4 Key Messages and Recommendation

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Abbreviations used in this chapter

ABOi	ABO-incompatible	**NICE**	National Institute for Health and Care Excellence
CIEHF	Chartered Institute of Ergonomics & Human Factors	**NMC**	Nursing and Midwifery Council
GMC	General Medical Council	**PID**	Patient identification
HCPC	The Health and Care Professions Council	**RCP**	Royal College of Physicians
HSSIB	Health Service Safety Investigations Body	**SaBTO**	Advisory Committee on the Safety of Blood, Tissues and Organs
ID	Identification		
IT	Information technology	**SOP**	Standard operating procedure
JPAC	Joint United Kingdom (UK) Blood Transfusion and Tissue Transplantation Services	**TACO**	Transfusion-associated circulatory overload
		UK	United Kingdom
LIMS	Laboratory information management system	**UKTLC**	UK Transfusion Laboratory Collaborative
NHS	National Health Service	**WBIT**	Wrong blood in tube

Key SHOT messages

- **Making safe transfusion decisions and ensuring patients are well informed:** Transfusions are very safe and effective when used appropriately. All staff involved in the transfusion pathway need to have relevant knowledge, appropriate to their role, of blood components, indications for use, alternate options available, risks and benefits, possible reactions and their management. Unnecessary transfusions must be avoided. Patients or their carers must be informed about the risks, benefits and alternatives to transfusions

- **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. Communication issues, assumptions and distraction compounded by staffing issues, ineffective and misuse of IT and poor safety culture contribute to errors. Errors must be investigated using human factors principles-based incident investigations and appropriate improvement measures implemented

- **Ensuring clinical and laboratory transfusion teams are well resourced:** 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. Safe staffing levels matched to the workload with well-resourced systems are vital for ensuring high quality care for patients and safety. Together they form the foundation for an effective healthcare system that prioritises patient safety above all else

- **Addressing knowledge gaps, cognitive biases, and holistic training:** Transfusion training with a thorough and relevant transfusion knowledge base should be available to all clinical and laboratory staff. They should also receive training in patient safety principles, application of human factors principles and quality improvement approaches. It is important that staff understand how cognitive biases and assumptions contribute to poor decision making so that they can be mitigated appropriately

- **Policies and processes:** Policies, guidelines/decision making aids and SOP need to be simple, clear, easy to follow and explain the rationale for each step. These should be up to date, accessible and reflect current national guidelines and recommendations. This will ensure staff are engaged and more likely to follow process, thereby avoiding any workarounds or deviations

- **Safety culture:** Fostering a strong and effective safety culture that is 'just, restorative and learning' is vital to reduce transfusion incidents and errors, enhancing patient safety. Staff should be able to confidently raise concerns, discuss issues and promote innovative ideas for improvement. Regular monitoring of the safety culture and its impact on patient safety; and staff wellbeing should be in place to ensure timely improvement actions are implemented

- **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. The appropriate response to a near-miss with potential for high-risk transfusion event includes: (1) reporting to haemovigilance agencies as required, (2) investigating near misses, (3)developing and implementing a corrective and preventative action plan and (4) monitoring the effectiveness of interventions

- **Shared care:** Clear, timely and comprehensive communication between all teams and hospitals involved in the patient-care pathway 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 and focussing on improvements:** Investigations must be systematic and thorough, using human factors principles and systems thinking in order to identify systems-based corrective and preventative actions. Systemic and organisational problems should be fully investigated, as staff-related actions are unlikely to resolve underlying systemic issues. Learning from the incidents should be shared widely

- **Safety checks before transfusions:** The pre-transfusion patient-side safety check provides a final opportunity for staff to identify errors ensuring the right component with the right specification is transfused to the right patient; the TACO risk assessment facilitates appropriate mitigating measures in vulnerable patients at high risk of TACO. These checks serve as safety pauses to ensure staff safeguard patient well-being and prevent potentially life-threatening complications. These are not tick-box exercises

