# 4 Key Messages and Recommendations

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## Abbreviations used in this chapter

| | | | |
|---|---|---|---|
| **EPI** | Electronic patient identification | **PID** | Patient identification |
| **HFE** | Human factors and ergonomics | **RBRP** | Right blood right patient |
| **HSIB** | Healthcare Safety Investigation Branch | **SOP** | Standard operating procedures |
| **IBCT** | Incorrect blood component transfused | **WBIT** | Wrong blood in tube |
| **NHS** | National Health Service | **WCT** | Wrong component transfused |
| **NTS** | Non-technical skills | **WHO** | World Health Organization |

## Key SHOT messages

- **Patient safety culture:** Fostering a strong and effective safety culture that is 'just and learning' is vital to ensure a reduction in transfusion incidents and errors, and to improve patient safety
- **Shared care:** Clear, timely and comprehensive communication between all teams and hospitals involved in patient-care is vital in ensuring patient safety. Robust and transparent processes must be in place for safe and effective transfer of information at all points in the patient care pathway
- **Investigating incidents:** Investigations must be systematic and thorough, proportionate to the risk and impact, identifying systems-based corrective and preventative actions. Systemic and organisational problems should be fully investigated, as staff-related amendments are less likely to resolve underlying systemic issues
- **Staffing challenges:** Staffing levels must be appropriate in all areas involved in transfusion. Staff should not be permitted (let alone instructed) to undertake tasks for which they have not been competency-assessed
- **Standard operating procedures (SOP):** SOP need to be simple, clear, easy to follow and explain the rationale for each step. This will then ensure staff are engaged and more likely to be compliant and follow the SOP
- **Learning from near misses:** Reporting and investigating near misses helps identify and control risks before actual harm results, providing valuable opportunities to improve transfusion safety

Blood components continue to be very safe. Morbidity and mortality associated with transfusions are often due to suboptimal practices and ill-judged transfusion decisions that need to be improved.

Transfusion is a complex multistep process involving members of several different professional groups i.e. nurses, doctors, laboratory scientists as well as the donors and recipients. The key messages and recommendations from the previous Annual SHOT Reports remain relevant and all healthcare organisations involved in transfusion are encouraged to continue implementing these and ensuring measures have been effective.

The principles of safe prescribing and safe administration of medications (Royal Pharmaceutical Society 2016) led to the development of the 10 'Rs' framework and acknowledges that the responsibility for

managing the environment in which drug administration takes place, and reducing the possibility of drug errors, is a multi-disciplinary concern (Edwards 2015).

Similarly, to reduce transfusion errors and ensure safer transfusion practices it is imperative to employ a broader, holistic understanding of the transfusion process end to end. Transfusion errors have been seen along all steps of the transfusion process and the 10 'Rights' includes considerations to follow before, during and after transfusions by both clinical and laboratory transfusion staff. These considerations are flexible and encompass the need to include critical thinking when making transfusion decisions which can be complex. Assessing risks and making such decisions requires complex thought processes to ensure safe practices. All staff involved in blood transfusions need to have essential knowledge of the blood components, indications for use, alternate options available, risks and benefits and possible reactions and their management.

