

# **Guidance for the Emergency Transfer of Blood and Components with Patients between Hospitals**

**NHSBT Appropriate Use of Blood Group &**

**National Laboratory Managers' Group of  
the CMO's National Blood Transfusion  
Committee**

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**Disclaimer**

While the advice and information in these recommendations is believed to be true and accurate, neither the authors nor the two groups (NHSBT Appropriate Use of Blood Group and the National Laboratory Managers' Group) accept any legal responsibility for the content of these recommendations.

## Introduction

This guidance for the emergency *ad hoc* transfer of blood with patients has been prompted by recent changes in medical practice, the organisation of health services and legal requirements, including:

- The regulatory framework requires a vein-to-vein audit trail between donor and recipient (EU directive 2002/98/EC; Blood Safety and Quality Regulations 2005 (as amended)).
- Improvements in the transfusion process, especially in documentation and patient identification (Better Blood Transfusion initiatives).
- Changes in the clinical management of patients with major bleeding and increased centralisation of health services in formal clinical networks (“hub and spoke”) have reduced the need for transfer of blood with patients.

The aim of this guidance is to standardise procedures for the emergency *ad hoc* transfer of blood and components between hospitals served by the NHS Blood and Transplant (NHSBT) and the Welsh Blood Service. Although it is intended as a guide that encompasses practices from all users, hospitals are encouraged, where appropriate, to add local protocols to the policy to complement the practices outlined in this document.

Blood and components are referred to in this document as blood unless specific components are discussed.

The committees concluded that a compelling need to transfer blood would be rare in modern practice though hospitals must undertake risk assessments to guide local practice. Two scenarios were considered to be an exception:

1. Blood allocated to a specific patient who was actively bleeding and in whom the risk of transfer to a specialist unit was considered appropriate. Such patients would require a medical and/or nursing escort.
2. Patients being transferred who have special transfusion requirements such as complex phenotyped blood, irradiated blood or HLA matched platelets. However these blood components should be transferred directly to the laboratory in the receiving hospital (see page 5; point 2)

This document does **not** cover:

- Agreed transfer of stock between hospital transfusion laboratories for optimal management of blood stocks.
- Transfer of blood for a specific patient to a blood fridge located in a satellite hospital/unit of the dispatching hospital.
- Contingency planning for a blood shortage.

## Purpose

The purpose of this guideline is to help ensure the following:

1. Blood is only transferred in the appropriate clinical scenario.
2. Blood is transported and packaged in accordance with validated procedures to ensure product quality and safety.
3. The transfer of blood is correctly documented to maintain proof of the cold chain of blood storage.

4. Vein-to-vein traceability is maintained.
5. The roles and responsibility of the dispatching and receiving hospitals are clearly defined.
6. Transport of blood is optimally managed by transfer from one transfusion laboratory to another transfusion laboratory.
7. Wastage of blood is minimised.

## **Clinical Guidelines**

The following information has been provided by the surgical and anaesthetic representatives on the NHSBT Appropriate Use of Blood Group.

### Changes in practice

There are several changes in clinical practice greatly reducing the need to transfuse patients during transfer.

Experience within vascular surgery networks has shown that survival following emergency surgery is improved by the transfer of patients to specialised units. The provision of specialist surgeons, anaesthetists, theatre teams and intensive care facilities outweigh early emergency surgery in peripheral hospitals<sup>1</sup>.

Recent changes in our knowledge of resuscitation favour permissive hypotension and rapid transfer, usually without medically qualified escorts. Blood transfusion is rarely used during transfer. Clear fluids are administered sparingly to maintain consciousness or a palpable radial pulse regardless of the blood pressure, which is kept low to prevent further bleeding<sup>2</sup>.

Blood transfusion and component therapy administered in the dispatching hospital aims to render the patient stable enough for transfer. Surgical "first aid" such as packing liver lacerations has the same aim; if the patient remains unstable they are usually unfit for transfer and have a very low chance of survival<sup>3</sup>.

Historically, the purpose of transferring blood with the patient was to provide an immediate supply of blood to use during the definitive operation in the receiving hospital. Advances in laboratory practice have made this unnecessary, except in rare situations.

### Results of London and South East Regional Transfusion Committee Audit

Audit in the London and SE has shown that during a three month period, 425 units of blood were transferred in 113 patient episodes. Over 75% were not used for the intended patient and of these 56% were wasted, largely due to inadequate packaging or temperature control. Only 2.7% patients were transfused *en route* ([www.transfusionguidelines.co.uk](http://www.transfusionguidelines.co.uk)).

### Results of North East Regional Transfusion Committee Audit

In terms of the fate of the units transferred only 5% were wasted. However, only 46% were transfused to the transferred patient with the balance of 49% being able to have the cold chain verified and subsequently accepted into hospital stock. Hospitals have reported that they would then need to re-crossmatch the units to allow issue by their own IT systems. ([www.transfusionguidelines.co.uk](http://www.transfusionguidelines.co.uk)).

1. [www.vascularsociety.org.uk/.../vascular.../33-the-provision-of-emergency-vascular-services-2007.html](http://www.vascularsociety.org.uk/.../vascular.../33-the-provision-of-emergency-vascular-services-2007.html)

2. Current trends in resuscitation strategy for the multiply injured patient Stahel PF, Smith WR, Moore EE. *Injury*. 2009;40 Suppl 4:S27-35.

3. Exsanguination in trauma: A review of diagnostics and treatment options. Geeraedts LM, Kaasjager HA, van Vugt AB, Frolke JP. *Injury* 2009 Jan;40(1):11-20.

## Avoiding transfer of blood with patients

The receiving hospital is, by definition, a specialist centre with up-to-date transfusion laboratory facilities. The transfusion laboratory in the dispatching hospital will have tested the patient sample and crossmatched blood. The blood group and results of antibody screening can be communicated by fax or telephone to the receiving hospital laboratory, to provide advance warning.

Preparation for anaesthesia and surgery in the receiving hospital provides a window of time for registration of the patient, fitting of identification wristbands and the provision of a blood sample for post transfer full blood count, biochemistry and cross-match.

If blood transfusion is required urgently in the receiving hospital, group O RhD negative or type specific blood can be issued immediately and transfused.

It is recommended that provision of facilities for cell salvage (equipment and trained personnel) should be considered in tertiary centres receiving such patients and, where appropriate, should be set up ready to receive the patient.

## Recommendations

**Transfer of blood or components with a patient is required in exceptional circumstances only. This should be reserved for patients who will need transfusing during the journey. Two units of blood should be sufficient.**

**The transfusion laboratory should coordinate the transfer of blood and ideally this will occur from laboratory to laboratory. Blood should never be transferred without the knowledge of the transfusion laboratory.**

## Principles of laboratory guidance for the transfer of blood

The cold chain is a temperature-controlled supply chain of storage and distribution activities which maintain a given temperature range. Insulated boxes containing cool packs, or other validated packaging materials, ensure that the optimum temperature is maintained for transport. Records are kept of transport of blood and components in order to maintain an audit trail of the cold chain. The fate of individual units must be recorded by both the receiving and dispatching hospitals.

Some hospitals do not generally transfer blood and may not have validated the packing of transport boxes. These hospitals should follow the appropriate local transfusion centre policy for packing and ensure they have the appropriate packaging and transport materials within the laboratory for use in the emergency situation. The temperature storage validation times from NHSBT are given in Appendix 1.

Transfusion laboratories that transport blood routinely to other hospitals, clinics and hospices should use their own validated method (in accordance with the BSQR 2005) to pack the blood for transportation for transfer.

Not all transfusion laboratories pack blood for transport in exactly the same way. Even if the dispatching hospital's method is different to that of the receiving hospital, the information on the received paperwork should be accepted as valid i.e. the expiry time of the cold chain of the packaged blood and the intact seal on the transport box.

## **Procedure for the dispatching hospital**

Prior to packaging the blood, ensure suitable transport arrangements are in place.

### ***Blood Packaging and Final Documentation***

1. Locate the blood to be sent.
2. Complete a transfer document (Appendix 2). The 'component detail' section can be computer generated and attached. Make a copy of this documentation for your records and fax to the receiving hospital. Return the blood to suitable storage conditions whilst preparing the transport box, packing materials and labels.  
*Blood which may have been difficult to source should not be transferred with the patient as the figures cited show that a large proportion of this would be wasted – it is preferable to send the blood by taxi/courier directly to the receiving transfusion laboratory.*
3. Immediately before sending, place the blood in the appropriate transport box validated for the number of units being transferred. Follow the local validated procedure for packaging and transport or, if this is not normal practice, in an emergency refer to the local blood centre protocols.
4. Place all the appropriate documentation in the transport box, retaining a copy of the transfer document.
5. Replace the transport box lid. Ensure label details are complete and label attached to transport box (Appendix 3).
6. The transport box should be sealed by a method (e.g. cable tie) that alerts the user/laboratory, if removed or broken, that the cold chain has been broken.
7. Staff accompanying patients with transport boxes should be advised regarding the temperature control of blood and given a copy of Appendices 4 and 5.

### ***Dispatch of Blood Components***

1. On dispatch of the blood, immediately telephone the transfusion laboratory of the receiving hospital to confirm dispatch and to check that their fax number is correct.
2. Confirm the following
  - Dispatching transfusion laboratory contact details.
  - Time of dispatch.
  - Mode of transport (courier or ambulance with the patient).
  - Estimated time of arrival.
  - Number and type of units.
  - Patient identification details and the ward or department (if known) expected to receive the patient.
  - Patient's blood group, any antibodies, special requirements and recent transfusion history.
  - Complete and fax a Shared Care Document if appropriate. This is to communicate any special transfusion requirements.
3. Fax a copy of the transfer document (Appendix 2) to the receiving transfusion laboratory.

4. It is necessary for the dispatching hospital to record the final fate of the units. This may be:
  - Transfused to the patient.
  - Wasted due to breach of cold chain.
  - Not transfused but put into receiving hospital's stock.
5. The receiving hospital must ensure that they can make this information available. The receiving hospital should record receipt, arrival time and final designation of the blood on the hospital LIMS or a paper record if the LIMS system does not allow for this.

### **Procedure for the receiving hospital**

The blood should be sent to the transfusion laboratory as soon as it arrives at the receiving hospital. The clinical area where the patient is being transferred to should be aware that they are required to send the transport box immediately on arrival to the transfusion laboratory to ensure proper process.

Local policies should be in place to ensure received blood is transferred to suitable storage facilities as soon as possible, taking note of the expiry time displayed on the transport box.

1. On arrival, transfusion laboratory staff should check the integrity of the transport box, complete the transfer documentation and check the blood is still under correct storage conditions.
2. Blood samples must be taken from the patient immediately and sent to the blood transfusion laboratory for testing.
3. Blood received must be entered on the LIMS and the fate should be recorded as follows:
  - Transfused to the patient
  - Wasted due to breach of cold chain.
  - Not transfused but entered into stock.
4. The receiving transfusion laboratory must ensure that all transferred units are accounted for.
5. For blood transferred with a patient, the receiving transfusion laboratory must inform the dispatching transfusion laboratory (preferably by fax) of the fate of the units to enable update of records as above. This ensures the correct fate of the units is recorded at both hospitals.

### **Wristbands**

Wristbands must be used to identify the patient during transfer. Most receiving hospitals will re-register the patient and issue a second set of wristbands. Communication between the clinical area and the transfusion laboratory is necessary to ensure that patient identification is managed in a safe and appropriate manner. A policy should be in place to minimise the risk of multiple hospital numbers and wherever possible the NHS number should be incorporated.

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## **Acknowledgements**

Louise Meaney, Megan Rowley, Rachel Moss, Brian Robertson, Catherine Howell, Sarah Morley, Richard Gray, Shirley Hannam, Jot Hyare and all members of the NHSBT Appropriate Use Group and the National Laboratory Managers' Group.

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## **APPENDICES**

**The appendices are available as Word documents so  
that hospitals can adapt for local use**

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**Guidance for the Emergency Transfer of Blood with Patients APPENDIX 1- NHSBT Temperature Storage Validation**

	<b>UBP 110</b>			<b>UBP 130</b>			<b>UBP 150</b>		
	Ambient Temperature			Ambient Temperature			Ambient Temperature		
<b>Red Cell Components</b> Including all component(s) stored at 4°C ± .2°C	2 to 6°C	Up to 27°C	Up to 32°C	2 to 6°C	Up to 27°C	Up to 32°C	2 to 6°C	Up to 27°C	Up to 32°C
	12hrs	6.5 hrs	NA	12hrs	6.5 hrs	4.5 hrs	NA	NA	NA
	Capacity: Up to 6 Adult Red Cell Units			Capacity: Up to 16 Adult Red Cell Units					
<b>Platelet Components</b> Including all component(s) stored at 22°C ± .2°C	-2 to 6°C	Up to 27°C	Up to 32°C	-2 to 6°C	Up to 27°C	Up to 32°C	-2 to 6°C	Up to 27°C	Up to 32°C
	3 hrs	7 hrs	4.5 hrs	NA	8 hrs	NA	NA	NA	NA
	Capacity: 6 Adult Platelets with 2 Medicool layers below and one above			Capacity: 6 Adult Platelets with 2 Medicool layers below and one above					
<b>Frozen Components</b> Including all component(s) stored below - 30°C	2-6°C	Up to 27°C	Up to 32°C	2-6°C	Up to 27°C	Up to 32°C	2-6°C	Up to 27°C	Up to 32°C
	NA	NA	NA	NA	NA	NA	NA	NA	11 hrs
							Capacity: Up to 8 Adult FFP units with 3 x 500 g packs of dry ice		

**Guidance for the Emergency Transfer of Blood with Patients APPENDIX 2  
BLOOD and BLOOD COMPONENT TRANSFER FORM**

This form must accompany units transferred with a patient between the Hospitals documented.

Blood and blood components must only be transported using a validated container and in strict accordance with a locally agreed method which complies with the Blood Safety & Quality Regulations (2005)

<b>PATIENT NAME</b>	<b>ID or ADDRESS</b>	<b>DOB enter as: dd/mm/yy</b>	<b>GENDER</b>
<input style="width: 95%; height: 30px;" type="text"/>			

<b>TYPE OF UNITS</b>	<b>Special requirements:</b>
<b>Blood</b> <input type="checkbox"/> <b>FFP</b> <input type="checkbox"/> <b>PLTS</b> <input type="checkbox"/>	<b>Irradiated</b> <input type="checkbox"/> <b>CMV-ve</b> <input type="checkbox"/> <b>HLA Matched</b> <input type="checkbox"/>

**Enter donation number of all units transferred (Blood, FFP, Platelets) or attach details to form**

<b>UNIT 1</b> <input style="width: 95%; height: 25px;" type="text"/>	<b>UNIT 2</b> <input style="width: 95%; height: 25px;" type="text"/>	<b>UNIT 3</b> <input style="width: 95%; height: 25px;" type="text"/>
<b>UNIT 4</b> <input style="width: 95%; height: 25px;" type="text"/>	<b>UNIT 5</b> <input style="width: 95%; height: 25px;" type="text"/>	<b>UNIT 6</b> <input style="width: 95%; height: 25px;" type="text"/>

.....**HOSPITAL NHS TRUST** **DISPATCHING HOSPITAL**

*I confirm that the components listed above have been stored in accordance with National guidelines before issue and that the recipient site is aware of their obligation to transport, store, use and maintain fully traceability in accordance with Blood Safety & Quality Regs (BSQR 2005)*

*I confirm that the components listed above will be transported in a correctly packed, validated container and must arrive within a 4 hour period of the package time*

**Date Packed:** \_\_\_\_\_ **Time packed:** \_\_\_\_\_ **Signature:** \_\_\_\_\_

.....**HOSPITAL NHS TRUST** **RECEIVING HOSPITAL**

**The box was received sealed**

**The box had been opened**

*I confirm that the components received were appropriately transported and will be stored in accordance with the requirements of the Blood Safety & Quality Regs*

**Date received:** \_\_\_\_\_ **Time received:** \_\_\_\_\_ **Signature:** \_\_\_\_\_

**FINAL DISPOSITION**

	<b>UNIT 1</b>	<b>UNIT 2</b>	<b>UNIT 3</b>	<b>UNIT 4</b>	<b>UNIT 5</b>	<b>UNIT 6</b>
Transfused en-route	<input type="checkbox"/>					
Wasted	<input type="checkbox"/>					
Stock	<input type="checkbox"/>					
Signature	.....	.....	.....	.....	.....	.....

Where units are transfused en-route or before being received by your Transfusion Dept, please disclose above.  
Used blood bags (plus label) must be sent by your Transfusion Department for retrospective data entry and recording of final disposition.

**RECEIVING HOSPITAL TO FAX THIS COMPLETED FORM TO THE DISPATCHING HOSPITAL**

**Dispatching Hospital contact details:**  
 Transfusion Laboratory Fax no: \_\_\_\_\_  
 Transfusion Laboratory Direct: \_\_\_\_\_ Out of Hours: \_\_\_\_\_  
 Hospital Switchboard : \_\_\_\_\_

Guidance for the Emergency Transfer of Blood with Patients APPENDIX 3 Label for Transport Box  
 To: *Insert name and address of receiving hospital*

This box should be taken immediately on arrival to the Hospital Transfusion Laboratory

**BLOOD**  
**URGENT**  
 For Immediate  
 Delivery

The Blood / Components contained in this box were issued from the Transfusion Laboratory at ..... Hospital.

If found please telephone ..... immediately

<b>Packed by:</b> Signature of BMS  PRINT NAME  <b>Date:</b> <b>Time:</b>	<b>Delivered by:</b> Signature of Porter/Driver  PRINT NAME  <b>Date:</b> <b>Time:</b>
<b>Delivered to:</b> Signature  PRINT NAME and DESIGNATION  <b>Date:</b> <b>Time:</b>	<b>Date and time removed from transport box:</b> Give <u>exact</u> time HH:MM Unit 1: Unit 2: Unit 3: Unit 4: Unit 5: Unit 6:

**This transport box has been validated for the storage of blood components.  
 The contents of this box will be suitable for transfusion until  
 HH:MM hours**

**Transport box opened/seal broken at: .....**

In compliance with BSQR 2005, it is confirmed that the contents of this box have been stored securely in accordance with Guidelines for the Blood Transfusion Services.

**Do NOT open unless immediate transfusion of the patient is indicated**

## **Blood Transfer Advice for Clinical Staff**

**Please ensure the following sheet is ATTACHED to the transport box when blood is being transferred with a patient**

*The blood and blood components have been packed in this transport box following transfusion laboratory guidelines.*

### **During transfer:**

- If blood is required during the patient's journey please ensure it is checked and transfused in accordance with local policy.
- Please ensure the transport box remains sealed unless blood is required for transfusion. Once opened, the cold chain has been broken and all the units must be transfused within 4 hours.
- If blood is removed for transfusion, please replace the lid.
- Blood is suitable for transfusion within the timeframe stated on the associated paperwork with the transport box, provided the seal is unbroken.

### **On arrival:**

- When the patient arrives in the receiving clinical area, please ensure the transport box is handed over to the receiving staff member.
- Please state how much blood was transfused during the journey and any adverse events (if occurred).
- The responsibility for the blood now lies with the receiving hospital in line with their local policy.

# ACTING ON TRANSFERRED BLOOD COMPONENTS UPON ARRIVAL

