NHS Blood and Transplant

Information for clinicians

Restrictive haemoglobin thresholds and single unit transfusion for red blood cells

"Don't give two without review"

The use of restrictive red blood cell transfusion thresholds and targets whilst transfusing one unit at a time (or an equivalent weight-based dose for children/low body weight adults) minimises unnecessary blood component exposure and reduces risk including transfusion-related circulatory overload (TACO). It also improves patient outcomes, reduces hospital costs, and preserves blood stocks.

All suspected cases of TACO, under/over transfusion, and inappropriate transfusion should be reported to Serious Hazards of Transfusion[1] (SHOT).

These principles apply to all patients over 1 year but exclude those with major haemorrhage, acute coronary syndrome and patients with chronic anaemia requiring regular transfusion support. The single unit recommendation also applies to platelet transfusions.

All recommendations are included in the NICE guidance on blood transfusion (2015)[2] and Quality Standards for blood transfusion (2016)[3]

Restrictive red blood cell transfusion Hb thresholds and targets:

For patients who need red blood cell transfusions without major haemorrhage or acute coronary syndrome:

- Consider a Hb threshold of 70g/L and a Hb target of 70-90g/L after transfusion.

For haemodynamically stable patients with acute coronary syndrome (excluding stable ischaemic heart disease):

- Consider a Hb threshold of 80g/L and a target of 80-100g/L after transfusion.

For patients with chronic anaemia and requiring regular red cell transfusions:

- set individual Hb threshold and targets.

Single unit transfusions

Clinical reassessment and measurement of Hb after each unit of red cells transfused helps decision-making on the need for further transfusions and minimises the risk of over transfusion.

When considering transfusion in stable non-bleeding patients:

- Does the patient's current clinical status and Hb indicate the need for transfusion?
- Is the Hb below the threshold for transfusion?
- What is the target Hb level?
- Provide the patient (and their families/or carers) with verbal and written information on the reason for transfusion, risks, benefits, other treatment options, and transfusion needs specific to them. Document the discussions in the patient's clinical record.
- Use weight-adjusted red cell dosing to guide the appropriate number of units required, for all non-bleeding adult patients.
- Transfuse one unit at a time or equivalent weight-based dose for children and low body weight adults. Reassess the Hb and the patient's clinical status before further transfusion.

- Document the reason for transfusion, the response, and any adverse incidents in the patient's notes and discharge summary.

After each unit transfused:

- Is the patient still displaying symptoms of anaemia?
- Re-check the Hb
- Has the target Hb been achieved?
- Is further transfusion appropriate?

Resources

Choosing Wisely initiative
https://www.rcpath.org/profession/patient-safety-and-quality-improvement/patient-safety-resources/choosing-wisely.html

Patient Blood Management - Hospitals and Science - NHSBT
https://hospital.blood.co.uk/patient-services/patient-blood-management/

Annual SHOT Reports - Serious Hazards of Transfusion
https://www.shotuk.org/shot-reports/

2017 Transfusion associated circulatory overload audit - Hospitals and Science - NHSBT
https://hospital.blood.co.uk/audits/national-comparative-audit/reports-grouped-by-year/2017-transfusion-associated-circulatory-overload-audit/

NBTC indication codes (updated 2024)
https://nationalbloodtransfusion.co.uk/recommendations

References

1. Serious Hazards of Transfusion UK haemovigilance scheme 2025: Definitions of current reporting categories and what to report SHOT Definitions - Serious Hazards of Transfusion

2. National Institute for Health and Care Excellence 2015 Guidelines for Blood Transfusion NG24 https://www.nice.org.uk/guidance/NG24

3. National Institute for Health and Care Excellence (2016) Quality standards for Blood Transfusion QS138 https://www.nice.org.uk/guidance/qs138

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This leaflet was prepared by NHS Blood and Transplant

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