2024 Annual SHOT Report – Supplementary information

Chapter 15a: Near Miss – Wrong Blood in Tube (WBIT)

Additional data tables and analysis not included in the main 2024 Annual SHOT Report.

Introduction

Every year the largest number of SHOT reports are wrong blood in tube (WBIT) events. In 2024, 899 WBIT events were analysed. In 448/899, where the patient and the blood component blood groups were both provided, 184/448 (41.1%) patients could have potentially received an ABO-incompatible transfusion.

In 2024, SHOT received 160 reports from emergency department (ED) and 237 from wards. In total there were 349 WBIT events related to maternity cases. To understand the contributory factors in the maternity and non-maternity (ED and wards) settings, a deep dive was conducted on the information provided by the reporters on the Human Factors Investigation Tool (HFIT) in the SHOT questionnaires. Careful comparison of the data is required as the number of responses for each question and from each setting differs throughout the HFIT questionnaire. This is demonstrated by the different denominators in the tables below.

In the 2024 Annual SHOT Report, all the departments included in Table 15a.2 reported situational factors as those having a bigger impact on the incident. Situational factors might refer to failures in the team function, issues affecting the particular staff involved, tasks features or something specific related to the patient.

Table 15a.2: Human factors identified with the greatest impact on the WBIT events reported from ED (non-maternity cases), wards (non-maternity cases) and maternity settings

	ED (n=142)	Wards (n=204)	Maternity (n=306)
Communication and culture	15 (10.6%)	29 (14.2%)	42 (13.7%)
Local working conditions	28 (19.7%)	38 (18.6%)	63 (20.6%)
Situational factors	**70 (49.3%)**	**108 (52.9%)**	**161 (52.6%)**
Organisational factors	29 (20.4%)	29 (14.2%)	38 (12.4%)

External factors	0 (0%)	0 (0%)	2 (0.7%)

HFIT questionnaire

To understand the main contributory factors in the WBIT events, each HFIT section was analysed by its individual questions as shown in Table 15a.3.

Table 15a.3: Contributory factors identified in each question of the SHOT HFIT separated by ED (non-maternity cases), wards (non-maternity cases) and maternity settings

Total number of SHOT reports in 2024	ED n=160	Wards n= 237	Maternity n= 349
Communication and culture			
Did a lack of safety culture in your area contribute to this incident?	18/145 (12.4%)	29/210 (13.8%)	49/310 (13.9%)
Did poor written, or verbal communication worsen the situation?	19/144 (13.1%)	48/209 (23.0%)	73/308 (23.7%)
Local working conditions			
Was there a mismatch between workload and staff provision around time of the incident?	49/145 (33.8%)	67/205 (32.7%)	111/311 (35.7%)
Was there any failure of team function in relation to leadership, supervision and roles?	14/144 (9.7%)	27/206 (13.1%)	41/312 (13.1%)
Were there any difficulties obtaining the correct equipment and/or supplies?	17/146 (11.6%)	23/207 (11.1%)	37/312 (11.9%)
Situational factors			
Does the cause of this incident include any failures in team function?	29/148 (19.9%)	50/210 (23.8%)	58/315 (18.4%)

Were there any reasons this incident was more likely to occur with the particular staff involved?	30/147 (20.4%)	64/212 (30.2%)	90/317 (28.4%)
Did task features make the incident more likely?	28/144 (19.4%)	54/212 (25.5%)	78/314 (24.8%)
Were there reasons that this incident was more likely to occur to this particular patient?	23/146 (15.8%)	34/212 (16.0%)	52/313 (16.6%)
Organisational factors			
Did the environment hinder work in any way?	49/144 (34.0%)	56/207 (27.1%)	70/312 (22.4%)
Were there problems in other department that contributed?	16/144 (11.1%)	11/206 (5.3%)	25/314 (8.0%)
Did organisational pressures play a role in the incident?	44/144 (30.6%)	53/208 (25.5%)	64/312 (20.5%)
Were there issues or gaps with staff skill or knowledge?	17/146 (11.6%)	64/206 (31.1%)	71/312 (22.8%)
External factors			
Were there any characteristics about the equipment that were unhelpful?	9/147 (6.1%)	18/214 (8.4%)	27/316 (8.5%)
Have any national policies or high-level regulatory issues influenced this incident?	2/146 (1.4%)	11/214 (5.1%)	4/315 (1.3%)

