Red Blood Cell Transfusion

- Restrictive Versus A Liberal Transfusion Strategy in Patients With Spontaneous Intracerebral Hemorrhage: A Secondary Analysis of TRAIN Randomized Clinical Trial
- Liberal vs restrictive transfusion strategy for acute brain injury: A meta-analysis with trial sequential analysis of randomized clinical trials
- Tranexamic Acid Use in Total Hip Arthroplasty for Avascular Necrosis: A Single-Center Experience
- Laboratory Markers of Impaired Erythropoiesis in Early Diagnosis of Perioperative Anemias
- Association between whole blood versus balanced component therapy and survival in isolated severe traumatic brain injury
- Impact of Continuous Non-Invasive Hemoglobin Monitoring on Red Blood Cell Transfusion During Decompressive Craniotomy for Acute Brain Injury: A Randomized Control Study
- Risk factors associated with acute kidney injury in patients with traumatic brain injury: A systematic review and meta-analysis
- Preventing Postoperative Sepsis: Multidisciplinary Implementation of Diverse Countermeasures in our first NSQIP Project

Blood transfusion, the introduction of blood directly into an individual's blood circulation through a vein.

Recommended transfusion criteria

● exchange transfusions in neonates

● acute burn debridement and grafting in children

Packed red blood cells (PRBCs)

Recommended transfusion criteria:

1. acute blood loss ≥ 15% of the patient's blood volume

2. in an asymptomatic patient: hemoglobin (Hb) ≤ 8 gm or Hct ≤ 24%

3. symptoms of anemia at rest

4. preoperative Hb ≤ 15 gm or Hct < 45% in the neonate

Amount to transfuse:

Adult: 1 U (250–300 cc) raises Hct by 3–4%

For many decades, the decision for a transfusion of red blood cells was based upon the "10/30 rule": transfusion was used to maintain blood hemoglobin (Hgb) concentration above 10 g/dL (100 g/L) and a hematocrit above 30 percent.

However, concern regarding the transmission of bloodborne pathogens and efforts at cost containment caused a re-examination of transfusion practices in the 1980s. The 1988 National Institutes of Health Consensus Conference on Perioperative Red Blood Cell Transfusions suggested that no single criterion should be used as an indication for red cell component therapy, and that multiple factors related to the patient's clinical status and oxygen delivery needs should be considered.

During the subsequent 25 years, a large body of clinical evidence was generated, resulting in the publication of many guidelines for red blood cell (RBC) transfusion in different settings.

A higher transfusion threshold of 10 g/dL after severe TBI increased the risk of severe PHI events. These results indicate the potential adverse effect of using a higher transfusion threshold after severe TBI [1].

A lack of consensus exists between European Intensive Care Units (ICUs) on blood transfusion and coagulation management [2].

Intraoperative blood transfusion is a major outcome determinant of spine procedures. Various approaches, including pharmacologic and nonpharmacologic therapies, have been tested to decrease both intraoperative and postoperative blood loss.

The aim of a systematic review is to report clinical evidence on the relationship between intraoperative blood loss (primary outcome) and on transfusion requirements and postoperative complications (secondary outcomes) in patients undergoing spine surgery. A literature search of PubMed database was performed using 5 key words: spine surgery and transfusion; spine surgery and blood loss; spine surgery and blood complications; spine surgery and deep vein thrombosis; and spine surgery and pulmonary embolism. Clinical reports (randomized controlled trials, prospective and retrospective studies, and case reports) were selected. A total of 473 articles were examined; 450 were excluded, and 24 were selected for this systematic review. Selected articles were categorized into 3 subchapters: (1) drugs active on coagulation (12 studies): tranexamic acid, aminocaproic acid, aprotinin, and recombinant activated factor VII; (2) drugs not active on coagulation (5 studies): ketorolac, epoetin alfa, magnesium sulfate, propofol/sevoflurane, and omega-3 and fish oil; (3) nonpharmacologic approaches (7 studies): surgical tips, patient positioning, and general or spinal anesthesia. Several studies have shown a significant reduction in intraoperative bleeding during spine surgery and in the requirement for blood transfusion [3].

Complications

Red Blood Cell Transfusion complications

1)
Vedantam A, Yamal JM, Robertson CS, Gopinath SP. 119 Progressive Hemorrhagic Injury After Severe Traumatic Brain Injury: Effect of Hemoglobin Transfusion Thresholds. Neurosurgery. 2015 Aug;62 Suppl 1:203. doi: 10.1227/01.neu.0000467081.47732.ee. PubMed PMID: 26181965.
2)
Huijben JA, van der Jagt M, Cnossen MC, Kruip MJHA, Haitsma I, Stocchetti N, Maas A, Menon D, Ercole A, Maegele M, Stanworth SJ, Citerio G, Polinder S, Steyerberg EW, Lingsma H. Variation in blood transfusion and coagulation management in Traumatic Brain Injury at the Intensive Care Unit: A

survey in 66 neurotrauma centers participating in the Collaborative European NeuroTrauma Effectiveness Research in Traumatic Brain Injury (CENTER-TBI) study. J Neurotrauma. 2017 Aug 21. doi: 10.1089/neu.2017.5194. [Epub ahead of print] PubMed PMID: 28825511.
3)
Willner D, Spennati V, Stohl S, Tosti G, Aloisio S, Bilotta F. Spine Surgery and Blood Loss: Systematic Review of Clinical Evidence. Anesth Analg. 2016 Oct 3. PubMed PMID: 27749350.

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