Australian Red Cross Lifeblood

2020 Edition

Pack Check Clinical Scenarios

Practice completing the patient, prescription and pack check in a clinical scenario

Scenario 1: Red cells

Lihn Nguyen, aged 65, was experiencing difficulty walking and performing everyday activities. She was initially examined by her local GP, who referred her to an orthopaedic surgeon.

Advanced osteoarthritis was diagnosed and surgery planned to perform a total hip replacement. Her medications included warfarin for atrial fibrillation and a fish oil supplement.

Post-surgery, Lihn had a haemoglobin count of 79 g/L and was experiencing ongoing blood loss, shortness of breath and associated chest pain. The decision is made to transfuse Lihn Nguyen one unit of red cells today (27/10/2017), following which she would be reassessed to identify the need for further blood components.

Activity

With a partner, check Lihn Nguyen's blood component pack. Use the appropriate documentation to ensure it matches the component to be transfused.

Additional learning

1. What are red cells?
2. What are the clinical uses of red cells?
3. What are the minimum observations when transfusing red cells?
4. What signs and symptoms are being looked for during the observations?
5. What are the compatible intravenous solutions for red cells?
6. Why has Lihn Nguyen been ordered Frusemide post-transfusion?

SV000643

INTRAVENOUS AND SUBCUTANEOUS FLUID ORDER

Adverse Drug Reaction Sticker

(See Medication Chart for details)

Weight 75 kg

UR No.: 475 963
Surname: Nguyen
Given Name: Lihn
D.O.B.: 25 5 53
Please fill in if no Patient Label available

1st Prescriber to Print Patient Name and Check Label Correct:

DRIP RATE CALCULATOR (1 Litre Bag) = Drops per Minute (DPM) Microdrip sets (60 drops = 1mL/hr) mL/hr = Drops/min

Time (hrs)	2	4	6	8	10	12	16	18	24
mL/hr (1L bag)	500	250	166	125	100	83	62	55	42
20 drop/mL set	167 DPM	83 DPM	55 DPM	42 DPM	33 DPM	28 DPM	21 DPM	18 DPM	14 DPM

Fluids Must be Prescribed Daily - Only One Bag Will Be Administered Against Each Order

Year 20			Medical Officer Prescription			Nursing Administration Record				
Date/Time ordered	Line/ Route	Volume	Fluid Type and Additive (amount per bag or syringe)	Rate	Dr Signature Print Name	Date/Time Start	Rate mL/hr	Nurse 1 Nurse 2	Time Stop	Volume Infused
27/10/17 0950	IV	1 unit	Red Blood cells	over 2hrs	BMBridle BMBridle #1372					

SV 643 11/14

INTRAVENOUS AND SUBCUTANEOUS FLUID ORDER -

Scenario 2: Fresh frozen plasma

May June is a 79-year-old female who suffers from hypertension, poorly controlled type 2 diabetes and atrial fibrillation.

May often experiences chest pain, and following investigations by her doctor, has been diagnosed with coronary artery disease.

Her doctor initially treats her condition with aspirin and warfarin to prevent platelet clumping and blood clotting in her narrowed arteries. However, her chest pain exacerbates and she is admitted to hospital.

May June has to undergo urgent coronary artery bypass graft surgery on advice from the cardiologist, as she has significant narrowing in multiple arteries. Warfarin was reversed pre-operatively with vitamin K and prothrombinex.

During her surgery there was some extra bleeding. Coagulation test results indicate normal fibrinogen, normal platelet count and a prolonged clotting time.

As part of her treatment, May June requires a transfusion of fresh frozen plasma (FFP) today (10/05/2018) to help reverse the effects of warfarin.

Activity

With a partner, check May June's blood component pack. Use the appropriate documentation to ensure it matches the component to be transfused.

Additional learning

1. What is FFP?
2. What are the clinical uses of FFP?
3. What are the minimum observations when transfusing FFP?
4. What signs and symptoms are being looked for during the observations?
5. What are the compatible intravenous solutions for FFP?
6. Why does FFP have two expiry dates?

Holes Punched as per AS2828.1: 2012

BINDING MARGIN - NO WRITING

NH606582 130514

SMR120003

Instructions:

Facility:

ADULT FLUID ORDER

FAMILY NAME June
MRN 134789
GIVEN NAMES May
☐ MALE ☑ FEMALE
D.O.B. 17.07.1938
M.O. P. Fitzroy
ADDRESS
LOCATION / WARD CCU
COMPLETE ALL DETAILS OR AFFIX PATIENT LABEL HERE

Allergies/ADR:

Date (dd/mm/yyyy)	Fluid Type	Volume (mL)	Additive (dose/volume)	Rate (mL/hr)	Route	Prescriber's Name Print & Signature / pager No.	Date/Time Started	Date/Time Finished	Administered Print / Sign	Checked Print / Sign
10/05/18	F.F.P.	1 unit		over 30 mins	IV	P. Fitzroy 5901	/ /	/ /		
/ /							/ /	/ /		
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Page 1 of 2

ADULT FLUID ORDER SMR120.003

Scenario 3: Platelets

Cullen Grahame-McGover is a 19-year-old male who has presented with a history of upper respiratory tract infections and more recently pallor, bone pain, fatigue and dizziness today (20/10/17).