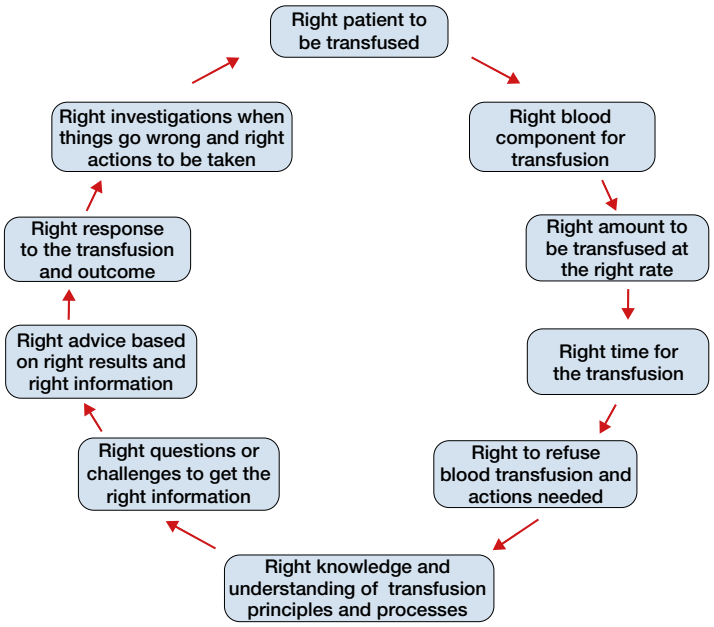



**Figure 4.1: Ten 'Rights' for safe transfusions**

The Safe Transfusion Checklist helps cover most aspects of the transfusion process at the bedside. The updated ABCDE approach to transfusions helps in the decision-making process and is shown below:

**A**

Assess patient
Any avoidable blood loss
(frequent, unnecessary tests/interventions)

**B**

Blood results (all) reviewed including trends – valid and reliable?
Best treatment option—is transfusion the best treatment option? If yes, what components needed, how many, what order and any specific requirements needed?

**C**

Consent/communication (adequate patient information—both verbal and written) to patients and where appropriate to families and carers
Correctable factors to be addressed like bleeding, haematinic deficiency

**D**

Do not forget other measures (vitamin K, tranexamic acid, cell salvage, etc)
Do not hesitate to question colleagues regarding decisions made and ask for rationale
Do not forget to document in patient's notes and in discharge summaries

**E**

Ensure timely communications to laboratory- need to be clear, concise and accurate
Ensure all relevant transfusion checklists including TACO risk assessment and actions arising thereafter have been completed
Evidence based decisions made weighing risks, benefits and options available
Ensure patient receives adequate post-transfusion information if transfusion given as a day case

**Figure 4.2: The A-E decision tree to facilitate decision making in transfusion**

# Key SHOT recommendations for 2019

## Patient identification (PID) errors

Despite the priority placed on addressing PID in previous Annual SHOT Reports, significant problems persist in both the clinical and laboratory areas. Patient misidentification has been recognised in several incidents reported to SHOT in various categories like incorrect blood component transfused (IBCT), right blood right patient (RBRP) and anti-D immunoglobulin errors.

A fundamental criterion for PID is an accurate identifier. Problems identified included inadequate aspects of identifier design, including illegibility (small font, or handwritten bands), ink that degraded with exposure to water, bands too narrow to accommodate the printed PID sticker. In July 2007 the National Patient Safety Agency (NPSA) issued Safer Practice Notice 24 – Standardising wristbands improves patient safety (NPSA 2007). This outlined the actions for NHS organisations to ensure standardised minimum criteria were used for patient wristbands and contained important information to guide local PID policy writing. Identification bands may be inaccessible or removed, posing risks for vulnerable patients who are unable to communicate or are confused. Similarly, specimen labels were often unclear due to small font size along with inadequate demarcation between labels printed for different patients.

If PID protocols are not being followed, organisations should consider seeking feedback from staff, and minor alterations in design may prove helpful. Simple low-technology measures (larger wristband size, using different ink) that reflect smart, thoughtful design using human factors principles will provide solutions. The use of electronic patient identification (EPI) systems has been shown to result in a lower incidence of wrong component transfused (WCT) and near misses such as wrong blood in tube (WBIT) compared to manual processes (Murphy et al. 2019). The Healthcare Safety Investigation Branch (HSIB) recommend (Recommendation 2019/46 (HSIB 2019)) that hospitals should take steps to ensure '*the adoption and ongoing use of electronic systems for identification, blood sample collection and labelling'.* It is important to note that PID errors have been reported even with EPI, often due to a system being used incorrectly, poorly located or staff inappropriately trained.

Registration and merging of patient records should be standardised with a policy in each healthcare setting to reduce the risks associated with incorrectly merging records. If electronic systems for patient identification are available, they should be utilised correctly by appropriately trained staff.

