9 Handling and Storage Errors (HSE) n=192

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Definition:

All reported episodes in which a patient was transfused with a blood component intended for that patient, but in which during the transfusion process, handling or storage errors may have rendered the component less safe for transfusion.

Key SHOT message

- **Return of blood components:** The British Society for Haematology (BSH) updated guideline for the administration of blood components notes changes to the 'Return of Blood Components' section. This guidance should be risk-assessed against local practice and agreement reached as to whether they are adopted in whole or in part (BSH Harris et al. 2017)

In 2016 there were 192 cases reported compared to 254 in 2015 (Bolton-Maggs et al. 2016). Clinical errors accounted for 146/192 (76.0%) and laboratory errors for 46/192 (24.0%). Laboratory errors have reduced from 122 to 46. There has been a noteworthy reduction in cold chain errors (CCE) from 134 in 2015 to 61 in 2016, Figure 9.1. This reduction in reports might be due to a number of factors, particularly that there were several multiple reports in 2015 due to refrigerator failures. The number in 2016 is more consistent with 2013 n=67 and 2014 n=79. All laboratory HSE-related errors are discussed in detail in Chapter 7, Laboratory Errors.

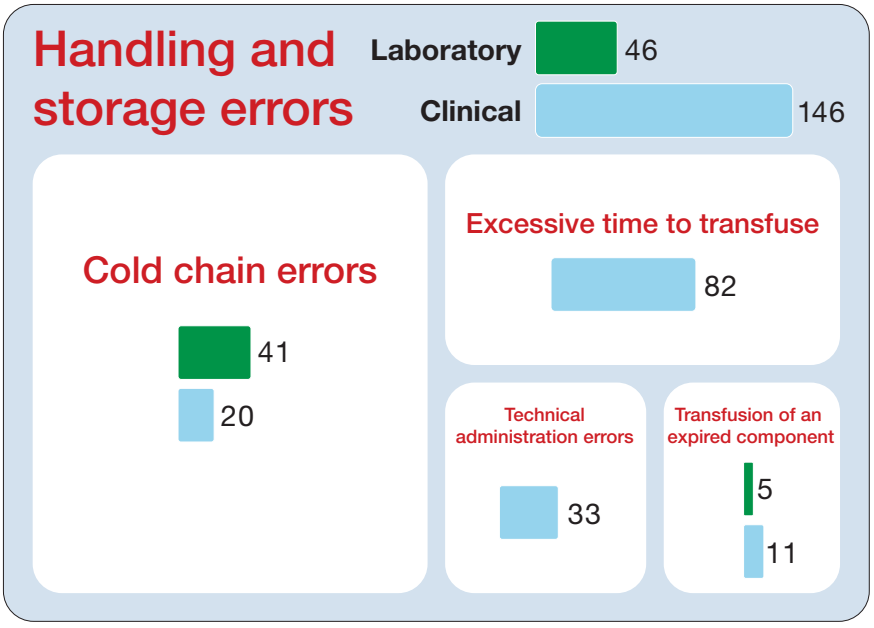

Figure 9.1: Breakdown of clinical and laboratory HSE data n=192

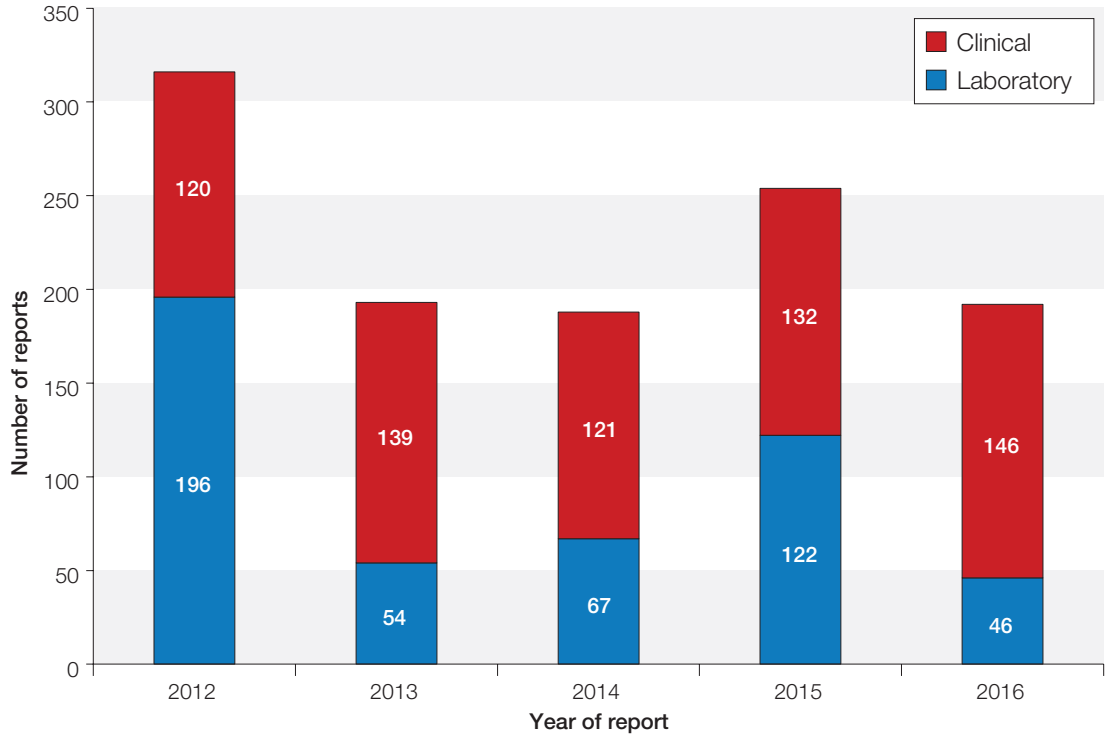

Figure 9.2: Breakdown of clinical and laboratory HSE data 5-year trend

Case 9.1: An additional risk to an immunocompromised patient (technical administration error)

A haematology patient with sepsis related to neutropenia was admitted via the emergency department to a general ward before being transferred to the haematology ward the next day. The patient needed a blood transfusion but the nurse damaged the bag during spiking. The patient reported that the nurse then taped up the bag and continued with the transfusion. The bag was discarded when there was further leakage before the unit was completed.

This case highlighted that a patient who was already immunocompromised and unwell was put at additional risk by this error. It has not been established if the staff member had undertaken this action as a result of not wanting to waste the unit. However staff should take the correct action and discard the punctured bag immediately.

Case 9.2: Failure to transport components appropriately (cold chain error)

A patient was transferred to a ward out-of-hours as an emergency by a technician as there was no other escort with the patient. The patient had a platelet transfusion in progress and an additional component was found in a carrier bag with no record of when the red cell unit had been removed from controlled temperature storage.

Learning point

- All staff (clinical and laboratory) should ensure that components are packaged appropriately in a validated transport box and that the correct documentation accompanies the components. Clinical staff should contact their local transfusion laboratory to seek advice and be aware of local policy before transferring patients

