

Preoperative blood typing may not be needed for some pediatric surgeries

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Certain pediatric surgeries carry such low risk of serious blood loss that clinicians can safely forgo expensive blood typing and blood stocking before such procedures, suggest the results of a small study by researchers at the Johns Hopkins Children's Center.

The finding, published ahead of print in the journal *Pediatric Anesthesia*, was accompanied by a list of 10 operations with "zero" [transfusion](#) risk, according to the [investigators](#) who reviewed the records of thousands of pediatric [surgeries](#) performed at The Johns Hopkins Hospital over 13 months.

Unnecessary pre-emptive [blood](#)-type testing and blood stocking can not only inflate the overall cost of care, but squander vital supplies when any unused blood expires and cannot be restocked for future use, the researchers say.

"We knew anecdotally that just-in-case blood typing and ordering are often unnecessary and wasteful but we wanted to know precisely when we may be able to safely skip them," says study lead investigator Allison Fernández, M.D., a pediatric [anesthesiologist](#) at All Children's Hospital Johns Hopkins Medicine in St. Petersburg, Fla. Fernández conducted the research as a pediatric anesthesiology fellow at the Johns Hopkins Children's Center in 2012.

The research showed that blood transfusions were not needed in more than 97 percent of the 8,620 pediatric non-cardiac surgeries performed

at Johns Hopkins during the study period. Of the 8,380 patients for whom a transfusion was unnecessary, 707 underwent preliminary blood typing and 420 of them underwent additional cross-matching, a procedure in which the recipient's blood is further tested for compatibility with the donor's blood. In 10 cases, the pre-ordered blood units reached a temperature that made them unsafe for future use and were thrown away. The total [price tag](#) for the additional tests and unused blood was nearly \$60,000, the researchers say.

The Johns Hopkins team mined the data to identify procedures least likely to require transfusions and discovered 10 that never did, yet children were commonly tested before them. The list includes some common surgeries of the colon and spinal cord, lumbar punctures, central line placements, a type of laparoscopic procedure used to treat gastro-esophageal reflux and hiatal hernia, and a brain operation for Chiari malformation that involves making a small incision in the back of the skull. Also on the list: a hip-imaging procedure known as an arthrogram, repairs of a dislocated or fractured elbow and tonsil and adenoid removal.

Two additional procedures—a surgery to reposition a catheter that drains excess cerebrospinal fluid from the brain into the abdomen and an operation performed in some scoliosis patients—carried an extremely small risk of blood transfusion.

Calculating the odds that a child would require a blood transfusion against the number of actual transfusions performed and the number of pre-surgical blood tests done, the researchers determined that nearly one-third of children underwent excessive blood testing before their surgeries.

To avoid excessive or unnecessary testing, surgeons and anesthesiologists should assess each patient's specific needs for blood screening in light of

the team's findings rather than order these tests as a knee-jerk reflex, the researchers say.

Hospitals with electronic medical record systems should take advantage of the rich pediatric surgery data captured in their databases and use that information to devise cost-cutting strategies that save precious resources without compromising patient safety and outcomes, the team says.

Recent advances in surgical techniques and new minimally invasive approaches have made many operations safer and less invasive, reducing [blood loss](#) and the need for transfusion, the investigators say.

"The moral of the story here is that times have changed and we transfuse less than we have in the past, so now we find that quite a few children undergo unnecessary blood-typing and cross-matching before common surgeries," says study senior investigator Eugenie Heitmiller, M.D., a pediatric anesthesiologist at the Johns Hopkins Children's Center. "These results tell us we should really pause and re-examine this practice."

Researchers say this is study the first of its kind in pediatric patients in that it used actual clinical data rather than surgeons' reports.

Other researchers involved in the study were Jessica Cronin, M.D., and Robert Greenberg, M.D.

Provided by Johns Hopkins University School of Medicine

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