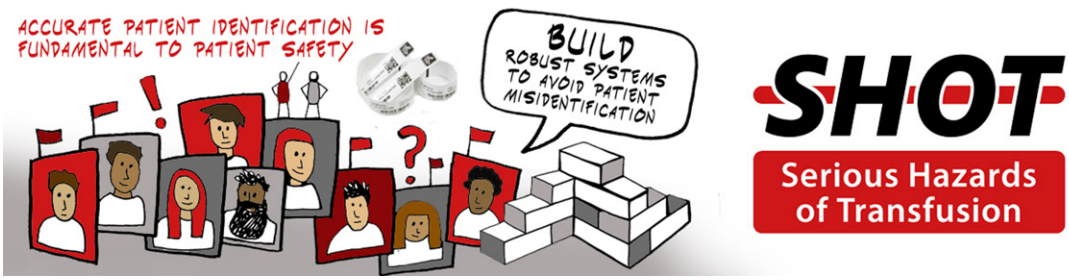
Studies have shown that involving the patient in their own care can lead to improvement in professional practice. Sustained long-term improvements will likely require a combination of good design, smart technology, and ongoing staff involvement.

Accurate patient identification is fundamental to patient safety and must underpin patient care at every stage, to ensure a safety-focused culture.

### Main recommendation 1

- Accurate patient identification is fundamental to patient safety. Organisations must review all patient identification errors and establish the causes of patient misidentification. Recognising gaps in existing processes, use of electronic systems, empowerment of patients and staff will reduce these errors

**Action: Hospital chief executives and medical directors, National Blood Transfusion Committee (or the equivalent for the devolved countries), hospital transfusion teams**



## Rethinking education and training of transfusion staff

While knowledge gaps and sub-optimal training of clinical and laboratory transfusion staff have been identified to contribute to several instances of poor transfusion decision-making, errors have been seen with trained and competent staff as well (Mistry et al. 2019). It is imperative and timely to review the content, delivery and assessment of transfusion education to all healthcare professionals.

Transfusion is an aspect of patient care which can occur within any discipline in the hospital. Hospital transfusion teams should escalate the findings from Annual SHOT Reports to medical directors and corporate governance teams to ensure transfusion safety is improved throughout the patient journey and that learning opportunities from serious adverse events and serious adverse reactions are not missed. It is crucial that all staff involved in transfusion are trained in relevant transfusion policies and procedures, but this alone does not suffice. As this training may no longer be classed as 'mandatory' by many Trusts and Health Boards, difficulties may occur in capturing all required staff groups. It is recommended that transfusion training and competency-assessment is included as a core component of hospital induction.

All staff in the NHS must be familiar with human factors and ergonomics (HFE) concepts. This was a key SHOT recommendation in last year's Annual SHOT Report. However, in order to truly improve transfusion and overall patient safety, HFE principles need to be integrated into all healthcare systems. Non-technical skills (NTS) such as interpersonal skills which include communication, leadership, teamwork, decision-making and situation-awareness skills need to also be embedded within staff. While technical skills help staff to get the job done e.g. the technical skill or know-how to operate a machine or conduct a certain operation, NTS enumerated above complement these technical skills and, when applied well, are invaluable in maintaining system safety and ensuring efficient and effective operations (Flin et al. 2008 and Gordon et al. 2012).

Clinical and laboratory transfusion staff must be given training in patient safety principles and quality improvement approaches including how to investigate incidents. Those investigating high level incidents occurring in complex systems need to be aware of and apply systems thinking principles. This will enable them to identify all contributing factors and map them from a systems perspective to bring about a system-wide change. Systems thinking provides a holistic investigative approach which considers a broad range of factors which lead to safety incidents (Canham et al. 2018).

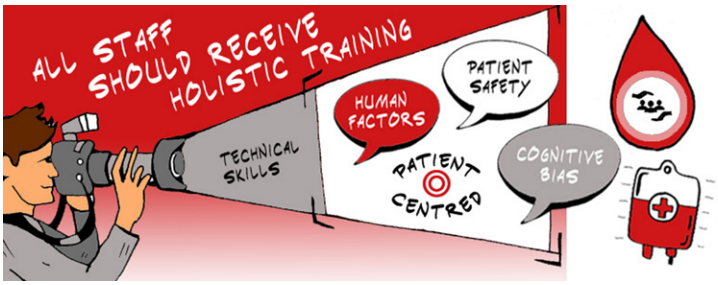
Cognitive biases are short cuts used to aid our decision-making and are increasingly recognised to contribute significantly to errors in healthcare. The causes of bias are varied, and include learned or innate biases, social and cultural biases, a lack of appreciation for statistics and mathematical rationality, and even simply environmental stimuli competing for one's attention. Several types of bias have been identified which may exist in different healthcare scenarios. Staff need to be aware of the potential for such bias, and be trained to recognise, and if possible, prevent through simple interventions such as formally 'slowing down', checklists and 'metacognition' (considering alternatives). Such strategies may help mitigate the effect of cognitive bias in healthcare and help make systems safer (O'Sullivan 2018).