**Please note that the denominator changes throughout the HFIT questions from each setting. This relates to the number of responses received from reporters. Blank responses were not included in this analysis.*

Table 15a.3 shows that mismatch between workload and staff levels at the time of the incidents was the most common contributory factor reported by each setting, representing more than 30% of the responses provided; ED 49/145 (33.8%), wards 67/205 (32.7%) and maternity (35.7%). Additionally for maternity cases, the other two most common factors were in the situational

section with reporter identifying that the incident was more likely to occur with the particular staff involved, 90/317 (28.4%), and task features making the incident more likely to occur, 78/314 (24.8%). For non-maternity cases in ED, organisational factors had a higher impact with 49 (34.0%) and 44 (30.6%) respondents out of 144 identifying that the environment hindered work and organisational pressures had a role in the incident respectively. In wards, the most common factors were organisational relating to issues or gaps in staff knowledge and skills (64/206; 31.1%) and situational where the event was more likely to occur with the particular staff involved (64/212; 30.2%). The answers provided by each setting represent the specific challenges faced in the location, with all reporting high acuity and lack of resources including staff to match the demand.

Additional details provided in the HFIT section

All comments provided by the reporters in the HFIT sections were analysed together with the responses provided in Table 15a.3. These were divided by themes as shown in Table 15a.4. Analysis of this data provided a deep insight of the challenges, barriers and issues encountered often on a daily basis in ED, wards and maternity settings.

Table 15a.4 shows a comprehensive list of the themes mentioned by the reporters. The numbers displayed in Table 15a.4 show the number of times that each factor was mentioned in the report. It requires careful interpretation of the results as there were reports where the same contributory factor was mentioned in more than one section of the HFIT, resulting in a potential over representation of these contributory factors. It is important to note that all the information provided by the reporters was voluntary and anonymised.

Table 15a.4: Number of times that each additional contributory factor was reported to SHOT in the comment sections of the HFIT questionnaire from ED (non-maternity cases), wards (non-maternity cases) and maternity cases

Total number of SHOT reports in 2024	ED n=160	Wards n= 237	Maternity n= 349
Pressurised environment	23	28	21
High workload	61	60	54
Staff multitasking or mismatch between workload and staff	19	47	27
Lack of space for safe practice (e.g., lack of space for trolleys, workstations and/or equipment)	24	5	10
Poor lighting	1	10	0
Patients in corridors	7	3	0

IT issues (e.g., not working or not working as expected/no access to IT/IT not promoting safe practice/IT not user friendly/IT in place but not available to use)	11	27	31
Gaps in knowledge and/or inefficient training	19	62	29
Historical culture of poor practice/resistance to change	3	7	6

Commentary

In the comments section (Table 15a.4), according to the answers provided by the HFIT questionnaire (Table 15a.3), the most common factor mentioned in each setting was high workload. This was often associated with comments about pressurised environment and staff multitasking or a mismatch between the demand and the staff available at the time of the event. Another contributory factor identified in all settings was gaps in knowledge and/or inefficient training.

It has been shown that a poor staff mix can impact negatively on patients' care and outcomes. This represents an extra burden to the skilled staff who are already stretched and under pressure to fill the gaps in knowledge and skills in the team while continuing to provide a high quality care for patients (RCN, 2023; House of Commons Health and Social Care Committee, 2021). Reporters also mentioned frequent distractions leading to loss of focus, confusion and miscommunication; all common factors known to increase the likelihood of an incident. Wards and maternity also commonly mentioned information technology (IT) issues either IT not working as expected or staff without access to devices. There were cases where IT was identified as not promoting a safe practice or not user friendly. This highlights the importance of a thorough system-thinking approach when designing and implementing a new IT system, which has been previously recommended by SHOT (Narayan, et al., 2024). When implementing an IT system, human factors should be considered to ensure the IT system is fit for purpose and promotes safe practice to avoid workarounds. IT issues were not exclusive to WBIT events; in fact, in all reporting categories there has been an increase in the number of events reported to SHOT where IT was implicated. Although IT systems have been shown to improve transfusion safety by preventing errors and save staff time (Vickers, et al., 2025), if IT systems are not configured or used appropriately there is a risk that new errors are introduced into the processes. An example of this was highlighted in 2024 by SHOT in relation to the maternity IT system where the D-status of the mother and/or neonate were required to be entered manually (SHOT, 2024). This lack of interoperability resulted in transcription errors leading to unnecessary administration of anti-D immunoglobulin (Ig) in D-positive women/birthing people and omission/late administration of anti-D Ig in D-negative women/birthing people.

