CoD) during the perioperative period. This project aims to explore global time trends in CoD during the perioperative period.

Methods: We are conducting a systematic review and meta-analysis to capture all primary articles reporting CoD during the perioperative period that used any of the three recognized bellwether procedures. We are searching MEDLINE, Embase, Cochrane CENTRAL, Global Index Medicus, and WHOLIS databases, and extracting overall and CoD specinc POMR from these studies. Other important known covariates including average age, sex, ASA status, and proportion of emergency surgeries are also being extracted. Additionally, the country and year that the study was conducted in is being retrieved. From this data we will perform a multi-level meta-regression to examine trends of specinc CoD across time in high, middle, and low-income countries in addition to other analyses to determine where further data collection is most needed.

Results: By April, we will have the results synthesized, with data visualization techniques to highlight which countries have provided data, and what CoDs are reported globally for bellwether surgeries. These models will provide estimates of POMR for each CoD separately for high, middle, and low-income countries, as well as several exploratory analyses to inform future research

Conclusion: This project aims to address current knowledge gaps surrounding causes of death in the perioperative period.