Technology-enhanced learning aligned to adult learning principles will help better staff engagement and retention of key messages. Multidisciplinary learning with interprofessional education leads to better collaborative working, better teamwork between health professionals, improves patient/donor outcomes and helps overcome any perceived barriers that can hinder communication (McPherson 2001).

### Main recommendation 2

- Clinical and laboratory staff should be trained in fundamentals of transfusion, human factors, cognitive biases, investigating incidents and patient safety principles. Such a holistic approach will ensure safe, high-quality, patient-centred care and help embed an organisation-wide culture of learning from patient safety incidents

**Action: National Blood Transfusion Committee (or the equivalent for the devolved countries), hospital transfusion teams and all teams involved in educating staff**




SHOT
Serious Hazards of Transfusion

## Holistic approach to improving patient safety

The approach to patient safety has been conceptualised as two models: Safety-I and Safety-II. Safety-I refers to traditional or current approaches to safety management. It includes practices such as incident reporting, investigations, root cause analysis, guidelines and targets and is predicated on a 'find and fix' model. Most Safety-I practices are reactive – they are designed to retrospectively identify what went wrong after harm has occurred and are limited by ability to recall, inadequate reporting and hindsight bias affecting how the event is judged. Solutions often involve individual or team training or warnings and sanctions against individuals. Compliance with targets and procedures is also a feature of a Safety-I approach.

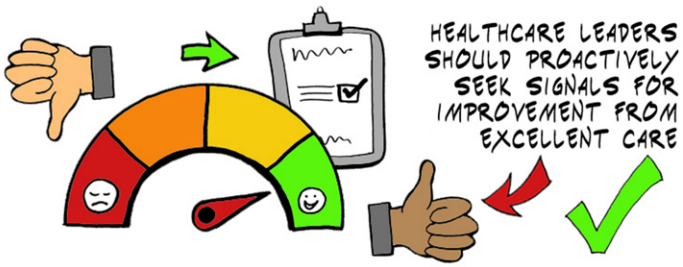
Safety-II seeks to understand the ability of staff in healthcare to adapt to problems and pressures. It is based on the view that healthcare is a complex adaptive system that is constantly changing in unexpected and unpredictable ways. The linear approach of Safety-I, which involves tracing causes of events and mapping out steps in procedures, does not consider the dynamic and flexible nature of healthcare practices. In a complex adaptive system, it is the humans who make things work by problem solving and adapting to the pressures in their environment. This is termed resilience as it refers to the capacity to bounce back from problems and pressures safely. Safety-II is a proactive approach that seeks to strengthen ability of staff to prevent problems before they occur and ensure high quality care even when there are pressures and competing demands.

Both Safety-I and Safety-II approaches are needed to build safer systems (Hollnagel 2015 and Braithwaite 2018). Safety-II does not replace Safety-I, instead both approaches complement each other. Resilience of any organisation is thought to involve four capacities: the ability to respond safely to problems as they occur, the ability to learn from experience and share that experience, the ability to monitor how things are going so that the need to respond can be identified as soon as possible, and the ability to anticipate future needs. The first step in trying to improve safety is to understand how well one's organisation or team is doing on these four capabilities and how they could be strengthened. Proactively and simultaneously seeking signals for improvement from unsafe, suboptimal and excellent care helps understand and build safer systems.

## Main recommendation 3

- All healthcare organisations should incorporate the principles of both Safety-I and Safety-II approaches to improve patient care and safety. Healthcare leaders should proactively seek signals for improvement from unsafe, suboptimal as well as excellent care

**Action: Hospital chief executives and medical directors, National Blood Transfusion Committee (or the equivalent for the devolved countries), hospital transfusion teams**




SHOT
Serious Hazards of Transfusion

## Bringing everything together: making system wide changes

Transfusion error reports received are seldom due to recklessness on the part of healthcare professionals or due to lack of trying hard enough. More commonly, errors are caused by faulty systems, processes, and conditions that lead people to make mistakes. The key to eradicating transfusion errors and advancing patient safety is to create systems for reliable healthcare delivery.

