Key Messages and Recommendations 4

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With contributions from the SHOT Steering Group

Key SHOT messages

- **Safe staffing:** Clinical and laboratory teams can function optimally only if adequately staffed and well-resourced. Staffing challenges in both clinical and laboratory areas are commonly cited as contributory in transfusion incidents and must be addressed urgently. Adequate numbers of appropriately trained staff must be available to ensure safe transfusions; there should be contingency planning for staffing levels below a minimum level and for times of high workload
- **Well-resourced systems:** Healthcare leaders and management must ensure that staff have access to the correct IT equipment which is fit for purpose. Adequate financial resources are a must for safe and effective functioning of teams
- **Addressing knowledge gaps, cognitive biases, and holistic training:** Transfusion training with a thorough and relevant knowledge base in transfusion to all clinical and laboratory staff along with training in patient safety principles, understanding human factors and quality improvement approaches are essential. It is important that staff understand how cognitive biases contribute to poor decision-making so that these can be mitigated appropriately
- **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, thus directly improving patient safety
- **Addressing transfusion delays:** Avoidable transfusion delays continue to contribute to patient deaths and measures recommended in the SHOT CAS alert (SHOT 2022) must be implemented to address these
- **Addressing transfusion errors:** Errors continue to be the source of most SHOT reports (83.1%). While transfusions are largely safe, errors can result in patient harm. Many of these are caused by poor communication and distraction. These must be investigated using human factors principles-based incident investigations and appropriate mitigating measures implemented
- **Learning from near misses:** Reporting and investigating near misses helps identify and control risks before actual harm occurs, providing valuable opportunities to improve transfusion 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

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Abbreviations used in this chapter

ABOi	ABO-incompatible
AHSN	Academic Health Sciences Networks
AoMRC	Academy of Medical Royal Colleges
API	Application programming interface
CAS	Central alerting system
ESR	Electronic staff record
Hb	Haemoglobin
HSIB	Healthcare Safety Investigation Branch
ICS	Integrated care systems
IT	Information technology
LIMS	Laboratory information management systems
NCA	National comparative audit
NHS	National Health Service
NHSBT	NHS Blood and Transplant
TACO	Transfusion-associated circulatory overload
NICE	National Institute for Health and Care Excellence
UK	United Kingdom
WHO	World Health Organisation

The UK healthcare system is under unprecedented strain exacerbated by the COVID-19 pandemic resulting in extraordinary demands on the NHS and its workforce, with detrimental impacts on staff health and well-being. This is adversely impacting their capacity as well as motivation to continue working in healthcare.

A report into NHS workforce retention challenges and prospects, summarising headline findings from a series of large-scale UK-wide surveys of NHS employees has recently been published. This report highlights a rising trend in numbers of NHS staff applying for non-NHS jobs since the emergence of the COVID-19 pandemic (Weyman et al. 2023). It draws on three waves of survey data from over 17,000 NHS staff gathered between late 2020 and summer 2022. Key findings which are all sobering, highlight worsening morale, increased stress and workload amidst staffing shortages and disproportionate workload. More than a third of respondents reported 'tiredness' and 'low energy'; approximately one in four reported 'physical exhaustion', 'mental exhaustion' and 'feeling overwhelmed' most days or every day; of these about half attributed this completely to their job. 'Abnormally high staff shortages', 'Not enough time to do my job properly' and 'Impact of removing COVID-19 restrictions' were the highest ranked sources of worry amongst staff in April 2022. The proportion of staff applying for non-NHS jobs shows a rising trend, from one in ten (winter 2020-2021) to approximately one in seven (April 2022). The most frequently reported reasons why staff leave NHS employment are, in order of importance, stress, shortage of staff/resources and pay. Pay has become more salient since 2020. It was ranked 8th of the 15 variables explored at wave one of the surveys, rising to joint 4th at wave two and 3rd at wave three. Ratings of confidence in improvement to working conditions '…over the next 12 months' (beyond spring 2022) ranged from very low to modest across all the criteria explored.

