

Administering blood transfusion

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Is it safe?

Approximately 3.34 million blood products are transfused each year in the UK. Blood transfusions save lives and improve the quality of life in a large number of conditions. However, data collected by SHOT (serious hazards of transfusion) scheme indicates that blood transfusion recipients are exposed to avoidable risks. Some of which can result in serious morbidity and death.

SHOT (2004) reported that of the main bulk of errors, 80%, can be put down to human error. And 42% of those errors occur when collecting and checking blood at the bedside.

Safe but not without risk



Following the 2004 SHOT report, the RCN (2005) produced Right blood, Right patient Right Time, a set of guidelines for improving transfusion practice. More recently the United Kingdom Blood Service has produced national guidelines in Handbook of Transfusion Medicine (2007). National guidelines such as these inform local policy, which may vary slightly from trust to trust. So it's important to always refer to your departments policy.

The following set of slides will give you an overview of the bedside checking procedure and the care of those undergoing blood transfusion.

Bedside checking is the last chance to prevent an error.

Learning outcomes

- Safe bedside checking
- Safe administration of blood
- Care of the patient receiving blood
- Responding to adverse reactions

Always refer to your hospital policy

Preparation

Blood should be in transfusion within 15 minutes of leaving the fridge. If the blood is not being transfused within 30 minutes of leaving the fridge the blood transfusion department must be informed and the blood may need to be returned.

Therefore it is important to ensure that you are prepared to check and administer the blood as soon as it arrives on the ward.

Before sending for the blood it may be helpful to ensure the following checks are carried out

Administering blood transfusion

Pre-collection checks

Is the transfusion prescribed appropriately?

Why does the patient need a transfusion?

Have any accompanying medications e.g. Frusemide, been prescribed?

Are there any special requirements e.g. Gamma Irradiation?

Check the patient has venous access. Is it patent and intact?

Will a second checker be available?

Ensure the patient is positioned so they can be closely observed when the transfusion is taking place.

Does the patient understand the procedure?

Have they given their consent?

Labels, forms, slips and stickers

Compatibility Unit Numbers		Group/Issue	Expiry Date	Product Type	Date Blood Issued	Signature 1	Signature 2
GG735073558064	CNEG	31/01/2008	REDCELL				
GG73507295597U	CNEG	31/01/2008	REDCELL				

Comments

Date Required: 25/01/2008 Issued by: 24/01/08 14:20

EMERGENCY BLOOD ISSUE - NO LABORATORY TESTING PERFORMED
CFA Accredited
(CFA)

Tear Below, Sign and Leave LAB COPY in the Laboratory - Thank you

Compatibility form

Selected for issue: 25/01/2008

Date Required: 25/01/2008

Donor unit No: GG73507295597U

Donor group: CNEG

SELECTED FOR:

(Details below used match patient's ID band)

Surname: PETEROP
Forename: PENelope
Hospital No: GDC0308
DOB: 04/08/1974
Sex: F
Blood group: A Rh D POSITIVE

Read off this label & stick to patient's record

GG73507295597U
Patient name: PETEROP, PENelope
Hospital No: GDC0308

Once unit is connected to the patient complete this section, detach and return to Blood Transfusion

GG73507295597U
Patient name: PETEROP, PENelope
Hospital No: GDC0308

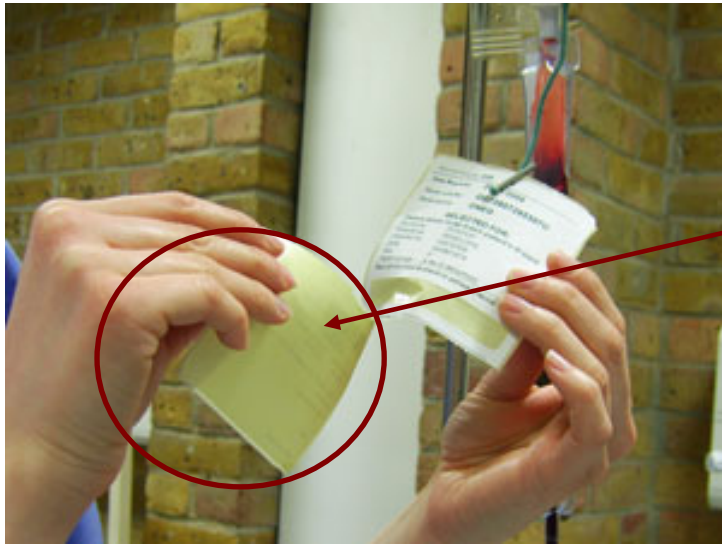
I confirm that the blood product has been transfused to the listed patient

