

Title: Evaluation of the Use of Blood Products in a Pediatric Operating Room

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Introduction:

The use of Maximum Surgical Blood Ordering Schedules (MSBOS) to improve the efficiency of preoperative blood ordering systems and to improve patient safety is a standard practice in adult anesthesiology practice.(1). While such guidelines exist for the adult population, few currently exist for the pediatric population. By reporting the type of procedures that are associated with a high incidence of peri-operative blood transfusions, we sought to inform decisions regarding the allocation of blood products in the pediatric surgical population. This sets the first step towards establishing MSBOS for pediatric non-cardiac surgical procedures.

Methods:

Data was retrospectively collected for all operations involving blood transfusions carried out at a single institution between February 1998 and December 2006 using de-identified information from the computerized peri-operative anesthesia system (CompuRecord, Philips Medical Systems, Bothwell, WA). IRB approval of this study was waived as it did not qualify as human subjects research under 45 CFR 46.102(f). The surgical procedure performed, type and volume of blood products received were recorded. Each of the procedures requiring blood transfusion were identified and classified into 8 primary categories: Craniofacial, General Surgery, Interventional Radiology, Miscellaneous Other, Neurosurgical, Orthopedic, Thoracic, Urological (Table 1).

Results:

During this period, 175,403 non-cardiac surgeries were performed with a total of 13,185 procedures requiring blood transfusion. A majority of blood transfusions were performed during Craniofacial (34.58%), General (22.65%) and Neurosurgical (16.75%) procedures (Fig.2).

Discussion:

During pediatric operative procedures at this academic children's hospital, peri-operative blood transfusions were most common in Craniofacial, General and Neurosurgical procedures. These observations provide a general, preliminary outline of blood product requirements in non-cardiac pediatric surgery. Further analysis of this data is required to determine the use of blood products for individual procedures in order to ultimately establish MSBOS for pediatric surgical patients. This analysis will take into account the variables of gender, weight, age, ICD9 and CPT-4 codes.

References:

1. Oliveira A, et al. The maximum surgical blood order schedule. Acta Med Port. 2006 Sep-Oct;19(5):357-62

Table 1: Surgical Categories

Category	Examples
Craniofacial	FrontoOrbital, LeFort, Vault Expansion, Mandibular Distraction, etc.
General Surgery	Abdominal tumor resection, Laparotomy, Nissen fundoplication, etc.
Interventional Radiology	Angioplasty, CV Catheter, etc.
Miscellaneous Other	Otorhinolaryngology NOS, Bone Marrow Aspirate, Amputation, etc.
Neurosurgical	Craniotomy, V.P. Shunt, Synostectomy, Spinal
Orthopedic	Ant/Post Spinal Fusion, Laminectomy, Osteotomy, etc.
Thoracic	Thoracotomy
Urological	Nephrectomy, PD Catheter insertion, Renal Transplant, etc.

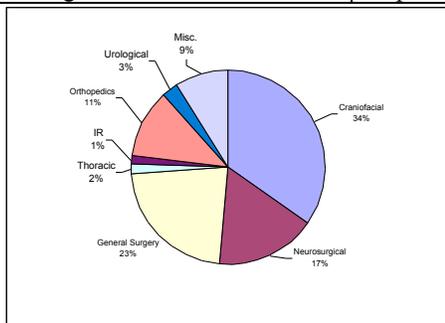


Figure 2: Percentage of Surgical Procedures Requiring Blood Transfusion