The HSIB have published a third interim report in February 2023 on their investigation which focuses on staff well-being across the urgent and emergency care systems and impact on patient safety. The investigation concluded that whilst staff are trying their best to give good care, harm is happening and that affects the outcomes for patients and the ability for them to stay well. The report shows the strong link between patient safety and well-being and has emphasised that the two national plans overseeing both areas (in England) are not interlinked (The NHS People Plan 2020 and the NHS Patient Safety Strategy) as yet. NHS England have recognised this and to support this, HSIB have made a safety recommendation that they include staff health and well-being as a critical component of patient safety in the NHS Patient Safety Strategy.

The NHS staff survey from 2022 showed that the overall willingness of staff to recommend the NHS as a place to work has seen one of the biggest shifts, falling from 59.4% to 57.4%. There was lower staff confidence in the quality of care they felt able to deliver, compared with results from 2021 and staff willingness to recommend the NHS as a place to be cared for has fallen from 67.8% to 62.9%. Nearly 44.8% of staff reported feeling unwell as a result of work-related stress in the preceding 12/12 with 56.6% of staff reporting to have come to work despite not feeling well enough to perform their duties.

Shocking figures published by the Office for National Statistics show that overworked NHS staff are being driven to suicide, with one life lost every 3 days. In 2021, 144 healthcare workers (62 nurses, two midwives, six paramedics and 10 doctors) took their own lives, up by nearly 40% from 105 in 2011. Supporting mental health and well-being of staff must be a priority and should include psychological support and treatment as well as a national support service with more complex mental health needs brought about by issues such as trauma.

It is essential that we look at ways to support staff, optimise working efficiency, promote safety amidst challenges in the resource poor healthcare with a deepening workforce crisis – none of these challenges are likely to be resolved in the immediate future. If NHS is to meet its current and future operational challenges, it is imperative to look at innovative workforce solutions, improve resilience and mental well-being of our workforce, streamlining skills training and make jobs easier.

The following are the main recommendations prioritising digital innovations to support NHS staff, from the Health Innovation Network (HIN) which is a founding partner of DigitalHealth. London published in February 2023 (HIN 2023). DigitalHealth.London connects NHS staff, digital health companies and academics, to support them to improve the NHS and social care in London through digital technology.

- **Recommendation 1:** To allow time and 'head space' NHS organisations should prioritise and realise the return on investing in this important engagement. They can do this by providing protected time for frontline operational staff and clinical champions to co-design and implement digital workforce solutions. Maximising the support that AHSN can provide to reduce the time required for frontline staff to contribute and make the process efficient as possible
- **Recommendation 2:** Harness and legitimise the staff with an 'innovation mindset' who see opportunities for challenging the status quo and have the passion to drive innovation for patient and staff benefit. These internal innovators should be celebrated as pioneers and encourage wider digital champions across team
- **Recommendation 3:** NHS providers should maximise the opportunities that digital solutions provide to increase staff retention and attract clinicians by providing more flexibility of work patterns, overtime etc. through the use of technology
- **Recommendation 4:** Standardise and streamline the procurement process for commissioning digital solutions, to enable wider adoption at ICS level rather than in the piecemeal way that currently exists. Both NHS organisations and innovators should have the flexibility to enable faster and wider roll-out
- **Recommendation 5:** Companies need to identify and understand the financial pressures of NHS organisations and articulate better how their workforce solution will deliver efficiency savings
- **Recommendation 6:** NHS stakeholders and national policy makers at NHS England/NHS Digital should ensure that the systems such as ESR have open API. For example, the procurement of the replacement for the ESR should detail open API as a requirement in the specification
- **Recommendation 7:** Digital inclusion and time for digital skills training or onboarding needs to be embedded into rolling out solutions. This should take place alongside involving staff working at all levels in the development and testing of the solution to reduce the risks of failure that are normally associated with adoption of innovation within the NHS. To make solutions accessible for all staff provide bite-size or micro training that is embedded into their everyday work practices rather than taking clinicians away from frontline care

The publication from the Academy of Medical Royal Colleges, 'Fixing the NHS' (AoMRC 2022) highlights that a reformed system must centre on the needs of the whole person and of the whole population.

