BLOOD TRANSFUSION

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What Are The Risks Associated With Blood Transfusion?

- Infection transmission
- Hepatitis B
- Hepatitis C
- HIV
- Syphilis
- vCJD?
- Transfusion of the wrong blood!!!
Figure 3
Cumulative numbers of cases reviewed 1996–2008  n = 5374

New Categories for this year
Transfusion Case Study

- Patient dies following transfusion
- Elderly man with chronic renal failure, anaemia and a history of falls attends A&E
- Symptomatically anaemic with Hb 6.8 g/dl.
- Cross matched using a blood sample taken in A&E
- On ITU after < 100 mL blood had been transfused, developed fever, hypotension, bronchospasmand died a few hours later

- On investigation:
  - Patient blood was group O RhD negative, he received a unit of A RhD negative blood.
What went wrong?

- No checking of patient's ID at the bedside, either with the patient or with the wristband.
- Incorrect patient had been bled in A&E resulting in a wrong blood in a tube incident. The sample was labelled for the intended patient.
- Why?
- Transfusion sample protocol not followed.
- What should have happened?
- All patients being sampled must be positively identified.
- Reaction? Acute Haemolytic Transfusion Reaction
Sampling Procedure

• **Step 1:** Ask the patient to tell you their:
  • Full name and date of birth
  • Check this information against the patient’s ID wristband
  • *Get a second independent check when the patient is unconscious / compromised*
Sampling Procedure

- **Step 2:** Check the patient's ID wristband against documentation e.g. case notes or transfusion request form:
  - First name
  - Surname
  - Date of birth
  - Hospital number
Sampling Procedure

- Only bleed one patient at a time
- Do NOT use pre-labelled tubes
- Hand write the sample tube before leaving the patients side!
- NB: Do not take samples from a IV drip arm.
Please Note:

• All patients’ requiring blood products will require two group and screen samples to be taken at separate times in order to verify the patient’s correct blood type. Unless there is an existing historical blood group record when an in date second sample will be required.

• Certain haematology patients must be treated with Hepatitis E (HEV) negative products. Please refer to CORP/PROT/327 or contact blood bank Tel 3746/3747 for advice.
Why do mistakes happen?

- Not following the trust policy
- Only seeing what you want to see when checking products / patient ID
- Relying on the other person to carryout the check
- Labelling blood tubes away from the patient
- Remotely carrying out the bedside check
Do you always see what your reading?

- I cdnuolt blveiee taht I cluod aulaclty uesdnatnrd waht I was rdgnieg. The phaonmneal pweor of the hmuan mnid Aoccdrnig to a rscheearch at Cmabrigde Uinervtisy, it deosn't mttaer inwaht oredr the ltteers in a wrod are, the olny iprmoatnt tihng is taht the frist and lsat ltteer be in the rghit pclae. The rset can be a taotl mses and you can sitll raed it wouthit a porbelm. Tihs is bcuseae the huamn mnid deos not raed ervey lteter by istlef, but the wrod as a wlohe. Amzanig huh? yaeh and I awlyas thought slpeling was ipmorantt!
What do you see?

PARIS
IN THE
THE SPRING
WHAT DO YOU KNOW ABOUT BLOOD TRANSFUSION?

WHAT IS THE AVERAGE VOLUME OF A BAG OF PACKED RED CELLS

- 280 MLS
- 350 MLS
- 450 MLS
AVERAGE VOLUME IS 280Mls

- Approx 450mls is collected from donors
- Blood is then fractionated into plasma
- For FFP/cryoprecipitate, platelets and RBCs
- RBCs are re-suspended in nutrient medium and issued
A patient's platelet count is $20 \times 10^9/l$; one bag of platelets will raise it to

A. 70
B. 100
C. 30
PLATELET COUNT WILL RISE TO APPROX. 70 x10^9/l

- One adult dose of platelets is derived from 4 pooled donations and combined in one bag
- Platelet count will rise by approx 50 after one adult dose
HOW MUCH DO YOU KNOW ABOUT BLOOD TRANSFUSION?

• A patient weighs 70kg and requires FFP the correct dose is;
  A. 20-30ml/kg
  B. 12-15ml/kg
  C. 5-10ml/kg
THE CORRECT DOSE OF FFP IS 12-15 ml/kg

- A 70kg patient would need 3/4 bags.
- No viral inactivation steps taken
- Contains all clotting factors
- Should not be used as a volume expander
Warfarin Reversal Before An Urgent Or Emergency Operation

There is no role at BVH for the use of fresh frozen plasma (FFP) in the reversal of anticoagulation. The preferred agent is prothrombin complex concentrate (PCC). (Octoplex)

PCC has the following advantages over FFP:

- No need for a blood group
- No need to thaw
- Small volume to give to patients (approximately 20mls compared to about 1 litre of FFP), which will be beneficial in elderly patients
- No risk of FFP-associated side-effects such as anaphylaxis or transfusion-related acute lung injury (TRALI)
FACTS ABOUT TRANSFUSION!

- There are NO clotting factors in red cells
- There are no active platelets in red cells
- Blood transfusion must be completed within 4 hours of removal from fridge BUT 280mls can be safely transfused into most patients over 2 to 3 hours
THE GREATEST RISK TO A PATIENT HAVING A BLOOD TRANSFUSION IS?