- **Patients as safety-partners:** Staff must ensure that they involve, engage, and listen to patients as 'partners' in their own care and decision-making to support safe transfusions. Engaging patients, their families, and carers as 'safety partners' helps co-create safer systems, identify, and rectify preventable adverse events

The 2023 Annual SHOT Report highlights continuing error trends with 83.1% reports in 2023 related to avoidable errors. Continuing reports of preventable ABOi transfusions, transfusion delays, avoidable transfusions and TACO are sobering to read. A steep increase in the laboratory transfused errors reported and the worrying signals evident from the recent SHOT-UKTLC survey on safety culture in the transfusion laboratories cannot be ignored and call for urgent action (see 'Recommended resources').

All staff involved in blood transfusions should have a basic knowledge of blood components, indications for use, alternative options available, risks and benefits, possible reactions, and their management. This

will help staff to have meaningful discussions with patients, carers and families; support shared decision-making and consent in accordance with the SaBTO recommendations (SaBTO, 2020). Anecdotal reports of suboptimal consent practices are evident in this report where patients were not adequately informed about the risks, alternatives, or potential consequences of transfusions. Consent in transfusion is crucial to facilitate shared decision-making with patients being able to make informed choices about their care. A recent national comparative audit of the NICE Quality Standard QS138 revealed that only 475/1356 (35%) of transfused patients had evidence of receiving both written and verbal information about the risks, benefits, and alternatives to transfusion (compared to 26% in the 2021 audit). All hospitals should urgently review local consent practices, initiate improvements, and ensure optimal consent and shared decision making for safe patient care. Table 4.1 highlights the key aspects that need to be covered when consenting patients for transfusions. See 'Recommended resources' at the end of this chapter for links to the national comparative audit and patient information pages on the SHOT and JPAC websites.

Table 4.1: Key aspects to be covered when consenting patients for transfusion

Key aspects to be covered when consenting patients for transfusion	
1	Patient and/or family/carer have been provided with relevant information about blood transfusions that would help in their decision-making process
2	The reason for the transfusion has been discussed
3	The benefits of the transfusion have been explained
4	Transfusion risks, both short and long-term risks have been discussed with the patient and/or family/carer (including any additional risks pertinent to long term multi-transfused patients)
5	The risks, benefits, and consequences of NOT accepting blood transfusion have been elaborated
6	Transfusion issues specific to the patient have been highlighted
7	Relevant alternative options have been discussed including how they might reduce the need for a transfusion
8	The transfusion process has been explained
9	The need for any specific requirements for blood components and rationale, including need for anti-D Ig post transfusion as appropriate has been elaborated and relevant patient information leaflet has been provided
10	Patient and/or family/carer has also been informed that once transfused, they are no longer eligible to donate blood
11	Patients and carers/family have been given the opportunity and been encouraged to ask questions
12	Patient and/or family/carer is aware that if they change their mind at any point before the transfusion, they are entitled to withdraw their consent, and this should be documented and managed appropriately
13	Synopsis of discussions and decisions taken documented in patient's clinical notes

The Safe Transfusion Checklist that is available to download from the SHOT website covers key aspects of the transfusion process at the patient side and the ABCDE approach to transfusions support safe decisions and helps avoid unnecessary transfusions (https://www.shotuk.org/resources/current-resources/).

Errors in transfusion persist due to a combination of factors including complex processes, communication issues, lack of standardisation, inadequate training, or resources including suboptimal implementation or use of transfusion IT. Failing to identify and implement system-focussed 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 while striving to deliver safe care amidst all the challenges. These have also been highlighted throughout the report. It is encouraging to see a wider recognition of the importance of human factors and ergonomics principles but more needs to be done to embed 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.

Key SHOT recommendations for 2023

The following main recommendations have been drafted to address the recurring themes identified in the analysed SHOT reports that impact transfusion safety. Previous SHOT recommendations remain pertinent, and organisations must endeavour to progress implementation of the same if gaps are identified.

