SHOT Bite No. 18:



Serious Hazards of Transfusion

Transfusion errors in haemopoietic stem cell transplant patients

Transfusion errors and reactions have been reported in haemopoietic stem cell transplant (HSCT) recipients (data here covers reports submitted to SHOT between 2011-2020). HSCT can be either autologous (where cells are harvested from the patient themselves) or allogeneic (from a donor). Patients in both groups are likely to require intensive transfusion support but have different requirements. Allogeneic HSCT patients may change their blood group requirements for transfusion during different stages of transplant, and all HSCT patients will require irradiated blood components prior to and following transplant (BSH 2020).

Trends in HSCT SHOT Reports



Most transfusion-related errors in HSCT patients are either failure to administer irradiated cellular components putting the patient at risk of Transfusion Associated Graft versus Host Disease (TAGvHD), or transfusion of ABO/D-mismatched red cells. Almost 1/3 of all HSCT related SHOT reports are near misses, these must also be investigated to prevent patient harm.



Failure to meet specific requirements is mostly caused by clinical error, particularly failure to inform the laboratory that irradiated cellular components are required. Errors in clinical communication are further compounded by the shared care of patients between the transplant centre and the patient's local hospital, which necessitates the need for effective transfer of information between centres.



Most ABO and D errors originate in the laboratory. Laboratory errors are often caused by inappropriate use of the LIMS, either failure to update the LIMS, or failure to heed LIMS warning flags. It is important to note that many ABO and D errors are detected prior to transfusion, often by vigilant clinical staff at the bedside.



Errors are occurring in the same areas in the transfusion process and mostly with routine requests. This demonstrates the importance of having robust procedures to document, communicate and instigate relevant actions for specific requirements and ABO/D group changes in HSCT patients. Communication of transplant specific requirements is essential between

- Clinical teams and laboratory in the transplant centre
- Clinical teams in transplant centre and local hospital
- Clinical teams and laboratory in local hospital



Fig 2: Important steps in ensuring safe

SHOT Bite No. 18:



Transfusion errors in haemopoietic stem cell transplant patients

Fig 3: Organisational level actions for safe transfusions in HSCT recipients

Communication sent to the laboratory

Information must include proposed date of transplant, blood group of the HSCT donor and blood group of components to be provided throughout transplant, CMV status of patient and donor, any additional specific requirements e.g. washed, or HLA selected platelets and any further information e.g. previous transfusion reactions.

Confirmation of final transplant date with transfusion laboratory - transplant centre and referring hospital.

Confirmation of receipt should be returned and transplant information updated regularly.

Training in transplant transfusion requirements

Formalised training with evidence of completion for every health care professional involved in issuing (biomedical scientists), prescribing (doctors and non-medical authorisers) and administering (nurses) blood components for stem cell transplant recipients in accordance with FACT-JACIE requirements.

SOPs and Protocols

Laboratory SOPs detailing blood group compatibility for components for patients receiving a transplant from an ABO/D mismatched donor should be integrated into the same document to reduce risks of discrepancies. The document must cover blood group requirements in all stages of the transplant.

Clinical documentation should be available to all clinicians caring for the patient including bone marrow transplant coordinators, ward doctors and ward nurses.

Pre-administration practices

Staff administering the blood must check the blood group of the component issued to the patient against the transplant protocol as part of the pre-transfusion checks.

Standard transfusion practices, the administration checklist and TACO checklist should be embedded within the practice of all transplant clinical teams.

Key Messages



- **Further resources**
 - Safe transfusions in haemopoietic stem cell transplant recipients can be accessed from the SHOT website under 'Current Resources' https://www.shotuk.org/wp-content/uploads/myimages/Safe-transfusions-in-haemopoietic-stem-cell-transplant-recipients-1.pdf
 - BSH Foukaneli, T., Kerr, P et al. (2020) Guidelines on the use of irradiated blood components. *British Journal of Haematology*, 2020, 191, 704–724 https://onlinelibrary.wiley.com/doi/epdf/10.1111/bjh.17015 [accessed 02 March 2021]
 - Bolton-Maggs PHB (Ed), Poles D et al. (2017) on behalf of the Serious Hazards of Transfusion (SHOT) Steering Group. The 2016 Annual SHOT Report <u>https://www.shotuk.org/wp-content/uploads/myimages/SHOT-Report-2016_web_11th-July.pdf</u> [accessed 23 March 2021].