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Incorporating the concept of overtransfusion into hemovigilance monitoring: An expert-based definition and criteria from the International HIT-OVER Forum

D Fischer, M A Weigand, R Moss, S Veiras, B Kübel, J A Garcia-Erce, K Zacharowski, P Meybohm, J H Waters, S J Raasveld, A P J Vlaar, T Richards, J Meier, S Lasocki, A Hofmann, A Shander, C von Heymann, G Dietrich, D Fries, A U Steinbicker, M B Rondinelli, J H Levy, G Beck, T Frietsch

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Author of the comment: Dra. Sonia María Veiras. Hospital Clínico Universitario de Santiago de Compostela. Head of Section in the Anaesthesia and Resuscitation Service. A Coruña province.

What is an overtransfusion?

This concept may be defined as:

- OVERDOSE OF COMPONENTS
- INCORRECT COMPONENT
- UNNECESSARY ADMINISTRATION

Our Hemovigilance system is very thorough, but it does not include the concept of overtransfusion, focusing on the misses / near misses in the administration of blood components and in transfusion reactions.

Overtransfusion may have deleterious effects, including hypercoagulability, with may lead to thrombosis, alloimmunization, increased mortality, longer hospital stays, increased infection rates, and cardiovascular overload events.

Situations and Examples of Overtransfusion

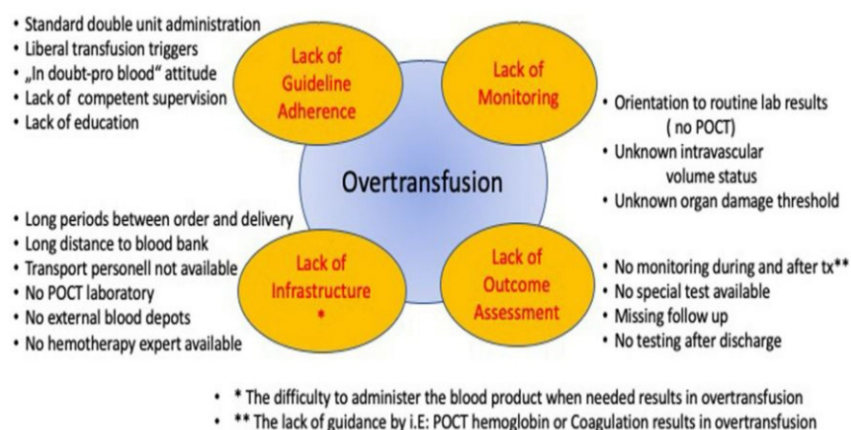


FIGURE 1 Situations and examples of overtransfusion. Overtransfusion is produced by the lack of guideline adherence, lack of monitoring, lack of infrastructure or structure, and lack of outcome assessment. POCT: point-of-care testing. [Color figure can be viewed at wileyonlinelibrary.com]

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There are four groups of reasons for overtransfusion:

- 1) Lack of adherence to clinical guidelines, which leads to attitudes such as “when in doubt, transfuse” and not considering transfusion thresholds.
- 2) Insufficient monitoring, meaning that the transfusion decision is frequently a “correction of analytical figures” and not necessarily beneficial for organ perfusion.
- 3) Hospital infrastructure hindering the immediate availability of blood components (blood bank far away, hospital attendant unavailable...)
- 4) Lack of auditing of post-transfusion outcomes.

In the 2023 NATA meeting, a working group was created to explore the concept of overtransfusion, with a literature review between 2000 and 2023, and the definition of overtransfusion was agreed as “the unnecessary or inadequate administration of blood products, incorrect component transfusion, overdose, administration of 2 units without proper monitoring, administration without clinical evidence”, separated into two divisions:

- 1) overtransfusion per se
- 2) overtransfusion-induced hypercoagulopathy

17,273 transfused subjects (articles published between 2011 and 2023 based on search keywords: overtransfusion, transfusion overdose, blood overdose, unnecessary transfusion...) with a mean overtransfusion rate of 46.99%.

The evolution of overtransfused patients is unclear due to heterogeneity and the lack of a control group.

If the discharge Hb levels are analysed as markers of appropriateness for CH, overtransfusion occurred in 20% of elective surgeries.

As examples of this search, the **unnecessary use of FFP** leads to an increase in surgical site infections, nosocomial infections, ARDS incidence, and longer hospital stays: for 100 ml of FFP... 0.38 more days in hospital.

Overtransfusion is an issue well beyond borders. As an example, in the United Kingdom, up to 45% of unnecessary packed red blood cells have been identified.

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Therefore, overtransfusion is defined as: The administration of a blood component not recommended in a specific clinical situation, or of multiple units when a single unit would do, or a dose that is inappropriately high for the patient's needs:

- In situations of controlled bleeding
- As a prophylactic treatment or with no evidence of improvement in vital signs
- Overcorrection
- With the potential to produce TRALIs, TACOs, transfusion associated dyspnea, alloimmunization, infection, transfusion reactions.

The challenge is... can we integrate overtransfusion in our hemovigilance?