

# Thinking outside the box: Consideration and application of systems-thinking principles for improving transfusion safety

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## 1. Introduction

Serious Hazards of Transfusion (SHOT) is the United Kingdom independent haemovigilance scheme, which accepts reports on transfusion serious adverse events (SAE) and reactions (SAR)

While human factors are increasingly being used in healthcare, many incident investigations submitted still incorrectly identify an individual as being the sole cause of an SAE

Healthcare is a complex system with many dynamic interactions between people, tasks, technology, environments (physical, social and cultural), organisational structures and external factors

For optimal learning and improvement, analysis of safety issues should take a 'systems approach' to identify latent system conditions that interacted and contributed to the event and recommend evidence-based change to reduce the risk of recurrence

## 2. Methodology

This abstract will examine three case reports submitted to SHOT:

1. Where a systems approach was not considered throughout the investigation
2. Where such an approach could have improved corrective and preventive actions (CAPA)
3. Where it was used effectively throughout.

## 3. Results

### Case 1:

- Antigen-positive red cells were transfused to a patient due to laboratory staff rushing to finish work before the end of the shift
- Suboptimal incident investigation blamed staff, stating 'staff being busy' was an 'excuse' instead of considering how workflow, workload, and safety culture impact on decision-making
- CAPA were directed toward the individual, and involved reflection and checking competency-assessments were in date, with missed opportunities to address systemic factors

### Case 2:

- An ABO-incompatible (ABOi) transfusion of fresh frozen plasma occurred following selection of the wrong component in the laboratory
- The investigation identified short staffing, information technology (IT) failure and component storage environment as contributory factor
- However, component storage environment and actions for the individual involved were the only factors considered in CAPA
- No actions to improve staffing, shift patterns or IT systems were implemented, which could have prevented future safety incidents

### Case 3:

- An ABOi transfusion of red cells occurred due to communication issues when clinical staff ordered the component, and process drift causing pre-administration checks to be completed away from the patient's side
- The investigation for this case identified how factors such as handover for breaks impacted on communication, how COVID-19 had caused drift in practice which hadn't returned to normal and how cognitive bias and familiarity affected the patient identification process
- CAPA were related to these system factors, for example introducing an electronic patient identification system and a change in policy for handover, and not the individuals involved. The findings were also widely shared within the hospital

## Conclusions

To prevent incident recurrence application of human factors and ergonomics principles and systems thinking is required

Application of a systems approach underpins, and is characteristic of, a holistic approach to safety. This promotes safe transfusion and a positive safety culture

When systems approaches are not considered, energy may be expended in an incorrect direction. This costs unnecessary resource and compromises patient safety as appropriate CAPA cannot be implemented



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