This requires:

- Expanding workforce numbers
- Improving patient access to care across all settings
- Reforming social care
- Embracing new ways of working
- Grasping the digital agenda
- Valuing our staff
- Modernising the NHS estate
- Revitalising primary care
- Greater focus on prevention and tackling health disparities
- Making better use of resources and ensuring there is adequate investment

This Annual SHOT Report highlights continuing error trends with 83.1% reports in 2022 related to preventable errors. Continuing reports of preventable ABO-incompatible transfusions resulting in patient deaths, increasing number of transfusion delays, avoidable transfusions and TACO are sobering to read. What is also evident is that the fundamental issues of staffing challenges, poorly resourced systems, with suboptimal implementation and use of IT solutions have not been addressed. Failing to identify and implement system-focused interventions reflects missed opportunities for enhancing safety and failure to optimally learn from incidents. It is also important to recognise that alongside examples of the failures of care, there are also eminent examples of innovation, staff working above and beyond striving to deliver safe care amidst all the challenges. These have also been highlighted throughout the Annual SHOT Report. It is encouraging to see a wider recognition of the importance of human factors principles but more needs to be done to use these in practice. An agenda for change with recommendations to enhance safety is covered in all the chapters. Without urgent interventions, the situation is only going to get worse. We must all act now and work together to improve systems and avoid normalising the unacceptable.

A driver diagram has been produced as a template for transfusion teams to use and adapt locally to identify tactical changes to help address the challenges and move towards a better and safer system. (see 'Recommended resources').

Key SHOT recommendations for 2022

The following main recommendations have been drafted to address the common themes identified as causal or contributory to adverse events that impact transfusion safety. Previous SHOT recommendations remain pertinent, and organisations must endeavour to progress implementation of the same if gaps are identified.

Appropriate management of anaemia and making safe transfusion decisions

Avoidable transfusions for haematinic deficiencies and reports of inappropriate management of anaemia continue to be reported to SHOT and the causes for these remain similar year-on-year. Information provided for several incidents demonstrates a lack of knowledge of basic haematology, particularly the characteristic features in the blood count in iron, B12 and folate deficiency. Avoidable transfusions can contribute to TACO which is evident in some cases reported to SHOT reinforcing the messages and recommendation for appropriate pre-transfusion assessment. Transfusions are a valuable and scarce resource, and every effort must be made to avoid unnecessary transfusions. This will also help ensure that patients are not put at unnecessary risk of exposure to blood components. Clinicians should be familiar with the 'Choosing Wisely' recommendations for transfusion and ensure that medical and nursing staff receive appropriate education and training about anaemia and its management. Haematinic deficiencies can be detected before severe anaemia develops and primary care teams can help address this before patients are admitted with severe symptomatic anaemia. The Evidence-Based Interventions Proposed List 2, drafted by the independent Expert Advisory Committee to the Evidence-Based Intervention programme and endorsed by the AoMRC (AoMRC 2020) supports the use of red cell transfusions only where indicated and then in single units, unless there are exceptional circumstances. While transfusions are safe there are inherent risks and unnecessary transfusions must be avoided wherever possible.

Appropriate laboratory tests should be performed in patients with suspected iron deficiency to help direct onward investigation and management based on national gastrointestinal and gynaecology guidelines and local pathways within individual healthcare settings (BSH Fletcher et al. 2022). The 2019 national comparative re-audit of the medical use of red cells showed significant numbers of asymptomatic or only mildly symptomatic patients being transfused when their Hb levels are above the recommended thresholds. In this audit, one in five patients were transfused because of iron-deficiency anaemia and nearly 5% of transfusions were documented as given because of B12 or folate deficiency or both (NCA 2019). The 2021 national comparative audit of NICE Quality Standard QS138 helped identify areas where there were gaps in implementing patient blood management measures and recommended that hospitals explore barriers to the implementation of the NICE Quality Statements for Blood Transfusion (NCA 2021) (NICE 2016). The NICE QS138 which is to be used in conjunction with the NICE guideline for Blood transfusion NG24, highlights four priority areas for improvement including iron supplementation, tranexamic acid for adults, reassessment after red blood cell transfusion and patient information. A quality improvement

benchmarking audit tool for hospitals to regularly self-assess their compliance to elements of the NICE QS138 Quality Standard has recently been introduced (NHSBT 2023). Decision-supporting tools such as the ABCDE approach to transfusions from SHOT, the Blood Assist App can support appropriate and safe transfusion decisions (see 'Recommended resources').