Addressing patient identification errors to enhance transfusion safety

Patient misidentification poses a risk to patient safety and has the potential to result in significant harm. Errors are often the result of multiple factors and patients are at greater risk of misidentification in certain settings or situations for e.g., handovers, shared care between hospital and clinical settings and in emergencies. All staff involved in patient care should be aware of the key patient identification criteria as per local policies and national guidelines (Robinson, et al., 2018).

PID errors occur at all stages of the transfusion process. Examples include clinical staff incorrectly transcribing or missing vital patient demographics when completing request forms and sample labelling, maternal and cord blood samples being incorrectly labelled and laboratory staff not transcribing and inputting data accurately into the LIMS during the booking-in of samples. Many PID errors are the result of inadequate systems suggesting that investigations into PID errors must be designed to highlight and resolve these system failures, i.e., identifying and addressing the human factors and ergonomics aspects.

Inaccurate and incorrect patient identification is commonly identified in near miss WBIT cases. These frequently go undetected and can potentially have fatal consequences making accurate PID and sample labelling in the preanalytical stage of the transfusion process imperative. Incomplete PID processes were recognised as a contributory factor in 2 ABOi cases reported in 2022, both of which resulted in patient fatalities (Narayan, et al., 2023). The use of a pre-transfusion checklist prior to administration has been recommended in previous Annual SHOT Reports and is the final opportunity to identify a PID error before the transfusion begins. This is especially important during emergency situations when additional pressure and distractions are likely. It is vital that staff perform PID steps accurately and completely during all stages of the transfusion process and wherever possible, involve the patient.

While electronic blood-tracking systems are increasingly being implemented and used in healthcare to support safe transfusion practices, it is doubtful that technology alone will reduce the risk of patient misidentification (HSSIB, 2024). Patient identification processes, including related technology can improve patient safety only by ensuring that systems incorporate the needs of patient groups that are at greater risk of misidentification. Additionally, IT systems must be correctly implemented, configured, and used by trained and competent staff. To be effective, they must interface with electronic patient record systems.

Analysis of both clinical and laboratory cases demonstrate gaps in knowledge relating to the importance of performing accurate and complete patient identification. Staff should recognise the risk of patient misidentification and its subsequent impact on all aspects of patient care including transfusion support. It is necessary for NHS Trusts/Health Boards to promote a reliable, just, learning safety culture to ensure PID policies are implemented, followed, and monitored (Tase, et al., 2013).

Main recommendation 1: Addressing patient identification errors to enhance transfusion safety

Transfusion is a complex multi-step process involving healthcare staff from varied clinical settings with differing levels of knowledge and skills. Ensuring that patients are accurately and correctly identified and communicating this information throughout the transfusion process is challenging. SHOT emphasises that all staff involved in the transfusion process should adhere to correct PID procedures in accordance with local transfusion policies. Accurate and complete identification of patients receiving transfusions is essential for patient safety and should be reflected in clinical and laboratory settings and embedded in transfusion practice.

Actions required:

Hospital senior management should:

- Ensure PID procedures and policies are regularly reviewed and updated and include high-risk settings, situations, and patient groups where the risk of patient misidentification is greater

- Ensure adequate funding and resources are available for the implementation and maintenance of effective fully functional IT systems used in PID processes in clinical and laboratory settings

- Foster a safety culture between multidisciplinary teams and ensure adequate support for clinical and laboratory teams with well-resourced services

- Ensure that electronic patient record systems are compliant with relevant risk management standards (such as DCB0129, DCB0160 and DCB1077)

- Regularly evaluate the effectiveness of PID processes by consistently auditing practice in clinical and laboratory settings

Hospital transfusion teams should:

- Review all transfusion-related patient identification errors and establish the causes of patient misidentification

- Recognise what changes are required to support staff when PID errors happen

- Ensure that knowledge of PID processes is included and emphasised in training and competency assessments to all staff involved in transfusion and are embedded in practice

Clinical staff should:

- Be supported by training which includes the knowledge and importance of undertaking accurate and correct PID processes during each step of the transfusion process