A. Getting post transfusion hepatitis
B. Getting HIV
C. You
Transfusion Management of Massive Haemorrhage

Patient bleeding / collapses
Ongoing severe bleeding eg: 150 mls/min
Clinical shock

Call for help
‘Massive Haemorrhage, Location, Specialty’
Alert emergency response team (including blood transfusion laboratory, portering/transport staff)
Consultant involvement essential

Take bloods and send to lab:
XM, FBC, PT, APTT, fibrinogen, U+E, Ca²⁺
NPT: ABG, TEG / ROTEM if available
Order MHP 1
Red cells* 4 units
(*Emergency O blood, group specific blood, XM blood depending on availability)
FFP 4 units

Give MHP 1

Reassess
Suspected continuing haemorrhage requiring further transfusion
Take bloods and send to lab:
FBC, PT, APTT, fibrinogen, U+E, Ca²⁺
NPT: ABG, TEG / ROTEM if available
Order MHP 2
Red cells 4 units
FFP 4 units
Platelets 1 dose (ATD)

Give MHP 2

Once MHP 2 administered, repeat bloods:
FBC, PT, APTT, fibrinogen, U+E,
NPT: ABG, TEG / ROTEM if available
To inform further blood component requesting

Give MHP 2

Aims for therapy
Aim for:
Hb 8-10g/dl
Platelets >75 x 10⁹/l
PT ratio < 1.5
APTT ratio < 1.5
Fibrinogen >1g/l
Ca²⁺ >1 mmol/l
Temp > 36°C
pH > 7.35 (on ABG)
Monitor for hyperkalaemia

2 packs cryoprecipitate if fibrinogen < 1g/l (<2g/l in obstetric haemorrhage) or as guided by TEG / ROTEM

Thromboprophylaxis should be considered when patient stable

Prevent Hypothermia
Use fluid warming device
Used forced air warming blanket
Consider 10 mls Calcium chloride 10% over 10 mins

ABG – Arterial Blood Gas
FFP- Fresh Frozen Plasma
PT - Prothrombin Time
APTT – Activated partial thromboplastin time
MHP – Massive Haemorrhage Pack
TEG/ROTEM- Thromboelastography
ATD- Adult Therapeutic Dose
NPT – Near Patient Testing
XM - Crossmatch

STOP THE BLEEDING

RESUSCITATE
Airway
Breathing
Circulation

RESUSCITATE
Airway
Breathing
Circulation

Haemorrhage Control
Direct pressure / tourniquet if appropriate
Stabilise fractures
Surgical intervention
Interventional radiology
Endoscopic techniques
Obstetric techniques

Haemostatic Drugs
Tranexamic acid 1g bolus followed by 1g over 8 hrs
Vit K and Prothrombin complex concentrate
for warfarinised patients and
Other haemostatic agents: discuss with Consultant Haematologist

Cell salvage if available and appropriate
Consider ratios of other components:
1 unit of red cells = c.250 mls salvaged blood

Transfusion lab 3746 /3747
Consultant Haematologist
Via switchboard

STAND DOWN
Inform lab
Return unused components
Complete documentation
Including audit proforma
BLOOD BANK

& Screen only
& Crossmatch

Coombs test
185207

Product Request
Product and quantity required

Date and time required

Previous transfusions
Yes / No

Reactions
Yes / No

If FEMALE
No. of Children .......... Miscarriages ..........

Reason for Transfusion

ABO and Rh group
(if known)

Use this form to order:

BLOOD
PLATELETS
FRESH FROZEN PLASMA
FACTOR VIII
FACTOR IX
ALBUMIN (20%)
ANTI-D IMMUNOGLOBULIN

Lab use only

Arrived 5/3/01
Grouped 15/11

BLOOD BANK  Tel 303746

Date of Birth          Sex
1/1/01                         M/F

Ward / Practice
9

Consultant
PAVI

Date / Time of Collection
5/3/01 24 Hr

Clinical Diagnosis
Haemorrhage

Product Request
Product and quantity required

Yes / No

Reason for Transfusion

Lab use only 0 Relative

It will be assumed that the Medical Officer authorising this investigation takes responsibility for the correct labelling of samples.

Crossmatched blood will normally be reserved until 9.00 am on the day following the date required.

Platelets are available by prior arrangement only. Gpued 2nd batch

Use this form to order:

BLOOD
PLATELETS
FRESH FROZEN PLASMA
FACTOR VIII
FACTOR IX
ALBUMIN (20%)
ANTI-D IMMUNOGLOBULIN

Wrong Patient
Please Print firmly using ball point pen

Hospital Ref No

BLOOD BANK  Tel 303746

Group & Screen only and save serum

Group: 185230

group: G

cross: X

cell count: C

Product Request
Product and quantity required

Date and time required

Previous transfusions Yes / No

Reactions Yes / No

If FEMALE
No. of Children Miscarriages

Reason for Transfusion

ABO and Rh group

Use this form to order:
BLOOD
PLATELETS
FRESH FROZEN PLASMA
FACTOR VIII
FACTOR IX
ALBUMIN (20%)
ANTI-D IMMUNOGLOBULIN

Crossmatched blood will normally be reserved until 9.00 am on the day following the date required.

Platelets are available by prior arrangement only.

Use this form to order:
BLOOD
PLATELETS
FRESH FROZEN PLASMA
FACTOR VIII
FACTOR IX
ALBUMIN (20%)
ANTI-D IMMUNOGLOBULIN

Lab use only

A POS

mL

Ward / Practice

Consultant

Sex

M / F

1

RAVI

5 3 1 01

Clinical Diagnosis

pre-op cholecystectomy

Routine □ Urgent □ Private □ Cat II □

Request Re: A student of Name

DR GF PARKINSON

1 1

1 9
THE ONLY SAFE TRANSFUSION IS?

THE ONE YOU DON’T GET!