Section	Criteria	Compliance Y N N/A	Comments/Action Required	To be completed by:
Emergency Preparedness	Hospital Trusts must include the Pathology department and HTT in Major Incident planning			
	Pathology staff should practice plans with clinical staff regularly to test the system			
	Ambulance Services should have arrangements with pre-selected Transfusion Laboratories for the provision of blood to scene in Major Incidents.			
	Staff should be placed where most transfusion samples are being collected and transfusion is taking place to assist.			
	Members of the extended transfusion team may be used to assist in a range of supporting activities			
	Hospital transfusion laboratories may consider moving stocks of universal blood components to key clinical areas for use in a Major Incident. Where blood is moved, secure systems should be in place for blood selection, maintaining the cold chain, and traceability records.			
	The consultant with responsibility for transfusion and the Transfusion Laboratory			

Section	Criteria	Compliance Y N N/A	Comments/Action Required	To be completed by:
	Manager are responsible for maintaining their own departmental action cards			
	Hospital Transfusion Laboratories should be aware of their Trust's pre-determined capacity plan in the context of a MCE.			
Incident Notification and communication	The initial internal communication cascade or call-out list must include the Transfusion Laboratory.			
	Hospital Transfusion Laboratories are currently advised to inform the Hospital Services department of the local NHSBT centre /stock holding unit once the hospital has been notified of a Major Incident and again when stood down.			
	Trusts should have protocols for alternative means of internal and external communication in the event of a failure of traditional or digital telecommunication technology.			
	Hospital Transfusion Laboratories should be permitted to maintain ongoing communication with NHSBT. It is recommended that hospitals consider retaining external phone lines for communication as a resilience measure.			

Section	Criteria	Compliance Y N N/A	Comments/Action Required	To be completed by:
	Press enquiries should be referred to the Trust's Press Liaison Officer. All communications for potential blood donors should be referred to NHSBT			
Hospital Transfusion Laboratory Response	A senior member of the Hospital Transfusion Laboratory should assume responsibility for transfusion services and assess the required response.			
	Staffing. An initial assessment of current laboratory staffing should be undertaken along with determining the need for additional personnel. Other transfusion staff should be redeployed according to departmental plans. Off-duty staff should not report for duty until advised to do so. Staff reporting for work should use the predetermined check-in points according to Trust plans. Staff should ensure they have Trust ID badges with them.			
	Blood Stock & Critical Consumables. Stock levels of blood components within the laboratory and in remote fridges i.e. ED, theatres and satellite fridges should immediately be assessed, as should the availability of other critical consumables, including reagents and transport containers.			

Section	Criteria	Compliance Y N N/A	Comments/Action Required	To be completed by:
	Stock movement: Routine surgery and some day care patient activity may be suspended. Blood already issued may no longer be immediately required for those cases. Consideration should be undertaken to de-reserve and re-centralise blood before reissuing to emergency areas to meet the potential surge in demand.			
	Plasma. It is assumed that hospitals will hold enough frozen blood components to meet their planned admissions for the first hour.			
	Platelets. Early consideration should be given to the demand and storage for platelets.			
	Pre-hospital transfusion. In the context of Major Incidents, Transfusion Laboratories should anticipate the requirement for pre-hospital transfusion and the implications for blood stock management.			
	Documentation. All key decisions should be documented, and all documentation should be clear, accurate and timely (dated and time stamped and signed). All documentation (electronic and paperwork) must be preserved. List of names and signatures should be kept.			
Hospital Response	Guidelines for identifying 'unknown' patients in emergency and mass casualty situations			

Section	Criteria	Compliance Y N N/A	Comments/Action Required	To be completed by:
	recommend non-sequential unique patient identifiers and gender as a minimum requirement.			
Patient Identification and blood samples	The use of unique patient identifiers and careful patient identification before blood sampling and administration of blood is essential to reduce the risks of incorrect blood transfusion.			
	Baseline blood samples for pre-transfusion testing should be obtained before administration of any blood component.			
	The use of group-specific blood is recommended once the patient's blood group has been confirmed.			
	The gender of the patient should be included on both the blood sample bottles and requests to optimise blood group selection.			
	Request forms should include treatment priority, age or estimated age and special requirements if known. Distinguishing children from adults enables age-related criteria to be applied to component selection.			
	There should be clear guidelines regarding the change from the Major Incident identifier to the routine hospital identifier, particularly in relation to transfusion samples.			

Section	Criteria	Compliance Y N N/A	Comments/Action Required	To be completed by:
Guidance for clinical blood use	Trusts should ensure that they have a policy for the management of massive haemorrhage and massive transfusion and this should be incorporated into the Major Incident plan.			
	Trusts should ensure that they have a policy for reversal of anticoagulation / antiplatelet agents, and this should be incorporated into the Major Incident plan.			
	Trusts should consider having an Intra Operative Cell Salvage (IOCS) service for use in major haemorrhage; including traumatic haemorrhage to reduce reliance on allogeneic blood.			
	Trusts should have contingency plans for major blood shortages incorporated into Major Incident plans			
Selection and issue of blood components	All patients admitted to hospital should have a baseline sample taken for transfusion testing of blood group (ABO and D) and atypical antibody screen. However, blood grouping should be initially prioritised to the most urgent cases (P1 and P2 cases)			
	Laboratory procedures should be in place to prioritise and handle emergency samples.			

Section	Criteria	Compliance Y N N/A	Comments/Action Required	To be completed by:
	Appropriate blood group substitutions should be considered to optimise stock management of all blood components			
	Group O positive red cells must be used in unknown males. D and K negative blood should be prioritised for unknown females under the age of 50 and children under 18yrs of age.			
	To prevent delays in blood components in emergency situations procedures should be in place a) to allow concessionary release of components; this includes the provision of O positive blood to patients of childbearing potential or paediatric cases (whose ABO D group is unknown) if this would be life- saving in the event of shortage of O negative blood. b) to ensure that patients are reviewed and appropriately managed when D positive blood is given to D negative patients. Governance structure for notifying Trust Haematologist should be robust.			

Section	Criteria	Compliance Y N N/A	Comments/Action Required	To be completed by:
	These incidents are reviewed locally in HTT and reported to SHOT.			
	Arrangements must be in place for the traceability of blood sent to other hospitals and the Ambulance Service.			
	Hospital Transfusion Laboratories should be able to provide details of blood and blood component usage following a Major Incident to NHSBT within 72 hour.			
Regulatory Requirements	Due consideration must be given to securely maintaining the cold chain of any blood components stored and transported during an incident.			
	The transfusion of any blood component must be documented in the clinical notes and in the Hospital Laboratory Management System (LIMS) using the unique number of both the blood unit and the patient. These records must be kept for at least 30 years for compliance with the Blood Safety and Quality Regulations 2005.			
	Hospital Transfusion Laboratories should have protocols for the timely thawing and issue of plasma together with the option of post-thaw storage of FFP at 4oC for up to five days.			

Section	Criteria	Compliance Y N N/A	Comments/Action Required	To be completed by:
	The use and disposal of any blood component must be documented in the clinical notes and in the Hospital Transfusion Laboratory records using the unique number of both the blood unit and the patient.			
	Hospital Transfusion Laboratories should have procedures for maintaining the systems for traceability of blood and blood components, used and wasted.			
	All adverse incidents related to either the provision of transfusion services and/or the use of blood components should be reported to the Hospital Transfusion Team and external bodies as necessary.			
Staff Support and Welfare	Hospital Transfusion Laboratories should have policies for the organisation of staff in a Major Incident with systems for provision of additional staff only if needed.			
	Trusts should consider having policies for providing food, rest facilities and accommodation for staff unable to travel home.			
	Staff may need some psychosocial support in the time following the incident. In some circumstances those affected may need additional support for a considerable period. Processes should be in place to facilitate this.			

Section	Criteria	Compliance Y N N/A	Comments/Action Required	To be completed by:
	Debriefing may help individuals and support the transfusion team.			
	At the command "Major Incident Stand Down" the transfusion team should hold a short 'hot debrief' meeting drawing out issues that presented problems or where improvements can be made.			
	It is recommended that debriefs should be recorded to help with sharing of learnings and investigations later.			
	A representative from the transfusion department should attend the hospital hot debrief meeting which is normally initiated by the director leading the Gold control team.			
Recovery Phase	Transfusion Laboratories should re-assess their blood stocks in the light of these future activities and adjust orders with NHSBT as required.			
	HTTs should complete traceability audits and endeavour to account for all blood components issued during the incident.			
Business Continuity	Local business continuity plans should cover LIMS and equipment failure, loss of utilities (i.e. electricity, gas or water) and be held in readiness in the Transfusion Laboratory as well			

Section	Criteria	Compliance Y N N/A	Comments/Action Required	To be completed by:
	as in the emergency planning and command control rooms.			
	Resilience measures and mutual aid should include the ability to use other sites and potentially the wider pathology networks.			
	Staff escalation procedures should be in place, to enable staff to obtain immediate advice out of hours and include methods of communication other than landline (including transfusion management, reference laboratories, and medical staff).			
	Validated contingency procedures should be clear, always accessible, and should be read by all staff members. Training and competency assessments for all business continuity procedures should be undertaken regularly. Staff should be confident to follow these when needed. Practice sessions/drills must be incorporated to maintain awareness and address any emerging concerns.			
Loss of buildings (fire/bomb threats/contamination	Systems should be in place to safely handle known infective samples and to decontaminate where required.			

Section	Criteria	Compliance Y N N/A	Comments/Action Required	To be completed by:
Interruption of essential supplies	Departments should ensure that there is enough stock of critical consumables and be aware of the risks in the supply chain i.e., reagents, consumables, and failure of critical equipment. Transfusion Laboratories may be required to work closely and proactively with other departments and commercial partners to ensure continuity of supply.			
Power outage / IT failure	Hospital Transfusion Laboratories should maintain the capability to use manual techniques for testing and non-electronic record keeping.			
	It is specifically recommended that nonelectronic records of regularly transfused patients with a) clinically significant antibodies b) special requirements are regularly maintained to enable timely transfusion in the event of a cyber-attack or power failure.			
	Pathology services should comply with cyber and data security good practice to reduce the risk of IT failure			
	Staff escalation procedures should be in place, to enable staff to obtain immediate advice out of hours and include methods of			

Section	Criteria	Compliance Y N N/A	Comments/Action Required	To be completed by:
	communication other than landline (including transfusion management, reference laboratories, and medical staff).			
	Validated contingency procedures should be clear, always accessible, and should be read by all staff members. Training and competency assessments for all business continuity procedures should be undertaken regularly. Staff should be confident to follow these when needed. Practice sessions/drills must be incorporated to maintain awareness and address any emerging concerns.			
National Power Outage	NHSBT will declare a "Red Alert" for all components immediately. Hospital Transfusion Service should factor this into local Business Continuity Plans. This should include keeping local paper copies of all the NBTC shortage plans, as Hospitals may not be able to download a copy during a NPO or receive timely communications from NHSBT.			
	Hospital blood transfusion laboratory teams should confirm that the laboratory satellite fridges are on the priority generator power list with local emergency planning teams. Blood components located in satellite fridges located in areas which are not on the generator priority			

Section	Criteria	Compliance Y N N/A	Comments/Action Required	To be completed by:
	list should be centralised to the laboratory within 30 minutes to prevent wastage of components.			
	Staff should be aware of how long their fridges and transport boxes can maintain an acceptable temperature. Staff should avoid opening fridges or freezers where possible with specific consideration given to the maintenance of the cold chain of components.			
	Laboratories should ensure that critical equipment (including laboratory PCs and printers) is identified and powered through the backup generator circuit. In addition, the use of Uninterruptable Power Supply (UPS) systems will provide a short bridging supply (approximately 20 minutes) during the transition between mains to generator power.			
	UPS should be available for all critical equipment which requires controlled power down, for example blood grouping analysers. In the rare event of secondary power supply failure, UPS also provide a period to safely close-down equipment and issue components.			
	Other critical equipment (e.g. blood fridges, selected LIMS terminals and plasma thawers) should be supplied by the back-up generator.			

Section	Criteria	Compliance Y N N/A	Comments/Action Required	To be completed by:
	Consider additional back-up solutions such as battery-controlled temperature graphs and loggers for blood storage fridges to enable temperature monitoring and log in a power outage			
	Non-critical equipment should be switched off to preserve generator power. Hospitals should keep an easily accessible updated list of all non-critical equipment.			
	Due to the impact of NPO on transport, IT systems and communications, hospitals may not be able to place orders to NHSBT Hospital Service in the initial stage of an NPO. Hospitals located close to NHSBT Hospital Services departments (i.e., within 1-2 miles) may send hospital staff to place and collect orders. NHSBT will issue on first come first serve basis.			
	Business continuity plans should clearly state expectations on staff attendance to work i.e., staff living nearby may need to be prioritised to attend work, especially if they can walk or cycle.			
	Non-standard procedures should only be undertaken for clinically urgent cases and should be discussed with medical staff. Decisions and discussions regarding concessionary release should be documented,			