Print name clearly

Sign

Date transfused

Compatibility label



Transfusion label



Blood bag label



Sticker for patient records

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Equipment



- A blood giving set should be used to administer blood
- Blood giving sets differ from regular giving sets in that they have a double chamber and an integral mesh filter. This is to prevent micro thrombi from being infused into the patient.
- As with any sterile device you must check the expiry date and that the packaging is intact
- Non-sterile Gloves and an apron



- Do you need a blood warmer?
- Electric infusion pumps may damage blood cells so should not be used unless identified as safe to use by manufacturers

Check product



Look for:

- Pack integrity
- Presence of large Clots
- Evidence of haemolysis in the plasma or at the interface between red cells and plasma

If any of the above are present the blood must not be used and must be returned to the blood transfusion department

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Bedside checking



Checking must take place at the patients bedside

Bedside checking is the last chance to prevent an error

Most local policies state that blood should be independently checked by two trained members of staff

Only check blood or blood products for one patient at a time

If you are interrupted in the checking procedure you must start again

Bedside checking: Step 1



Ask the patient to tell you their name and date of birth

It is essential that an open question is used, for example: Can you confirm your full name and date of birth please?

Check this against the ID band

If the patient is confused or unconscious a responsible visitor or another member of staff who knows the patient can be asked to verify the patients identity

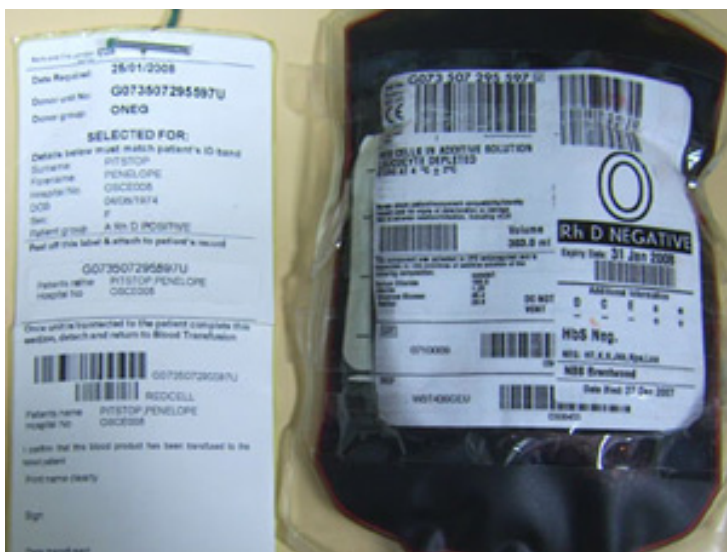
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Bedside checking: Step 2



Check the full name, date of birth and hospital number on the patient ID band against the compatibility label

Bedside checking: Step 3



Check the blood unit number on the compatibility label against the blood unit number on the blood bag label

Now check the blood group and Rh status of the donor and the blood group and Rh status of the recipient on the blood label match those recorded on the compatibility label. Are the blood groups compatible?