- Wherever possible undertake positive patient identification by proactively involving patients in their care

- Perform PID checks at critical steps in the transfusion pathway i.e., sample taking and labelling, collection of components and pre-administration checks

- Undertake all appropriate PID checks by using a pre-transfusion checklist prior to administering a transfusion at the patient side. This should include accurately checking the patient's identity against the prescription and the blood component compatibility label

Pathology laboratory management should:

- Ensure that procedures are in place and SOP reflect PID processes in the transfusion laboratory at safety critical steps in the transfusion pathway. These include pre-analytical processes, component selection and labelling, and at point of issue

- Embed the use of a laboratory exit check such as PAUSE (Narayan, et al., 2022), or equivalent to ensure that that all previous steps have been completed correctly and that unit is safe for issue to the clinical area

- Ensure that the LIMS incorporates PID processes and is used to its full potential to support transfusion safety

ACCURATE PATIENT IDENTIFICATION IS CRITICAL FOR SAFE TRANSFUSIONS

NAME? D.O.B? ID NUMBER?

SHOT
Serious Hazards of Transfusion

Safe staffing to support safe transfusions

Appropriate staffing is a key element in provision of a safe transfusion service, from the donor to the patient, involving medical, nursing, scientific and support staff. Appropriate staffing is not just about numbers of staff, but also requires the right skill mix and forward planning. The importance of appropriate staffing was reinforced by the Francis Report into failings at Mid Staffordshire NHS Foundation Trust in England (Francis, 2013). Capacity planning is critical to understanding safe staffing levels for a transfusion laboratory (Dowling, et al., 2024). In England, the National Quality Board (2016) set out expectations relating to getting nursing, midwifery, and care staffing right. This provided a governance and oversight framework alongside recommended evidence-based tools, resources, and examples of good practice, to support NHS providers in delivering safe patient care and the best possible outcomes for their patients. The Health and Care (Staffing) (Scotland) Act 2019 came into force on 1 April 2024 (Scottish Government, 2019). This groundbreaking legislation sets out requirements for safe staffing across all health and care services in Scotland. The Act places a legal duty on NHS and care providers to make sure there are always suitably qualified staff working in the right numbers for safe and effective care. It also imposes a duty on the Scottish government to ensure there are enough registered nurses, midwives, and medical professionals available to enable employers to ensure safe staffing. The Nurse Staffing Levels (Wales) Act 2016 protects nurse staffing levels in Wales and was the first law of its kind in the UK making Health Boards and NHS Trusts legally responsible for providing enough nursing staff in their nursing services and those they commission (NHS Wales, 2017). Similar campaigns are ongoing in Northern Ireland to secure staffing in healthcare.

The Royal College of Physicians published Guidance on Safe Medical Staffing in 2018, following concerns that levels of medical staffing had fallen dangerously low (RCP, 2018). There is no set minimum staffing level for any of the professions, this is dependent on many factors including workload, levels of information technology, and the complexity of the service provision within the organisation. Appropriate staffing is critical to supporting a positive safety culture within an organisation, where excellence in patient care is supported by a listening culture, good leadership and a workforce that feels empowered to raise concerns. A positive safety culture will struggle to flourish where the workforce is stretched and overburdened.

In a survey of healthcare staff in 2022 (Ibbetson, 2022), 966 out of 1016 (95%) staff stated that their workplace had been affected by staff shortages due to COVID-19. Of the NHS staff whose workplace had been affected by staff shortages, 71% said that current staff were working overtime or doing extra shifts, 38% said that their workplace was bringing in agency staff to cope with shortages, and 36% said