Main recommendation 1: Appropriate management of anaemia and making safe transfusion decisions

Patients should not be transfused with blood components where alternative and effective treatments are available. Patient blood management should be an established service within organisations. Cases of anaemia should be investigated and where haematinic deficiencies are identified, these should be corrected appropriately with minimal red cell transfusion. Identification and correction of anaemia should be standard in the assessment of patients for surgery where moderate blood loss is expected. The provision of an autologous cell salvage program supports surgery where transfusion is not an option and reduces the reliance on the allogeneic blood component resource.

Actions required:

Hospital management should:

- Ensure adequate support for clinical and laboratory teams with well-resourced services for treatment of anaemia, including haematinic deficiencies
- Ensure regular audits of blood usage, use of cell salvage and other patient blood management measures
- Provide services that support effective identification, assessment and management of pre-operative anaemia, including intravenous iron as appropriate in a timely manner. Patients scheduled for elective surgery should be screened for anaemia far enough in advance of surgery to allow appropriate correction of anaemia
- Ensure provision of a properly resourced cell salvage programme where the need is identified
- Ensure policies, procedures and training are in place to avoid delays in transfusion where this would cause patient harm
- Engage with primary care teams to facilitate early anaemia screening, investigations, referrals when relevant and appropriate management including support with haematinics

Clinical staff should:

- Be supported by training and tools that includes knowledge to identify, investigate and manage patients with anaemia following haematinic deficiencies
- Use decision-support tools, such as Blood Assist, to avoid unnecessary transfusions
- Proactively involve patients in their care (monitoring, follow up, making choices regarding treatment) with shared decision-making and provide leaflets, signpost videos and apps as relevant relating to transfusion support

Transfusion laboratory staff should:

- Have processes in place to question potentially unnecessary transfusions
- Have training and processes to avoid delays in provision of blood components in life threatening anaemia

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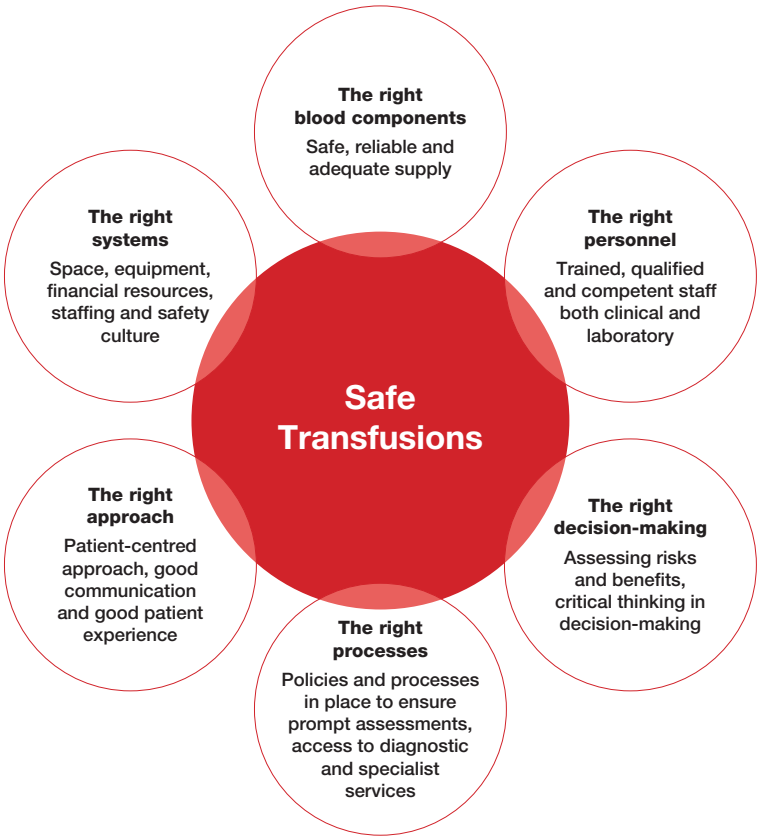
Safe systems to ensure safe transfusions