Check the expiry date on the blood bag label

Finally, ask a second checker to begin their own check the blood at the bedside

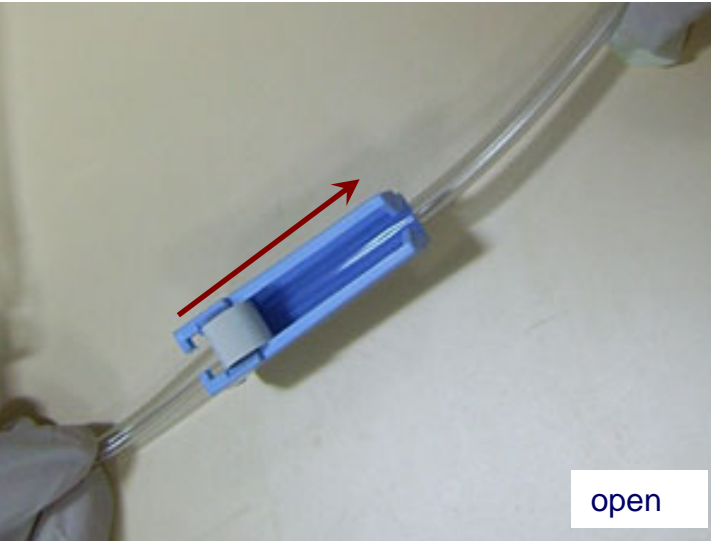
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Putting up the blood



Firstly, have you got that set of base line observations? These should be carried out immediately before the transfusion is started and should include BP, Temperature, Respirations, Pulse, Oxygen saturations and urine output.

Ensure clinical staff are available to closely observe the patient



- Asepsis and standard precautions must be used throughout

- Wash hands

- Put on non sterile gloves and an apron

- Close the clamp on the giving set to occlude the line



Putting up the blood



Pull the tabs to expose the outlet port



and aseptically



insert the spike into the blood component pack outlet

Administering blood transfusion

Putting up the blood



Squeeze the blood up through the first chamber



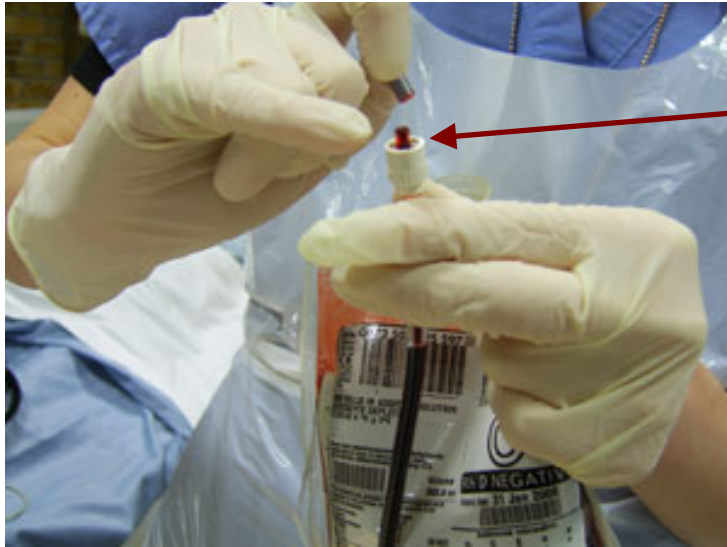
and a third of the way into the second chamber. Now, slowly open the clamp



Priming the line

- Run the blood through the giving set so that all air is expelled

Putting up the blood



Keep sterile



Aseptically attach blood giving set to cannula
Secure the giving set and cannula with bandaging

Ask the patient to observe for and report the following symptoms

- Chest or loin pain
 - Feeling unwell
 - Shortness of breath
 - Rashes
 - A restless or anxious feeling
 - Abdominal discomfort
 - Blood in the urine
- Ensure the patient has access to a call bell

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Calculating the drip rate



Ensure the blood is being delivered at the correct rate.

If the blood is transfused too quickly the patient is at risk of becoming overloaded. If the transfusion is delayed there is a risk of haemolysis occurring as the blood warms to room temperature

Example:

For a 3 hourly, 500ml bag of blood

The drop factor for blood is usually 15, which means that with the size of tubing in a blood giving set there will be 15 drops of blood in 1ml of blood.

$$\begin{array}{r}
 \text{Total Volume to be infused} \\
 \text{-----} \\
 \text{Time in minutes} \\
 \text{(convert hours to minutes)}
 \end{array}
 \begin{array}{c}
 \boxed{500\text{ml}} \\
 \\
 \boxed{180 \text{ minutes}} \\
 (3 \times 60 \text{ minutes})
 \end{array}
 \times \text{Drop Factor } \left(15 \frac{\text{drops}}{\text{ml}} \right) = 42 \frac{\text{drops}}{\text{minute}}$$

Measures - Units

Volume - ml

Time - min

Drip rate - drops/min

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Observing the patient during the blood transfusion



The patient should be closely observed during the first fifteen minutes of receiving a blood transfusion by a qualified member of staff. This is because a blood reaction is likely to occur with the first few drops. However it could take days for a blood reaction to occur.

