



# Eliminating routine preoperative laboratory studies in outpatient pediatric cardiothoracic surgery patients: a quality improvement study

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## Introduction

- Clinical studies examining the need for routine preoperative testing in pediatric patients undergoing elective noncardiac surgery challenge the current standard of care regarding preoperative laboratory testing
- Current studies indicate that tests are expensive and largely unnecessary<sup>1-2</sup> and do not influence medical decision making<sup>3</sup>
- Effects of multiple sticks on available venous access, anxiety experienced by the patient as a result of blood draws, and resources spent by the family and the hospital during a preadmission testing visit have not been considered

## Methods

- Eliminated all preoperative blood-based lab testing for pediatric outpatients scheduled for elective cardiac surgery
- Obtained post-induction, pre-incision type and screen (T&S) and arterial blood gas (ABG) with hematocrit
- Prospectively monitored time required to obtain type-specific blood in the operating room (OR) for 5 weeks
  - Additional time points: start of anesthesia care, time that T&S was sent, time that T&S resulted in the electronic medical record, time that type-specific blood was ready in Transfusion Services, time that type-specific blood was delivered to the OR, incision time
  - One unit of O negative (O-) blood was brought to the OR prior to incision if type-specific blood was not ready

## Results

- 17/30 patients presented as outpatients for elective cardiac procedures; 5 had laboratory studies drawn preoperatively
- 8 patients without preoperative laboratory studies required type O- blood in the OR as type-specific blood was not ready prior to incision
- 4 cases had type-specific blood in the room at the time of incision. Incision time was delayed by approximately four minutes in one case to wait for type-specific blood to arrive in the room (Table 1)

## Discussion

- Elimination of all preoperative laboratory studies, including T&S, is feasible with collaboration of the entire congenital cardiac surgery team
- This practice has multiple benefits without introducing significant risk
- Use of O- blood is safe:
  - Incidence of antibodies is rare in this population
  - One unit of O- blood does not deplete this resource
- Continued revision of hospital processes as we implement and improve this protocol are underway

Table 1. Times related to the ordering and delivery of type-specific blood in the operating room

Interval	Median Time ± Standard Deviation (minutes)
Anesthesia start to incision	106.5 ± 23.7
Anesthesia start to T&S sent	26.5 ± 12.5
Anesthesia start to type-specific blood in OR	109.5 ± 29.7
T&S sent to T&S completion by lab	59 ± 11.6
T&S completion to type-specific blood ready in blood bank	11 ± 12.9
T&S sent to type-specific blood in OR	85.5 ± 20.4

## References

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2. Meneghini L, Zadra N, Zanete G, Baiocchi M, Giusti F. The usefulness of routine preoperative laboratory tests for one-day surgery in healthy children. *Paediatr Anaesth*. 1998;8:11-5.
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