Systems-based strategies with a collaborative effort by everyone from board to ward in healthcare are needed urgently to reduce, if not eliminate, medical errors and bring about sustainable and tangible improvements in patient safety.

The World Health Organization's (WHO) 'Building Blocks' framework (WHO 2007) highlighted that a health system, like any other system, is a set of inter-connected parts that have to function together to be effective and in order to improve services, all inter-linked aspects of this system will need to be strengthened. According to this framework (see Figure 4.3), six building blocks constitute a health system. These are the six essential functions of the health system. Each building block needs to be strong to achieve the overall goals. Intermediate goals are access, coverage, quality and safety.

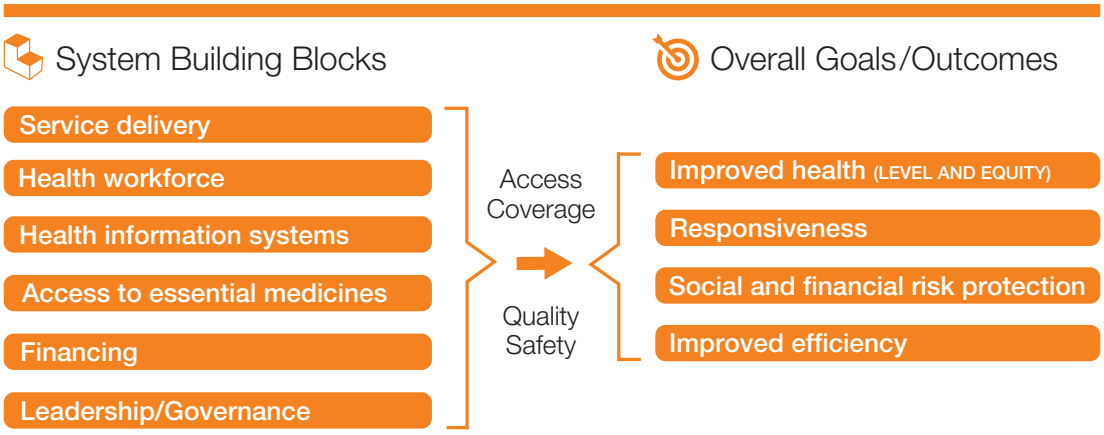



**Figure 4.3: The WHO health system framework**

### Main recommendation 4

- Healthcare management must recognise that safety and outcomes are multifaceted, a linear view of safety does not fully acknowledge the interdependencies of resources including their leadership, adequate staffing and knowledge. Healthcare leaders should ensure these are all in place to improve patient safety

**Action: Hospital chief executives**

In order to acknowledge how the building blocks were interconnected and interacted with each other, and to emphasise the fact that patients (consumers) and communities are at the centre of the health system, in 2009, WHO published an adapted version of the building blocks framework in a seminal publication on systems thinking (De Savigny 2009). This placed 'people' at the centre and showed the interconnectedness of the different blocks.

There are several frameworks highlighting the interdependency to bring about sustained improvements in patient safety. WHO's six building blocks illustrate clearly that improvements must be multifaceted. Focussing on healthcare professionals, without an awareness of what influences peoples' behaviours, is unlikely to produce sustained, tangible improvements (WHO 2010).

It is time to have a holistic approach towards achieving safer transfusions. Let's rethink strategy, consider the people involved, address their behaviours, attitudes, relationships and culture; ensure resources are in place, including adequate financial support with a well-trained, well-informed, resilient and competent workforce. Using technology to automate processes and reduce human intervention is vital. Clinical

and laboratory practices need to be evidence-based with robust governance processes and a safety culture that promotes learning from experience including instances of unsafe, suboptimal and excellent care. The long term aims of an incident reporting system, such as SHOT, are to help reduce incidents that result in harm while moving towards increased reporting of near miss events for future learning. Facilitating system-wide changes is a step in the right direction.

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