Having the right infrastructure is vital in promoting improved standards of care and well-being for all patients. This is a key pillar in ensuring safety and improving outcomes. Any health system needs adequate staff, funds, equipment including IT, information, supplies, transport, communications and overall guidance and direction to function. Strengthening and building safer health systems thus means addressing key constraints in each of these areas. Transfusion errors reported to SHOT are commonly errors 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. Improvements in safety do not occur unless there is commitment and support from senior executive managers. This has been reinforced repeatedly in the recent Annual SHOT Reports (Narayan et al. 2020, 2021 and 2022) and remain pertinent as they have not been addressed meaningfully.

While accepting that it may be impossible to eliminate error entirely, all error-related incidents are by definition preventable, so the aim of a haemovigilance programme should be to see a move from patient-harm to non-harm, i.e., we would expect an increase in near miss events compared to incidents in potential harm categories. An analysis of the last 5 years shows incidents with no patient-harm are between 51% and 57.4% of the total error events (Figure 3.3 in Chapter 3, Headline Data: Deaths, Major Morbidity and ABO-Incompatible Transfusions) meaning potential harm errors account for nearly half of all error incidents. The key to eradicating transfusion errors and advancing patient safety is to create systems for healthcare delivery that doctors, nurses, and others providing patient care can rely on. Actions needed are multifaceted and will need to ensure all the following at a macro-system level all the following aspects (Figure 4.1) for safe transfusions in healthcare

Figure 4.1: Framework for safe transfusions



Main recommendation 2: Safe systems to ensure safe transfusions

Transfusion of blood components is a multi-stage process, errors may occur at any step, from collection of the blood sample to administration of the blood component. Patient identification is paramount in transfusion safety, where patient identification bands are used in the transfusion process, they must be attached to the patient. Staff involved in the transfusion process must work within a system that supports safe practice, a system that makes it easier to do the right thing and harder to do the wrong thing. Systems should be designed with human factors and ergonomics at the forefront. Safety checks must be completed accurately to pick up any errors in the preceding steps and not be seen as a tick box exercise. Organisations should invest in effective information technology and automation, in the clinical and laboratory setting, that supports safe transfusion practice, each time and every time.

Actions required:

Hospital senior management should:

- Ensure adequate funding and resources are available for implementation and maintenance of effective IT and automation at all stages of the transfusion process
- Ensure adequate staffing levels, training and resources are available to support a systems-approach to safe practice, with emphasis on human factors and ergonomics
- Ensure that transfusion safety checks are embedded at all stages of transfusion practice, and where IT is not yet available, use SHOT or locally designed resources
- Ensure effective contingency plans are in place for IT downtimes, and staff have training in these processes
- Perform regular safety audits to assess work as imagined versus work as done. This will identify workarounds that may impact on patient safety and allow implementation of effective corrective and preventive actions

Clinical and transfusion laboratory staff should:

- Ensure they complete the NHS Patient Safety Syllabus training programme and local training and competency-assessment programs
- Have access to clear instructions for using IT and automation correctly, including escalation where key equipment does not function as expected or is not suitable for actual practice
- Perform safety checks at critical points in the transfusion pathway such as patient identification checks, collection of components, and administration including TACO risk assessment

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Effective implementation of appropriate interventions following incident investigations

Improvement in patient safety is a continuous cycle, including learning from Safety-I and Safety-II principles and adapting to change. Incident, and near miss, investigation should include a review of human factors that may have contributed to the event. It should look at every aspect of the system,

including training and competency-assessment, documentation, procedures, environment, equipment, staffing levels, workload, and leadership. The actions identified for improvement should be systems-based, not focused on the individual(s) involved in the event. Improvements require investment, this may be the purchase of equipment or information technology solutions, it may be staff training and education and it may be re-design of systems. Investments in reducing patient harm can lead to significant financial savings, and more importantly better patient outcomes (WHO 2019). Healthcare organisations should utilise processes for identification of risk, incorporate basic principles and innovations for safe design and use this knowledge in understanding the reasons for hazardous conditions and the ways to reduce vulnerabilities (Institute of Medicine 2000). Developing robust safety actions to address areas for improvement or system issues identified is one of the key aspects of the recently introduced Patient Safety Incident Response Framework (NHS England 2022).