that staff were being redeployed from nearby locations to assist. Although the number in the survey was relatively small, similar signals are seen in a survey performed by the UKTLC in 2022 (SHOT, 2022). The NHS is facing an unprecedented staffing crisis. In its inquiry on the health and social care workforce in July 2022 (section 3.2), the House of Commons Health and Social Care Committee reported that the NHS had lost two million full-time equivalent days to sickness in August 2021 (Health and Social Care Committee, 2022). These included more than 560,000 days to anxiety, stress, depression, or another psychiatric illness. Workforce challenges are not only related to sickness absence, but high numbers of staff also continue to leave their profession, disillusioned with pay, conditions and training to support them in their roles. In the NHS England staff survey 2023 only 31.23% of respondents stated they were satisfied with their level of pay, 32.40% stated that there were enough staff at their organisation for them to do their job properly and 57.41% felt supported to develop their potential (NHSE, 2024). Plans to turn the tide and address workforces shortages have been published for the devolved nations (NHS Long Term Workforce, 2023; National Workforce Strategy for Health and Social Care in Scotland, 2022; NHS Wales Workforce, 2023; Workforce Strategy, 2018), however, these long term plans have made little difference in the short term, and patient waiting lists continue to rise (The King's Fund, 2023).

Innovative solutions to address deficiencies in staffing levels have included accelerated training, using unregulated staff to make decisions about patient treatment (GMC, 2024) and virtual clinics. These are well-intentioned but can have unintended consequences that put patient care at risk. Other innovative solutions include automation and information technology that can be used to support practice and optimise staff efficiencies. Although innovative solutions may be effective, where they are employed, implementation processes must consider potential risks and accountability.

A mismatch between workload and staffing levels is implicated in many cases described throughout the 2023 Annual SHOT Report. It is evident that an appropriate workforce, supported by a good safety culture and a listening leadership, is the keystone to a safe service. A systems-thinking approach that builds an environment that makes it easier for staff to do the right thing and harder to do the wrong thing (see Chapter 8, Human Factors and Ergonomics in SHOT Error Incidents), incorporation of effective information technology systems (see Chapter 16, Errors Related to Information Technology) and optimisation of automation in the laboratory (see Chapter 15, Laboratory Errors) are also key to supporting a safe service.

A recent white paper on 'Fatigue risk management for health and social care' from the Chartered Institute of Ergonomics and Human Factors highlights a chronically fatigued workforce due to several factors including staffing issues and high workload. It provides a foundation for national health and social care bodies to recognise the risk that staff fatigue poses to safe and efficient healthcare services and advocates a systemic approach to managing these risks (CIEHF, 2024).

Main recommendation 2: Safe staffing to support safe transfusions

Healthcare leaders should review their organisations workforce needs to ensure that appropriate staffing is in place with future planning, including digital transformation to support a safe transfusion service. The review should consider the needs of the organisation, using tools relevant to the individual professions and must include clear time-bound actions plans where gaps are identified.

Actions required:

Hospital senior management should:

- Have a process in place that measures and monitors appropriate staffing levels across the organisation to support safe transfusion practice

- Identify and address challenges relating to recruitment and retention of clinical and laboratory staff

- Spearhead a good safety culture and have processes in place to monitor and measure the effectiveness of the culture and staff engagement

- Support implementation of effective and validated innovative solutions to address the mismatches between workload and staffing levels, including IT and automation

Clinical and laboratory management should:

- Have processes in place to identify where there are staffing issues that impact on service provision and escalate risks to the senior management team

- Have capacity plans in place that identify minimum staffing levels for a safe service, including time required for any quality, training and supervisory related activities

- Have documented forward and succession plans that include agreed timelines and are regularly reviewed for compliance and any changes within the workforce

- Ensure protected time is provided for staff training and competency assessment within the working hours

- Support a good safety culture, a listening management team and provide feedback on staff suggestions

Clinical and laboratory staff should:

- Raise concerns to relevant management personnel when safety risks relating to staffing levels are identified

- Engage in regular meetings with relevant management personnel, including 1:1 meetings and appraisals

Effective timely communications to ensure safe transfusions

Effective communication is critical for safe patient care. Patients need to feel secure and empowered enough to communicate honestly and openly with their care providers to receive effective treatments. Clinical staff need to convey treatment plans and health education clearly, accessibly, and empathetically so that patients can receive optimal care. Staff should share information ethically and responsibly to protect patient confidentiality. This includes accurate documentation of patient information and effective handovers during shift changes. Healthcare organisations need to apply culturally responsive measures to bridge communication gaps between stakeholders. Additionally, patient involvement in decision-making and understanding their care plan is crucial for their safety and well-being.

