

# BloodNotes

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## Perioperative autologous blood donation and directed donation

Canadian Blood Services has been evaluating the appropriate utilization of two special types of blood donation: perioperative autologous blood donation and directed donation. These two types of donation have been the subjects of recent [BloodBriefs](#).

Perioperative autologous blood donation (PAD) is the banking of red cell units (rarely plasma) collected from a patient before a planned surgery. The use of PAD was promoted in the Krever Commission recommendations to improve blood safety as a response to viral transmission by allogeneic blood in the early 1980s. The residual risk estimates of a potentially infectious donation in Canada are very low at 1 in 21.4 million donations for HIV, 1 in 12.6 million donations for HCV and 1 in 7.5 million donations for HBV.

Given the current exceedingly low risk of transfusion-transmitted viral infection by allogeneic blood and the fact that the risks of transfusion-associated circulatory overload (TACO), bacterial contamination and receiving the wrong unit are not mitigated by PAD, the rationale and safety of routine PAD has been questioned. Additionally, autologous blood donation before surgery can contribute to preoperative anemia and a greater need for perioperative transfusions.

Finally, the cost-effectiveness and the balance between the risks and benefits need to be examined as 60 to 80 per cent of units collected are discarded. This is a waste of the patient's blood, their time and a waste of health care resources.

A directed blood donation is one that is collected by Canadian Blood Services from a parent or legal guardian, and designated to be transfused to their minor child. The rationale and safety of routine use of directed donations has also been questioned.

Blood collected for a directed donation cannot be used for another recipient, therefore, if not used for the specific recipient, directed units issued to hospitals must be discarded. Furthermore, directed donation may be associated with increased risk to the recipient, which include the following.

- (1) Blood from a first-degree relative can be associated with an immune reaction called graft versus host disease (GvHD), which can be a severe and potentially fatal reaction. To reduce the risk of this reaction, the blood is irradiated, but irradiation does not eliminate the risk.
- (2) Because a directed donation unit must be irradiated, product quality and shelf-life are reduced.
- (3) During pregnancy, a mother may be alloimmunized to fetal blood cells. A subsequent directed donation from a mother to her child may result in a transfusion-related acute lung injury (TRALI) reaction.

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- (4) Exposing patients to family members' blood may make it more difficult to find family members who would be compatible as stem cell or organ donors if needed in the future. This is because the patient may form antibodies to family member's blood cells through a directed blood donation.
- (5) Directed donors tend to be first-time donors, and transmissible diseases are detected more frequently in first-time donors than in the regular volunteer donor pool.
- (6) Relatives may perceive undue pressure to provide a directed donation. Sometimes these individuals may have a confidential or private reason that prevents them from being eligible to donate blood. This pressure may result in the individual concealing this risk and donating a unit that is potentially less safe than one from the general donor pool.

In summary, directed donation results in a unit of blood associated with higher risks and no clear benefit for the patient. While it is recognized that providing directed blood donation may be helpful to the emotional state of family members, the risks associated with directed donation are higher for the patient.

There is likely no role for routine perioperative autologous donation except for select patients such as those with rare blood groups or multiple blood group antibodies where compatible allogeneic blood is difficult to obtain; patients at serious psychiatric risk because of anxiety about exposure to allogeneic blood; and, potentially, patients who refuse to consent to donor blood transfusion but will accept PAD.

The [Choosing Wisely Canada](#) campaign has recommended that physicians 'do not routinely order perioperative autologous and directed blood collection'.

Nationally, the demand for both perioperative autologous units and directed units for transfusion has been declining steadily since 2007. This shift in demand is encouraging but relatively high use continues at certain sites. Sites are encouraged to review their use of these resources to ensure only patients who truly need them receive autologous or directed donations.

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