Near miss HSE cases n=124

Table 9.1: Near misses that could have led to HSE n=124

Point in the process	Type of error made	Number of cases	%
Component selection	Time-expired unit selected	7	5.6
Collection	Time-expired component available	33	26.6
Administration	Inappropriate storage in clinical area	55	47.6
	Incorrect transport/packing of units	3	
	Wrong giving set used	1	
Other	Incorrect storage in the laboratory	17	20.2
	Component available outside sample suitability	7	
	Part-used unit returned to refrigerator	1	
Total		**124**	**100**

In 2016 there was an increase in near miss HSE cases, 124 compared to 97 in 2015. The main causes of this increase were:

- Laboratory errors causing time-expired components to remain available for clinical staff to collect, 33 in 2016; 12 in 2015
- Components being stored incorrectly in the clinical area 55 in 2016; 26 in 2015

Information technology (IT)-related HSE cases n=3

All three cases related to refrigerator alarms. In one case the power to the refrigerator was cut and the temperature exceeded 6°C but the alarm did not work as intended so the blood was transfused. On another occasion a refrigerator was out of temperature control and temperature mapping was unsatisfactory but blood was still transfused because the alarms were not acted on correctly.

Case 9.3: Blood-tracking system fails to prevent storage of platelets in the refrigerator

The theatre porter collected platelets and fresh frozen plasma (FFP) required for surgery from the transfusion department. On arrival in theatre the FFP was scanned into the theatre refrigerator using the blood-tracking system. The blood-tracking kiosk tried to prevent the platelets being put in the refrigerator by issuing a storage alert when the unit was scanned. Ignoring this, the emergency button was pressed and the platelets were put in the refrigerator. On attempting to scan the platelets to remove them from the refrigerator an alert stating that the unit was not in the location (because they had not been scanned in) was also ignored and the platelets were taken to theatre and transfused to the patient.

Learning point

- Satellite refrigerators improve access to blood for patients but must be used correctly and staff must be trained to understand the action to take when an alarm or alert is noted

Commentary

All staff should note the potential for error in relation to removing, returning, transferring and administering components; staff should adhere to the recommended infusion times and use the correct giving sets.

All laboratory-related HSE are discussed in further detail in Chapter 7, Laboratory Errors.

References

Bolton-Maggs PHB, Poles D et al. (2016) **The 2015 Annual SHOT Report.** www.shotuk.org [accessed 20 April 2017]

BSH Harris AM, Atterbury CL et al. (2017) **Guidelines on the administration of blood components.** Transfus Med submitted