Reducing Type and Screens for Elective C-Sections FAQs

Background

Caesarean section is a common obstetric procedure, with hemorrhage as a frequent complication. Traditionally, preoperative type and screen testing has been routine due to transfusion risks. However, evidence, including Choosing Wisely Canada's recommendations, suggests that limiting this practice to high-risk cases does not compromise patient safety.
Based on the success of reducing type and screen testing at Grey Nuns Community Hospital, there was a desire to expand this approach across nine high-volume sites across the province. In collaboration with Alberta Health Services, Acute Care Alberta, and the Physician Learning Program Calgary Zone implementation began in September 2023 and concluded May 30, 2025. As a result of this work, participating sites successfully reduced testing by applying clear clinical criteria. The aim is to sustain this evidence-informed practice and ensure the criteria and frequently asked questions remain accessible to staff.

Frequently Asked Questions

1. Why should I reduce routine type and screen testing for elective C-sections?

- There is good evidence that suggests patient safety is not compromised when clinicians restrict the practice of ordering type and screen testing to patients where there is truly a high risk that excessive blood loss will occur
- Saves the patient time and avoids the need for a low-value test 72 hours before elective C-section
- Reduces risk for iatrogenic anemia
- Saves lab services time and resources by avoiding the performance of low value tests
- Reduces environmental waste (e.g., test tubes)
- Encourages clinicians to consider the risks for the patient and reminds them of high-risk patients, ensuring patient-centered care

2. What are the criteria/risk factors that warrant ordering a type and screen for elective C-section?

- Abnormal placentation including previa & accreta
- Preeclampsia/HELLP
- General anesthetic
- Hb <100 g/L
- Three or more previous C-sections
- Clinically significant antibody and /or history of prior Hemolytic Disease of the Fetus and Newborn
- Other reasons specific to a patient or clinical circumstance (e.g., an underlying bleeding disorder or prior postpartum hemorrhage)

3. What is the likelihood of transfusion at the time of delivery?

- The rate of transfusion for women delivering by elective C-section is estimated to be <1%[1]

4. Is it safe to use unmatched blood in a bleeding emergency at the time of delivery?

- Prenatal women have an antibody screen in early pregnancy. The vast majority have a negative antibody screen confirming that it would be safe to use "unmatched blood"
    - **Note:** Those that have a positive screen with a clinically significant antibody are monitored closely through pregnancy and would be among the group where a predelivery type and screen is recommended
- The likelihood of a late developing antibody where the patient has a negative screen initially and then develops an antibody during the 2nd or 3rd trimester is very low. Several studies confirm this with the prevalence of new antibody production during pregnancy estimated at 0.24 percent (range: 0.02 – 0.43 percent)[2 3 4 5 6]

5. What is the risk of causing antibody formation by giving uncrossmatched blood to patients, which could then impact future pregnancies or future need for blood?

- There is a 1/13 chance that the patient will develop an antibody as a result of the transfusion, with potential impact in the next pregnancy—but this risk is not different if you give matched or unmatched blood since we don't match for all antigens[7 8]
- In fact, when you give unmatched blood in Canada you are giving O RhD negative and K negative blood. This means that there is no risk for immunization to the RhD or the K antigen when you give unmatched. Furthermore, if your patient had an unexpected or unknown anti-D or anti-K (the two most common antibodies), there would be no problem because the unmatched blood is already D and K negative. Of course, group O blood also avoids the problem of anti-A and anti-B in your patient, since group O blood also lacks the A and B antigens
- In summary, the unmatched is "safe" from the perspective of anti-A, anti-B, anti-D and anti-K. Even if your patient has one of these antibodies, the blood you are giving is negative and unmatched blood has a risk of alloimmunization to non-D, non-K antigens of about 1/13 or less, not different than the risk when giving matched red blood cell transfusions, since we don't match for everything[9]

6. Is there a risk of using up the supply of O negative blood?

- Supply is always an issue, but this population (patients with childbearing potential) is the exact group for whom Transfusion Medicine keeps a supply of O negative K negative units
- For a male patient in need of an unmatched transfusion, there is less concern about alloimmunization (fewer consequences if they do become alloimmunized) so they routinely receive O positive units
- For the patient requiring unmatched, unmatched group O RhD negative would be issued while awaiting the completion of a blood group and antibody screen and crossmatch, and then a switch to group specific rbc would occur, limiting the use of O negative blood and the impact on supply

7. Is there a risk for rural sites and the time it takes for crossmatched blood to be brought urgently when a type and screen is not available?

- If an antibody screen is negative, patient specific units aren't sent to the sites
- There are a limited number of uncrossmatched red cell units at many of the smaller sites
- The criteria developed encourages clinicians to reconsider the risks to the patient and reminds them of higher risk patients that may require type and screen test early to ensure adequate supply of crossmatched blood at the time of delivery for this small subset of patients who may require it

8. Does a stat type and screen test cost more than a regular type and screen test?

- A regular type and screen test is an automated method, but a stat type and screen test can be done either manually or automated depending on the site performing the test.
- A manual test is one that requires a technologist to manually perform the testing (all pipetting, incubations, centrifugations are manually implemented and performed by the technologist). This type of testing has higher tech time for the testing, as well as additional consumables to perform the testing (examples: tubes, pipettes…).
- An automated test is completed entirely by an automated analyzer. This means the technologist places the sample on the analyzer and can work on something else until the testing is complete. Current automated analyzers also have the capacity to have stat specimens added.
- Stat testing can have "cost" impacts since it will realign the priorities within the Lab, and it may stop routine runs or other tests to perform the stat testing. Additionally, the Lab may not have the staff compliment capacity to allow for frequent stat testing at sites that are not immunohematology reference laboratories, since they often are not staffed with technologists dedicated to transfusion medicine.
- Therefore, it is important to only order stat testing when truly necessary.

9. Where can I find the type and screen criteria for elective C-sections?

- The criteria are available in poster format on:
  - Transfusion Medicine, Specimen Collecting & Testing External AHS Website: Specimen Collection & Testing | Alberta Health Services

10. Who can I contact if I have further questions or concerns?

The provincial project concluded May 31, 2025. Please contact your Operational Obstetrics Lead or your local Transfusion Medicine Committee representative for questions or concerns.

References

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