When assessing the individual setting i.e., ED, wards or maternity, contributory factors were identified that were specific to the location. One of these examples was 'poor lighting' reported 10 times from wards. This factor is mainly present when the samples are taken early in the morning while patients are still sleeping. The dim light and the complaint of disturbance by patients when turning the light on impacted on the ability of healthcare professionals to follow the correct practice of taking and labelling samples at the patient's side. Another example specific to location was the 'corridor care' reported by wards (n=3) and by ED (n=7). Additional related information was added by reporters; that having patients in corridors had become the 'norm'. This can result in reporters not mentioning it when submitting an event to SHOT as it can be perceived and accepted as normal practice in their organisation. However, as mentioned by different sources, patients staying in corridors reflect the current crisis in the NHS and should not be accepted as patient safety, dignity and respect is suboptimal (RCN, 2025; Sheather, 2025). Another factor more commonly reported by ED (n=24) was the lack of space for safe practice, this included staff not having space for trolleys, equipment or not enough workstations for the team. These were also reported by maternity (n=10) and wards (n=5). Once more it highlights the importance of a systems-thinking approach when designing the layout of the area or department. For an effective system to work it is crucial to understand how the different parts interact, react and impact.

One last factor that was mentioned by all departments even though in small numbers were poor practice embedded in the culture of the workplace or staff being resistant to change. Again, the same question comes to light as for the 'corridor care'; do the low numbers represent an improvement in the culture or a sign of being accepted as the norm?

Limitations

The analysis of the WBIT events reported to SHOT, including the responses in the HFIT questionnaire can only be as robust as the data reported. As shown in the tables above, there was a percentage of cases in each setting where no information was provided. In average, the HFIT questionnaire was reported in; 145/160 (90.6%) from ED, 209/237 (88.2%) from wards and 313/349 (89.7%) from maternity cases. This accounts for 79 cases where the questions related to human factors were not complete. Also, the number of responses obtained for each question was variable which makes difficult to establish a direct comparison of results.

Conclusion

The additional analysis performed in 2024 aims to increase awareness of the challenges that are faced by the healthcare professionals in each setting and the individual characteristics of each location. WBIT events have been the highest number of events submitted to SHOT every year and issues with patient identification have been highlighted for more than 25 years. It is important to remember that every WBIT sample can potentially result in serious consequences for the patient if not identified before transfusion.

References

House of Commons Health and Social Care Committee, 2021. *Workforce burnout and resilience in the NHS and social care,* London: UK Parliament. Available at: https://committees.parliament.uk/publications/6158/documents/68766/default/ [Accessed 02 May 2025].

Narayan, S. et al., 2024. *The 2023 Annual SHOT Report,* Manchester: Serious Hazards of Transfusion (SHOT) Steering Group. doi: https://doi.org/10.57911/605r-em59.

Royal College of Nursing (RCN), 2023. *Impact of Staffing Levels on Safe and Effective Patient Care.* [Online] Available at: https://www.rcn.org.uk/Professional-Development/publications/impact-of-staffing-levels-on-safe-and-effective-patient-care-uk-pub-010-665 [Accessed 02 May 2025].

Royal College of Nursing (RCN), 2025. *On the Frontline of the UK's Corridor Care Crisis*. [Online] Available at: https://www.rcn.org.uk/Professional-Development/publications/rcn-frontline-of-the-uk-corridor-care-crisis-uk-pub-011-944 [Accessed 02 May 2025].

Serious Hazards of Transfusion (SHOT), 2024. *SCRIPT articles.* [Online] Available at: https://www.shotuk.org/script/script-resources/script-articles/ [Accessed 16 May 2025].

Sheather, J., 2025. Ethics and corridor care: a contradiction in terms?. *BMJ,* 388(r91). doi: https://doi.org/10.1136/bmj.r91.

Vickers, M., Murphy, M., Graham, R. & Neuberger, J., 2025. We should implement electronic blood management systems across the UKT to imrpove blood transfusion safety. *BMJ,* 389(r700). doi: https://doi.org/10.1136/bmj.r700.