Is a preoperative hemoglobin value necessary for all patients less than 6 months of age?

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Introduction

Current CHOP standards require a preoperative hemoglobin (Hb) value for all patients less than 6 months of age presenting for surgery. We questioned whether or not this information is necessary to provide safe anesthetic care. To answer the question we queried our database of electronic patient and anesthesiology records from 2007 to 8/31/2012 to provide the following data: gestational age (GA), current age (days), Hb, diagnosis, and surgical procedure. Those patients with a Hb value obtained more than 1 month prior to the date of surgery were excluded (793/7366; 10.8%).

Results

Interestingly, we found that only 39.2% (2886/7366) of patients less than 6 months of age had a preoperative Hb. Average Hb for all patients was 11.62 ± 1.89 SD, (range 6.9 to 22.7). Hemoglobin averages by post-conceptual age can be seen in the top graph. A one-way between subjects ANOVA was conducted to compare the effect of age (1-6 months) on Hb. There was a significant effect of age on Hb at the p<.01 level for the six conditions [F(5, 2880) = 202.8, p < 0.001].

Transfusion thresholds have changed over the years and current practice leads us to believe that most anesthesiologists would not cancel a case for a patient with a Hb equal to or > 8. Preoperative labs have both dollar expense and expense to the patient: they cause discomfort and possible loss of intra-operative IV sites. Based on our results, we recommend following the ASA statement on routine preoperative labs and diagnostic screening. To summarize, the ASA states that no routine preoperative labs are necessary and that labs should be ordered when the anesthesiologist believes this information will change or influence management decisions.1 The prevalence of anemia in ASA I and II children up to 18 years of age has previously been quoted as 0.29% - 0.5%.2,3 We do not believe a prevalence of Hb values in an “at risk” category of 1.1% indicates that all children less than 6 months of age should be subjected to preoperative Hb testing. When accredited Pediatric Anesthesiology programs were queried, 54% of the respondents said their institution does not routinely check preop Hb.4

Perhaps preoperative Hb in infants should only be obtained when there is a clinical indication such as expectation of large blood loss, which would require a type and crossmatch. However, since the data yield on the youngest age, and smallest gestational ages is limited, future analysis with more than 5 years of data may provide insight as to which infants would benefit from preoperative Hb values. Since hemoglobin <10 is a risk factor for postoperative apnea in expremature infants up to 60 weeks postconceptual age, a hemoglobin may not be necessary preoperatively but should be done at the time of surgery to understand whether there is increased risk for apnea.

References: