

[GA2-60] Use of Anesthesia Information Management Systems (AIMS) to Develop Reference Ranges for Perioperative Pediatric Blood Pressure Values and Intraoperative Hypotension

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INTRODUCTION: Previous studies have shown significant variability in the definition of intraoperative hypotension (IOH) among pediatric anesthesiologists. While some authors have extrapolated 5th percentile systolic blood pressures (SBPs) and mean arterial blood pressures (MAPs) in children from 1 to 17 years of age from Task Force on Blood Pressure Control data, there is scant data regarding thresholds for IOH in children less than 1 year of age. We used anesthesia information management systems (AIMS) data to develop reference values for normal perioperative blood pressures and IOH in the infant population.

METHODS: SBP values were obtained from AIMS data for 215 infants 30 to 90 days of age undergoing thoracic surgery from 3/18/2005 to 7/10/2012. The data was first put through a specialized parser (written in Python) that associated each BP value with a specific patient and time period during anesthesia. The multiple values per patient per time period were condensed, either by taking the 5th percentile (for hypotensive values) or the 50th percentile (for mean values) resulting in each patient having one BP value per time period. The BP values were then grouped by age, time period during anesthesia, sex, and type of surgery. This data was then plotted, and the resulting graph shows the five percentile values for each of six different age groups.

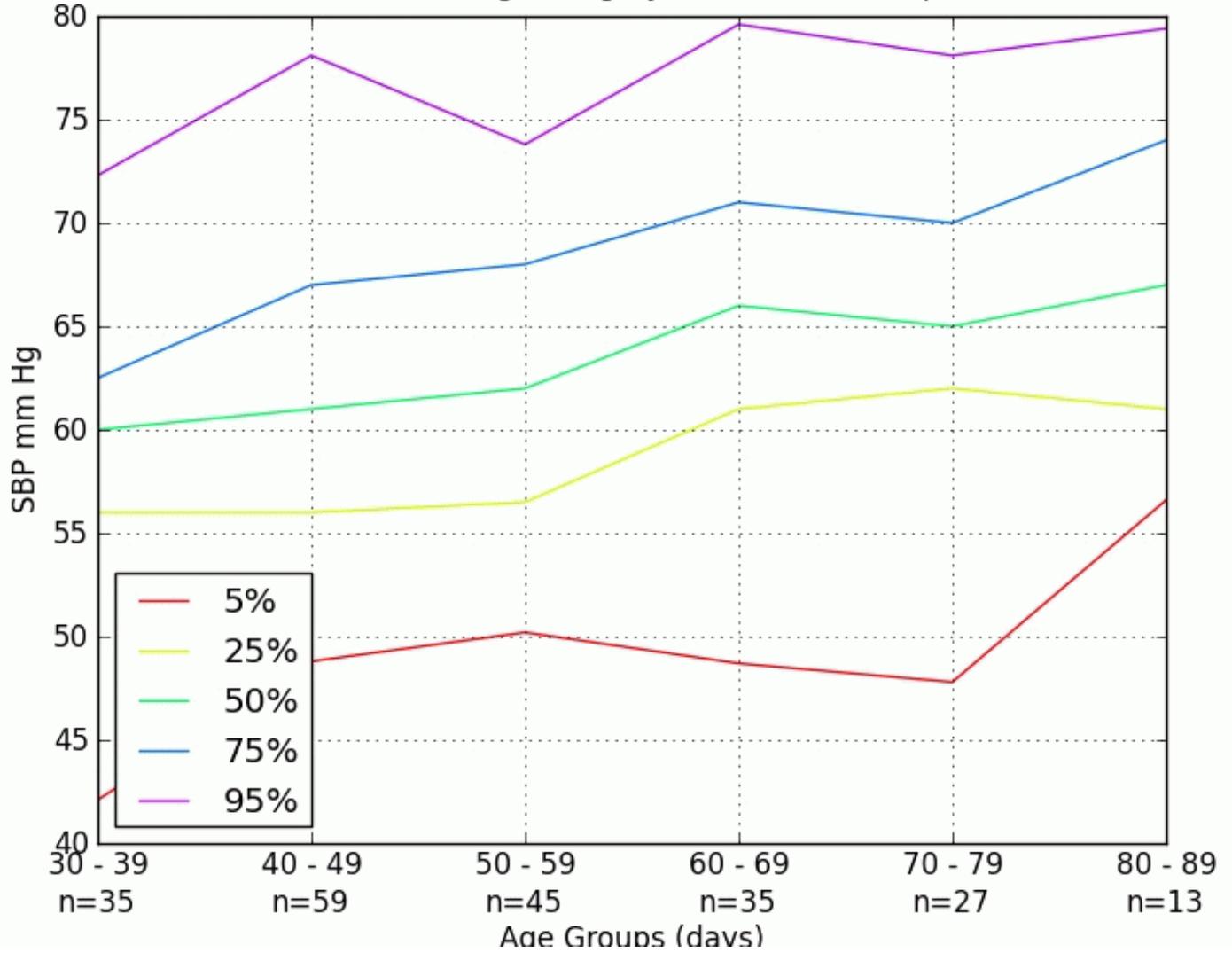
RESULTS: Figures 1 and 2 show 50th percentile SBPs from both genders, during surgery and pre-surgery but post-intubation, respectively. The two selected figures summarize a small portion of our results. In general, SBP values at each percentile gradually increase as a patient's age increases from 30-39 days to 80-89 days.

DISCUSSION: While there are many confounding factors (e.g. patient gender, height, and weight, co-morbidities, anesthetic techniques, volume status), our data serve to provide a starting point for reference values for normal SBPs under anesthesia and establishing thresholds for the definition of IOH. Either the 5th or 25th percentile lines could potentially serve as a threshold to define IOH, although it could be argued that the 50th percentile line could be a reasonable cutoff for IOH based on the fact that average SBPs are 20-30% lower than values established for the general infant population in the non-operative setting.

We plan to determine a broader set of reference values for normal blood pressures under anesthesia and threshold for IOH, irrespective of the type of surgery. As our understanding of IOH values improves, then we plan to assess the relationship of IOH to morbidity and mortality in the perioperative period.

BP values for Children

Gender: Both, Anesthesia Stage: Surgery, Percentile Used per Patient: 50th



BP values for Children

Gender: Both, Anesthesia Stage: Pre-Surgery, Percentile Used per Patient: 50th

