NAC STATEMENT ON PERIOPERATIVE AUTOLOGOUS BLOOD DONATION

NAC PERIOPERATIVE AUTOLOGOUS BLOOD DONATION WORKING GROUP:

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BACKGROUND:

Perioperative autologous blood donation (PAD), as a strategy to avoid allogeneic red blood cell transfusion, has been in decline over the last decade due to a decrease in demand from physicians and patients. PAD was originally promoted in the 1980s and subsequently by the Krever Royal Commission as an important mechanism to decrease exposure to allogeneic transfusions and the associated risks of transfusion, particularly viral transmission. In Canada, the number of autologous units collected by Canadian Blood Services has steadily decreased from 5516 units in 2007 to 155 in 2016. This dramatic reduction reflects the trends for PAD across most jurisdictions in North and South America, and Europe, and is at least partially related to the recognition of the current safety of allogeneic blood transfusions. Over the past 3 decades, the risk of transfusion-transmitted viral infection has been dramatically reduced. The residual risk estimates for viral transmission following an allogeneic transfusion 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.

With this reduction in viral transmission, the impetus for PAD has been significantly reduced. Potential benefits of autologous red blood cell donation remain (such as eliminating the risk of alloimmunization and risk of viral transmission, if allogeneic transfusions are avoided), but these benefits are offset by potential risks and adverse effects associated with PAD. PAD often decreases hemoglobin levels prior to surgery and therefore 1) increases the risk of perioperative anemia and 2) can result in high rates of transfusion for any blood product (autologous + allogeneic). Perioperative anemia may be associated with poorer postoperative outcomes, increased morbidity and increased health-care costs. Finally, autologous RBC transfusions may still be associated with transfusion complications including bacterial infections, transfusion-associated circulatory overload (TACO) and, perhaps most importantly, transfusion of an incorrect unit (either for the autologous donor or another patient receiving the autologous unit in error).

While there has been a marked reduction in PAD, there continues to remain a very high discard rate for these autologous red blood cell units since unused units cannot be crossed over into the regular blood supply. In Canada, the discard rate for PAD units is 70%. This represents a waste of valuable health-care resources for the collection and storage of RBCs that are never used. Since PAD may result in lower hemoglobin levels post-operatively, PAD can result in possible harm to patient with absolutely no benefit for 70% of PAD units collected.

Given the reduction in risks associated allogeneic transfusions and the potential adverse effects associated with PAD, recommendations from various international organizations have suggested that PAD should not be routinely performed. Rather, it should be limited to very specific clinical scenarios where there is clear benefit to patients (e.g. patients with antibodies to high frequency antigens patients who would have severe psychologic distress if they were to receive an allogeneic transfusion).

RECOMMENDATION:

Given the increased safety of allogeneic transfusions and the potential adverse effects associated with PAD, the National Advisory Committee on Blood and Blood Products recommends that PAD not be routinely performed as a strategy to reduce allogeneic blood transfusions. PAD should be restricted to patients undergoing surgery with a high risk of transfusion and antibodies to high frequency antigens that make it very difficult to support their transfusion requirements with the regular allogeneic blood supply. All patients being considered for PAD should be discussed with the local or regional transfusion medicine physician. For patients meeting the exceptional criteria for PAD, it is critical that all PAD units are collected 3-4 weeks prior to surgery to minimize the risks of iatrogenically induced perioperative anemia. In these patients, perioperative iron replacement should be undertaken as appropriate.

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