Main recommendation 3: Effective implementation of appropriate interventions following incident investigations

Identification of actions to eliminate or control system hazards or vulnerabilities identified in the investigation of safety incidents is vital to improve safety. Teams should strive to identify effective actions that prevent the event from recurring and, if that is not possible, reduce the likelihood that it will occur or that the severity or consequences are reduced if it should recur. System-focused actions that provide effective and sustained system improvement must be identified and implemented. The success of any patient safety effort lies in its integration into the fabric of the organisation at all levels. This cannot happen without the active participation of leaders and managers at all levels.

Actions required:

Hospital senior management should:

- Have an oversight of the incident investigation process including management of near misses within their teams. This should be accomplished by supporting the process, approving and periodically reviewing the status of actions, understanding what a thorough incident investigation report should include, and acting when reviews do not meet minimum requirements
- Ensure they review the incident investigation process at least annually for effectiveness
- Ensure that staff are appropriately trained to carry out incident investigations and have access to the tools and resources for effective investigations. Staff should also have protected time during the normal work shift to lead or participate in these incident investigations
- Promote a just, learning safety culture with a collective, inclusive, and compassionate leadership
- Encourage patients to raise concerns, participate in incident investigations as appropriate and provide feedback on actions taken

Risk management departments should:

- Provide support and training for all staff involved in transfusion-related incident investigation
- Ensure procedures and templates are available that include consideration of human factors and a system-based approach to investigation, including plans for corrective and preventive safety actions and a process for reviewing the effectiveness of the actions
- Provide a platform to share learning from transfusion errors and near miss events across the whole organisation
- Provide opportunities for involved staff as well as involved patients/families to offer feedback of the findings of investigation process, and be given the opportunity to comment on whether the proposed actions make sense to them, where appropriate

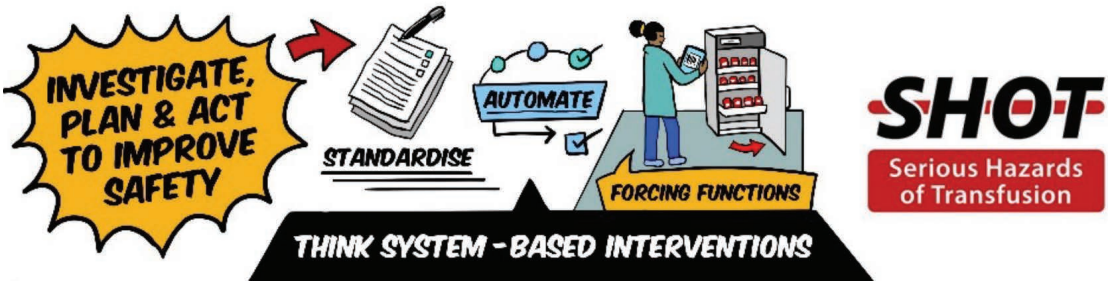
Clinical and pathology laboratory management should:

- Ensure capacity plans include provision of adequate staffing to support robust investigation of all transfusion-related incidents and near miss events
- Ensure that staff involved in incident investigation have received adequate training, including human factors and a system-based approach to investigation
- Provide support with implementation of effective corrective and preventive actions, ensuring that these are forcing functions* wherever possible
- Record unresolved residual safety risks identified that cannot be solved with short term measures in the organisational risk register and escalate appropriately

**A forcing function is an aspect of a design that prevents the user from taking an action without consciously considering information relevant to that action (e.g., a rule in the LIMS that does not allow issue of ABOi red cell units)*

Clinical and laboratory transfusion staff should:

- Be able to identify system-focused sustainable solutions, both short term and long term, if involved in incident investigations
- Identify solutions with effective and appropriate use of IT and automation with support from suppliers
- Review effectiveness of interventions/safety actions and share lessons learnt to optimise learning from safety incidents



