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SHOT Serious Hazards of Transfusion

Are we asking the right questions when things go wrong?

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Introduction

The Serious Hazards of Transfusion (SHOT) haemovigilance scheme collects and analyses data regarding serious adverse events and reactions of transfusions in the United Kingdom.

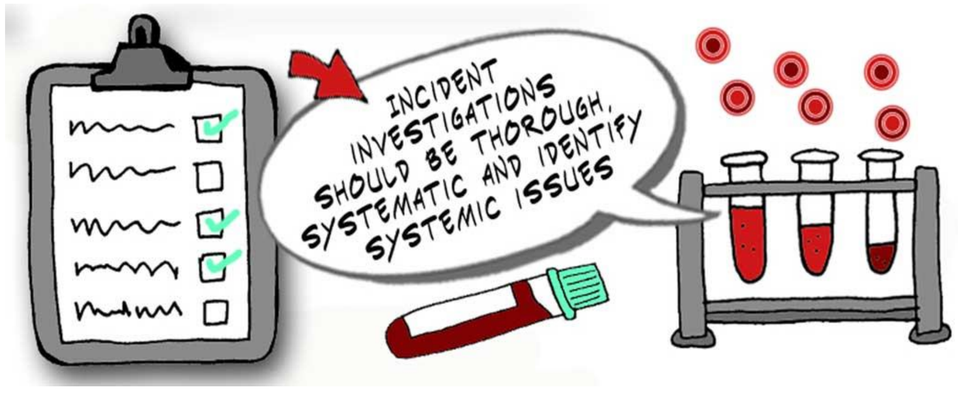
Errors continue to account for more than 80% of SHOT reports annually and can be mitigated by consideration of human factors (HF) in incident investigation and system design and redesign.

Approximately a third of reports to SHOT, originate in transfusion laboratories.

Continuing high numbers of transfusion errors indicate that sustainable systemic improvements to prevent errors may not have been fully implemented or the improvements implemented are not effective.

Methods

All reports submitted to SHOT between 2018-2020 where errors originated in the transfusion laboratory were reviewed to recognise common themes and identify areas for improvement.



Questions matter!
Asking appropriate questions during incident investigations leads to a shared understanding of the incident and helps identify the appropriate actions.

Results

Between 2018-2020, 9937 incidents were analysed including serious adverse events and reactions, 3060 (30.8%) originated in the laboratory.

Laboratory errors where the patient was transfused (n=1873) were far higher than near misses (n=1187).

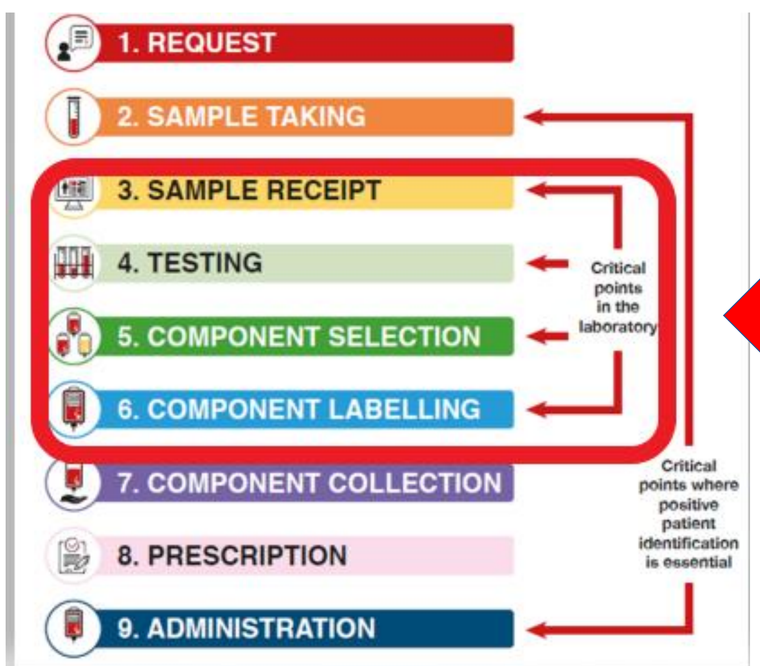
In total, there were 9 ABO-incompatible transfusions (2 red cells, 5 FFP, 1 relating to COVID-19 convalescent plasma and one cryoprecipitate) that resulted from a primary laboratory error.

Laboratory errors have been reported in various SHOT categories, incorrect blood components transfused where specific requirements have not been met accounted for 19.8% of the events reported (605/3060, with 401 errors and 204 near misses).

Introduced into SHOT reporting in 2016, the Human Factors Investigation Tool results have shown that incident investigations disproportionately blame individuals while system failures are overlooked.

Patient impact

There were 2 patient deaths where laboratory errors contributed to transfusion delays. There were 10 instances of major morbidity. In 7/10 of these cases, transfusions resulted in sensitisation to the K antigen in patients with childbearing potential, one caused transfusion delay in major haemorrhage and in 2 cases, the errors resulted in the wrong ABO red cell transfusion.



Errors can occur in any of the laboratory transfusion steps. In 2020, testing errors and component labelling, availability and handling and storage errors were the most commonly implicated steps.

Conclusions and Recommendations

Effective incident investigations help reduce errors, improve practices and lead to safer systems. Staff involved in incident investigation must receive adequate training for investigating incidents. A systems-based approach to the investigations, asking 'why' not 'who', is essential.

Consideration of human factors and identifying all contributory factors is key to effective safety management. Procedures and templates must be available that include consideration of human factors and a systems-based approach. Corrective and preventive actions must focus on the system and include reviewing their effectiveness.

A just and learning culture is vital for patient safety and having a HF driven incident investigation framework helps promote this. Safety management should include a proactive approach as well. 'Near miss' does not mean 'no error' and hence 'no investigation'

Several educational materials have been developed by SHOT which can be accessed at this link: https://www.shotuk.org/resources/current-resources/. Improving incident investigations and learning is one of the key SHOT recommendations from the 2020 Annual SHOT Report.

Download the SHOT App now to keep up to date with SHOT resources wherever you are