All healthcare staff must have the knowledge, skills, understanding and confidence they need to be able to share and use health and care information. The professional standards from the GMC, the NMC Code and HCPC standards for conduct, performance, and ethics mandate specific communication standards in healthcare to uphold patient safety (GMC, 2024; NMC, 2015; HCPC, 2023). These ensure

that healthcare staff adhere to established guidelines for effective communication, documentation, and patient engagement throughout the care process. Compliance with these mandates helps minimise errors, enhance care coordination, and ultimately improve patient outcomes. However, communication issues (between clinical staff and patients; different teams/care providers and between clinical and laboratory staff) are repeatedly highlighted in Annual SHOT Reports as contributory to errors and incidents and must be addressed.

Main recommendation 3: Effective, timely communications to ensure safe transfusions

Effective communication is crucial for safe patient care. Timely, clear, and concise communication can help prevent avoidable transfusion errors, foster collaboration, facilitate shared decision-making and enhances the overall quality of care provided to patients. Clear and succinct messaging with active listening, structured handovers, team huddles and safety briefings with optimal use of technology to support safe communications is vital for patient safety. Staff should receive appropriate training on effective communication skills including cultural sensitivity and feedback mechanisms must be in place to ensure continuing improvement in processes.

Actions required:

Hospital senior management should:

- Have an oversight of the communication policies, processes and practices in place to support patient care within their teams

- Ensure they review the effectiveness of communications at least annually

- Ensure that staff are appropriately trained and competent to communicate effectively with colleagues, patients and families

- Promote a just, learning safety culture and promote sharing of good practices with a collective, inclusive, and compassionate leadership

- Encourage patients and staff to raise concerns as well as provide constructive feedback

Staff learning and development teams should:

- Provide support and training for all staff in effective communication skills

- Ensure procedures and templates are available to facilitate structured communication

- Provide a platform to share learning and best practices across the whole organisation

Clinical and pathology laboratory management should:

- Ensure staff are trained in effective communication skills and have regular update training as appropriate

- Ensure structured handovers are in place to facilitate safe communication of relevant patient information between teams (between clinical teams within a hospital, between clinical and laboratory teams, when patient is transferred between hospitals)

- Ensure regular feedback is sought from patients and staff about effectiveness of communication. This should be part of regular reviews of the processes in place to ensure safe communication at all points of the patient pathway with timely improvement actions to address gaps identified

Clinical and laboratory transfusion staff should:

- Follow a structured handover when passing on information related to patient care at all points (between shifts, between teams and during interhospital transfers). All communications must be specific, concise, relevant and timely

- Identify solutions with effective and appropriate use of IT to improve communications for safer patient care

- Undertake regular audits of communication practices for example: consent practices, discharge communications, management of patients in shared care, quality of handovers in both clinical and laboratory areas

Conclusions

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 have a safety culture that promotes learning from experience including instances of unsafe, suboptimal and excellent care. The long term aims of a haemovigilance 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. Making system-wide changes is absolutely essential.

Recommended resources

A-E decision tree to facilitate decision making in transfusion
Safe Transfusion Checklist
https://www.shotuk.org/resources/current-resources/

Patient information page with relevant resources from the SHOT website
https://www.shotuk.org/patients/

Transfusion information for patients on the JPAC website
https://www.transfusionguidelines.org/transfusion-practice/consent-for-blood-transfusion/consent-information-for-patients

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/)

SHOT, UKTLC safety culture survey in transfusion laboratories in the UK
https://www.shotuk.org/resources/current-resources/shot-surveys/

National Comparative Audit: 2023 Audit of NICE Quality Standard QS138 and Vein to vein audit contact details
https://hospital.blood.co.uk/audits/national-comparative-audit/

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