Section	Criteria	Compliance Y N N/A	Comments/Action Required	To be completed by:
	in a structured log with the clinical team, including laboratory advice given to clinical staff should be maintained.			
	Documented information regarding the groups of all components to be released in emergency situations should be available (e.g. O red cells and A platelets and plasma components). SOPs and training should be in place to control the process.			
	All patients who need transfusions should have x2 separate samples sent to confirm grouping. If manual crossmatching is needed, ensure additional staff are available to provide an independent second check. This is applicable to any manual work, including handwritten compatibility labels. Processes should be in place to maintain meticulous paper records of components issued and results of any serological investigations.			
	Business continuity plans should cover how to issue frozen products in the absence of a thawer and a process for approval must be in place for component issue outside of SOP. Resilience measures include the use of pre-thawed plasma (or Lyoplas) and preparation elsewhere			

Section	Criteria	Compliance Y N N/A	Comments/Action Required	To be completed by:
	A record should be kept regarding cleaning, and the appropriate products used in improvised water baths and components post exposure to tap water.			
	Ensure an emergency supply of pre-printed/prepared and accessible manual compatibility labels and other documentation are available (including manual result forms, SOPs, tracking forms etc).			
	Ensure essential resources such as torches are available in case lighting is compromised. When available ensure these are checked on a regular basis to ensure the batteries have not run out.			
Interruption /loss of IT System due to Cyberattack	Business continuity plans should be in place for significant cyber-attack that impacts a LIMS. For large scale incidents, escalate to local MD office, NHS England on call officer to notify NHSBT.			
	Identify senior Transfusion Team members (i.e., Consultant Haematologist or Pathology Managers) and set out roles and responsibilities to help co-ordinate incident management, attendance of local, regional, and national meetings.			

Section	Criteria	Compliance Y N N/A	Comments/Action Required	To be completed by:
	Activate local command structure and emergency blood management group (EBMG)			
	Undertake risk assessments on all processes where deviation from routine practice is likely to be necessary.			
	If OBOS is not available, inform local NHSBT Hospital Services and follow downtime procedures for requesting blood components. It is recommended that 'FRM536/7.1 - Standard Component Request' is downloaded from https://hospital.blood.co.uk/components/order-forms/ and copies kept for emergency use. Keep a log of all units requested.			
	Establish regular (i.e., at least daily) meetings with high users to establish urgency and appropriateness of requests. All patients who need transfusions should have x2 separate samples sent to confirm grouping. If undertaking manual crossmatching, ensure additional staff are available to double check. Maintain meticulous paper records of components issued and results of any serological investigations.			

Section	Criteria	Compliance Y N N/A	Comments/Action Required	To be completed by:
	Ensure all PBM measures are scaled up i.e., use of iron, tranexamic acid, cell salvage, restrictive transfusion policies.			
	Ensure alternative methods (i.e., manual methods) are available to maintain traceability if electronic systems are not available.			
Resilience and Recovery from IT Failure/ Power Outage/ Cyberattack	Review mutual aid alternatives to support provision of services. Examples of mutual aid for transfusion might include movement of blood stock and emergency use of fridges, freezers, and plasma thawers. It is recommended that hospitals should consider this in their business contingency planning and have a pre-agreed SLA with other neighbouring hospitals or NHSBT if this is not possible.			
	Recruitment of additional/external staff to support manual processes. Plans should be in place for incidents which are prolonged (beyond 1-2 weeks) to provide support for existing staff, to aid with double checking of processes, to cover planned/unscheduled leave.			
	Plan for additional resources required to enable retrospective data input of all patients test results and transfusions during and after the incident - scanning paper charts - data input (date/time stamp) - Traceability logs			

Section	Criteria	Compliance Y N N/A	Comments/Action Required	To be completed by:
	All staff should be actively involved in all debriefs to capture learning from experience to recognise achievements and areas for improvement.			
	Ensure all SOPs, and business continuity plans are updated with lessons learnt during and after the incident.			
	Analysis of incident reports submitted during and post incident to ensure corrective actions and preventative actions (CAPA) have been implemented where incidents could have led to harm.			
	All transfusion related patient adverse events should be reported to HTT and SHOT			

With thanks to Julie Staves, BT Lab Manager

National Blood Transfusion Committee
NHS Oxford University Hospitals NHS Foundation Trust