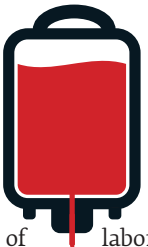
LABORATORY ERRORS IN TRANSFUSION

Jenny Berryman and **Paula Bolton-Maggs** from the Serious Hazards of Transfusion (SHOT) scheme explain their latest annual report.

The Annual SHOT Report for incidents reported in 2018 has now been published. In a total of 3326 reports, there were 20 deaths related to transfusion and 109 cases of major morbidity. Transfusion continues to be very safe in the UK. The risk of infection transmission remains very low. The risk of death is close to one in 117,000 and of serious harm close to one in 21,000 components issued. Pulmonary complications post-transfusion and delays in transfusion continue to be the leading causes of death.



LABORATORY ERRORS

In 2018, 2020/2905 errors originated in clinical areas and 885 (31%) in the laboratory. These 885 laboratory errors include 355 near misses. This is an increase compared to 2017 when there were 409 errors and 331 near misses reported. The incidents suggest that laboratory staff are working beyond their capability or knowledge, and deviating from the standard laboratory operating procedures.

There were four cases of ABO-incompatible component transfusion originating in the laboratory. One resulted in major morbidity (group B red cells transfused to a group A patient). There were two unintentional ABO-incompatible transfusions of fresh frozen plasma and one of cryoprecipitate.

Two additional laboratory errors led to major morbidity – issue of the wrong group blood to a solid organ donor recipient (patient group B, donor group O) leading to an acute reaction with fever and haemolysis requiring ITU admission; and issue of K+ red cells to a patient with anti-K.

Failure to provide irradiated cellular components when indicated: 17/81 incidents originated in the laboratory.

Laboratory errors occurred at different stages of the transfusion process and most often in component labelling and availability, and handling and storage

IMAGE: ISTOCK

KEY SHOT MESSAGES

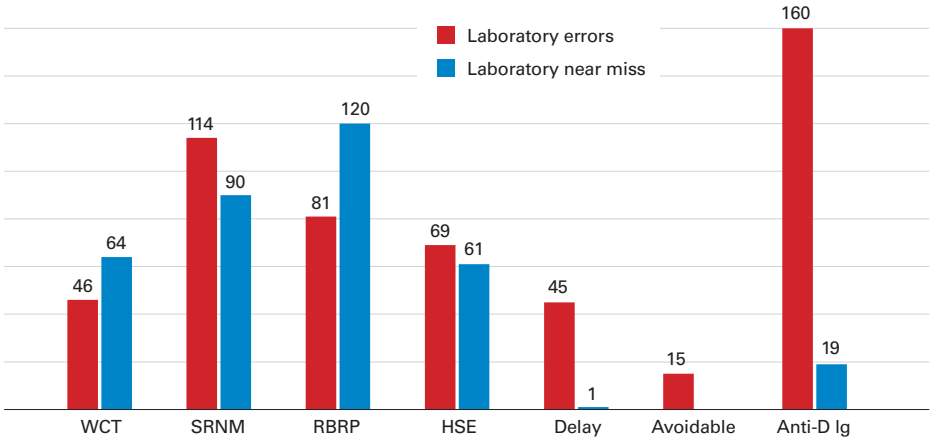
- Errors account for 87.3% of all reports (including near miss and right blood right patient).
- Near miss events continue to account for a large proportion (43.6%) of the incidents reported to SHOT and have increased again this year.
- Staff involved in transfusion need to be vigilant at each step in the transfusion process - they should verify each step, particularly where patient identification is involved, and should never make the assumption that errors could not have been made in the preceding steps in the process or anytime in the past. Clinicians need to be aware of the risks of transfusion-associated complications in patients with severe anaemia and should be extra cautious when the patients have additional risk factors.
- Staffing challenges are noted as contributory to many events reported to SHOT. Staffing levels must be appropriate in all areas involved in transfusion.
- Emergency transfusion saves lives. Do not delay. Do not let the patient bleed to death or die from anaemia.
- A just and learning culture is vital to promote safety in organisations. Incident investigations should be thorough and identify attributable system-related and human factors so that appropriate actions can be instituted.

errors. These generated several SHOT learning points including:

- Treatment plans with a detailed timetable should be provided for transplant patients.
- Upgrading the LIMS: Thorough knowledge and validation of the LIMS as well as capture of data from legacy systems are essential for mitigation of transfusion errors and for compliance.
- Routine use of Sp-ICE (the NHSBT electronic database for England shared between hospitals) at sample receipt can prevent errors in selection of components for patients with complex transfusion histories.
- Care must be taken when selecting components that look similar.
- A group-check policy should be in place. Issue of group O blood/AB plasma in an emergency can mitigate patient identification errors prior to group-check of a second sample.
- Components must be correctly stored. Robust procedures and prompt actions upon alert are required for component storage temperature monitoring.
- Identification of patients born after 1 January 1996: care must be taken so that these individuals who require pathogen-inactivated components are not overlooked.

Multiple errors in the transfusion process are common. Contributory factors include poor communication, gaps in knowledge and training, poor clinical decision-making, deviations from standard procedures, and staffing issues. There is increasing concern in some organisations about the prevalence of a culture that prevents learning from experience. A punitive approach discourages reporting and learning. Mark Bellamy, Chair of the SHOT steering group, advises that a "...system in which both complications of transfusion, and near misses (including delays and omissions) are openly reported and shared is crucial to advancing safety, building on the advances of the last 25 years".

LABORATORY INCIDENTS AND NEAR MISSES (N=885)



WCT=wrong component transfused; SRNM=specific requirements not met; HSE=handling and storage errors; RBRP=right blood right patient; Ig=immunoglobulin

A recurring theme over the several years of SHOT reporting is evidence that laboratory staff are working under increasing pressure. Claire Whitham (reporting from NEQAS) has seen this reflected in increased EQA errors, many of which were attributed to such pressures as well as errors caused by failure to follow manufacturers' instructions and lack of individual knowledge. Rashmi Rook (reporting from the UK Transfusion Laboratory Collaborative) reports that attendance at professional meetings by transfusion managers and biomedical scientists needs to urgently improve so that collective knowledge is not lost as people retire.

Inadequate incident investigation continues to be an area of concern. Investigations often lack sufficient depth, detail and scope. Unless the root cause is identified and corrected, the underlying problem will not be addressed. Chris Robbie from the MHRA says: "Errors are almost always the result of individuals not performing the task they should have done". However, this should not mean the individual was at fault. "Human factors" principles are based on the knowledge that an individual is unlikely to be solely to blame when something goes wrong. The underlying systems issues need to be identified and addressed. SHOT maintains that human factor approaches, whether in the laboratory or clinical area, can lead to strategies for enhancing patient safety.

Laboratory staff (and all staff involved in the transfusion process) should take heed of the key SHOT messages (see previous page) and should embrace human factors training.

In conclusion, it is clear that transfusion safety continues to be compromised by errors. Staff need to be vigilant at all steps of the transfusion process, getting it right the first time. Appropriate staffing and training are essential. Transfusion laboratory practice should be underpinned with robust, validated IT systems, which will help to reduce the risks of transfusion errors. BMS

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