Reactions vary from mild to dangerous and life threatening



Many signs of an adverse reactions are visible so therefore close visual observation of the patient is essential

Record patients blood pressure, temperature and pulse and respirations 15 minutes after each unit is started and according to local policy

Monitor urine output and colour

Documentation



First name, surname, DOB, hospital number

Date, time transfusion started and finished

Reason for transfusion and consent

Type of units transfused

Number of units transfused

Unit numbers in full

Outcome of transfusion

Any adverse reactions

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Documentation



Sticker in medical notes (blood unit number)

Compatibility report must be filed in the case notes immediately following the transfusion



Sign the prescription chart



Sign transfusion label return section, this needs to be returned to the lab

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Some points to remember

Blood should be transfused within four hours of its removal from storage (there is a risk of bacterial proliferation and red cell metabolism if the blood reaches an ambient temperature for a sustained period of time) (RCN 2005)

Never add anything to a blood transfusion

Blood products are not compatible with dextrose (dextrose 5%) can lyse red blood cells

Change the giving set at least every twelve hours for a continuing transfusion and on completion of the transfusion (RCN)

Used bags stay on the ward for 48hrs (in case of delayed reaction) and then disposed of in a yellow clinical waste bin (in the case of a delayed reaction the lab can use the stalk of donor blood to initiate serological investigation)

Adverse reactions

Acute reactions

Allergic reaction (mild to anaphylaxis)

Haemolytic reaction

Infective shock

Circulatory overload

TRALI

Delayed complications of transfusion

Delayed haemolysis of transfused red cells

Transfusion associated graft versus host disease

Post transfusion purpura

Iron overload

Infection e.g. HIV, Hepatitis B, Hepatitis C, Syphilis

Adverse reactions: when to stop a transfusion

If any of the following occur,

Increase in temperature by 1°C

Significant rise or fall in Blood Pressure

Significant rise in pulse

Any sign of a reaction

Stop the transfusion!

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Adverse reactions: How to act when patient reacts

Stop the transfusion

Maintain venous access (keep the line open with normal saline)

Check ABC and examine the patient

(medics, what would you be looking for in your examination?)

Check the ID of the patient (verbally and/or wristband) against ID details on the unit, compatibility form, compatibility label and prescription chart

Call for senior and specialist help (if it appears life threatening call the resuscitation team)

Obtain bloods

Medics - which investigations would you order and why? Who else might you call for advice?

Emergency drugs and crash trolley (hydrocortisone, Antihistamine, adrenaline)

Retain any unfinished infusion and giving set (this will need to go back to the laboratory)

Close monitoring of vital signs

Further reading

Grey, A. Illingworth, J (2005) Right Blood, right patient, right time. RCN guidance for improving transfusion practice: Royal College of Nursing UK

Blood Transfusion Policy Barts and The London NHS Trust 2006
Ref BLT/POL/11107/N&Q

McClelland B. (Editor) (2007) *Handbook of Transfusion Medicine* 4th edition London: The Stationery Office

Murphy M.F. and Pamphilon D.H. (Editors) (2005) *Practical Transfusion Medicine* 2nd Edition Oxford: Blackwell Science

Parris E, Grant-Casey J (2007) Promoting safer blood transfusion practice in hospital. *Nursing Standard*. 21,41, 35-38.

SHOT (2005) Annual Report 2004 (full report 51 pages)
(Summary of Annual Report was circulated to all BLT clinical areas)

Websites

www.bbts.org.uk

www.blood.co.uk

www.doh.gov.uk/bbt2

www.shotuk.org

www.transfusionguidelines.org.uk

<http://www.learnbloodtransfusion.org.uk/>

Test your knowledge of blood transfusion on www.cetl.org.uk/learning/

This printsheet is produced by Natasa Perovic, CETL learning technologist

www.CETL.org.uk