Learning from excellence and day-to-day events

SHOT has been promoting a holistic approach to safety incorporating principles of Safety-I and Safety-II. This was one of the main recommendations in the 2019 Annual SHOT Report (Narayan et al. 2020). 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. Safety-II is a proactive approach that seeks to strengthen the 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. Proactively and simultaneously seeking signals for improvement from unsafe, suboptimal and excellent care helps understand and build safer systems. Several recent publications have explored ways to operationalise Safety-II in practice (Bartman et al. 2021, Shorrock 2020 and Verhagen et al. 2022). Chapter 5. Acknowledging Continuing Excellence in Transfusion (ACE) explores a few of these approaches and paves the way for transfusion clinical and laboratory teams to embed these in day-to-day practices.

Main recommendation 4: Learning from excellence and day-to-day events

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. Developing a proactive safety framework will help to better understand how staff adapt their everyday work and support a proactive approach to safety.

Actions required:

Hospital senior management should:

- Embed a proactive approach to safety within their teams across the organisation and learn not just from when things go wrong but from day-to-day events and excellence
- Regularly assess their organisation's safety culture using a safety assessment survey and take appropriate actions to address any concerns identified

Risk management departments should:

- Ensure local incident reporting systems also have the capability for excellence reporting
- Ensure staff are aware and are encouraged to report good practice

Clinical and transfusion laboratory staff should:

- Ensure they complete the NHS Patient Safety Syllabus training programme and are compliant with relevant current national legislation, guidelines, and recommendations
- Be familiar with human factors principles and application especially with designing user-friendly systems not just incident investigations
- Be able to engage with and promote a proactive safety framework by regularly using safety tools such as:
  - Proactive safety huddles bringing together an interdisciplinary team to plan, anticipate problems and identify actions that can help mitigate risks before an error occurs
  - Proactive safety observations with safety experts performing workflow observations/quality walkarounds, evaluate how work is done and proactively identify and address system weaknesses before an error occurs
  - Simulations with multidisciplinary teams to test systems and enhance process improvement
  - Observational audits such as vein-to-vein audit to help bridge the gap between 'work as done' and 'work as imagined' and learning from near misses to understand effectiveness of controls in place
  - Appreciative inquiry so that teams can learn from 'what went well' and utilising successful cases to investigate, identify strengths and behaviours that lead to positive patient outcomes to promote learning
- Escalate any safety concerns identified to leaders and help identify/implement appropriate mitigating actions, ensure feedback loops in place

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We need to rethink strategy, consider the people involved and support them, promote a just and learning safety 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.

Recommended resources

A-E decision tree to facilitate decision making in transfusion
Driver diagram to help identify tactical change ideas to improve transfusion safety
Safe Transfusion Checklist
https://www.shotuk.org/resources/current-resources/

Patient Blood Management - Hospitals and Science – NHSBT
https://hospital.blood.co.uk/patient-services/patient-blood-management/

E-learning modules on e-learning for health includes modules such as 'Anaemia - the only introduction you need', 'Anaemia in primary care patients' and 'Anaemia in hospital patients'
https://hospital.blood.co.uk/training/clinical-courses/

Blood component use in major haemorrhage
https://www.e-lfh.org.uk/programmes/blood-component-use-in-major-haemorrhage/

The NHSBT O D-negative toolkit
https://hospital.blood.co.uk/patient-services/patient-blood-management/o-d-negative-red-cell-toolkit/

Royal College of Pathologists - Choosing Wisely
https://www.rcpath.org/profession/patient-safety-and-quality-improvement/patient-safety-resources/choosing-wisely/recommendations-for-transfusion-medicine.html

Patient Blood Management - Blood assist app
Apple (https://apps.apple.com/gb/app/blood-assist/id1550911130)
Google play (https://play.google.com/store/apps/details?id=uk.nhsbt.bloodassist)
Web based (https://www.bloodassist.co.uk/)

National Comparative Audit – Vein to Vein audit – contact details
https://hospital.blood.co.uk/audits/national-comparative-audit/

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