Tests conclude the diagnosis to be acute myeloid leukaemia. A gastrointestinal haemorrhage has also been found.

Important parts of Cullen's care are platelet transfusions to maintain a platelet count greater than $10x10^9$/L. This decreases the risk and occurrence of bleeding complications associated with leukaemia and chemotherapy.

Activity

With a partner, check Cullen Grahame-McGover's blood component pack. Use the appropriate documentation to ensure it matches the component to be transfused.

Additional learning

1. What are platelets?
2. What are the clinical uses of platelets?
3. What are the minimum observations when transfusing platelets?
4. What signs and symptoms are being looked for during the observations?
5. What should be considered if a transfusion reaction is suspected with platelets?
6. What are the compatible intravenous solutions for platelets?
7. What are the incremental changes/responses in platelet count that you would expect following the transfusion?

Page 2 of 2

Administration must not commence without a valid consent or prescription
PATIENT MISIDENTIFICATION CAN BE FATAL

BLOOD & BLOOD PRODUCTS ADMINISTRATION

Facility:

Date (dd/mm/yyyy)	Blood Product	Volume (mL)	Rate (mL/hr)	Route	For Medical Review Post Transfusion, Yes/No	Prescriber's Name Print & Signature / pager No.	Date/Time Started	Date/Time Finished	Administered Print / Sign	Checked Print / Sign
20/10/17	Platelets Irradiated	1 Adult Dose	over 30 mins	IV	Yes	GEETHANJALI RANGVEKAR 44471	/ /	/ /		
/ /							/ /	/ /		
/ /							/ /	/ /		
/ /							/ /	/ /		
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NO WRITING

Management For Suspected Transfusion Reaction

If during the transfusion the patient exhibits any of these signs & symptoms:

- Rise in temperature - >1°C above baseline and >38°C
- Hypotension – diastolic BP drop of >10% from baseline
- Respiratory difficulty – shortness of breath, wheeze
- Sudden onset of pain – flank, back or chest pain
- Urticaria or pruritis

↓

STOP THE TRANSFUSION IMMEDIATELY
(maintain IV access with 0.9% Sodium Chloride)

↓

- Contact Medical Officer to review the patient
- Check and record patient vital signs
- **Re-check identification of patient and blood product details**
- Document reaction in medical records
- Document incident in IIMS

Medical Officer will determine if transfusion should continue based on patient's symptoms

COMPLETE ALL DETAILS OR AFFIX PATIENT LABEL HERE

LOCATION / WARD

ADDRESS

D.O.B. 18/09/1998 M.O.

GIVEN NAME CULLEN

FAMILY NAME GRAHAME-McGOVER

MRN 578521

☒ MALE ☐ FEMALE

SE13006O

BINDING MARGIN - NO WRITING

Holes Punched as per AS2828.1: 2012

Scenario 4: Cryoprecipitate

Vladislav Yordanyotou is a 45-year-old male admitted to the emergency department following a motor vehicle accident on his way home from work today (27/10/18).

He is conscious and able to speak with the doctors. His medical history includes liver disease secondary to chronic hepatitis, hypertension and gastro-oesophageal reflux disease.

Severe internal bleeding from the trauma complicated by the presence of liver disease has been determined, and he is rushed to surgery to find the cause. Cryoprecipitate is transfused as part of his critical bleeding/massive transfusion management.

Activity

With a partner, check Vladislav Yordanyotou's blood component pack. Use the appropriate documentation to ensure it matches the component to be transfused.

Additional learning

1. What is cryoprecipitate?
2. What are the clinical uses of cryoprecipitate?
3. What are the minimum observations when transfusing cryoprecipitate?
4. What signs and symptoms are being looked for during the observations?
5. What are the compatible intravenous solutions for cryoprecipitate?
6. What is critical bleeding?

Holes Punched as per AS2828.1: 2012

BINDING MARGIN - NO WRITING

SMR120003

NH606582 130514

Facility:

ADULT FLUID ORDER

Instructions:

FAMILY NAME Yordanyotov | MRN 927659

GIVEN NAMES Vladislav | ☑ MALE ☐ FEMALE

D.O.B. 18 / 4 / 72 | M.O.

ADDRESS

LOCATION / WARD

COMPLETE ALL DETAILS OR AFFIX PATIENT LABEL HERE

Allergies/ADR:

Date (dd/mm/yyyy)	Fluid Type	Volume (mL)	Additive (dose/volume)	Rate (mL/hr)	Route	Prescriber's Name Print & Signature / pager No.	Date/Time Started	Date/Time Finished	Administered Print / Sign	Checked Print / Sign
27/10/18	Cryoprecipitate	5bags		30min	IV	TWallis TW #2765	/ /	/ /		
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ADULT FLUID ORDER SMR120.003

Scenario 5: Thalassaemia

Vasos Papadopoulos is a 55-year-old male with thalassaemia major.

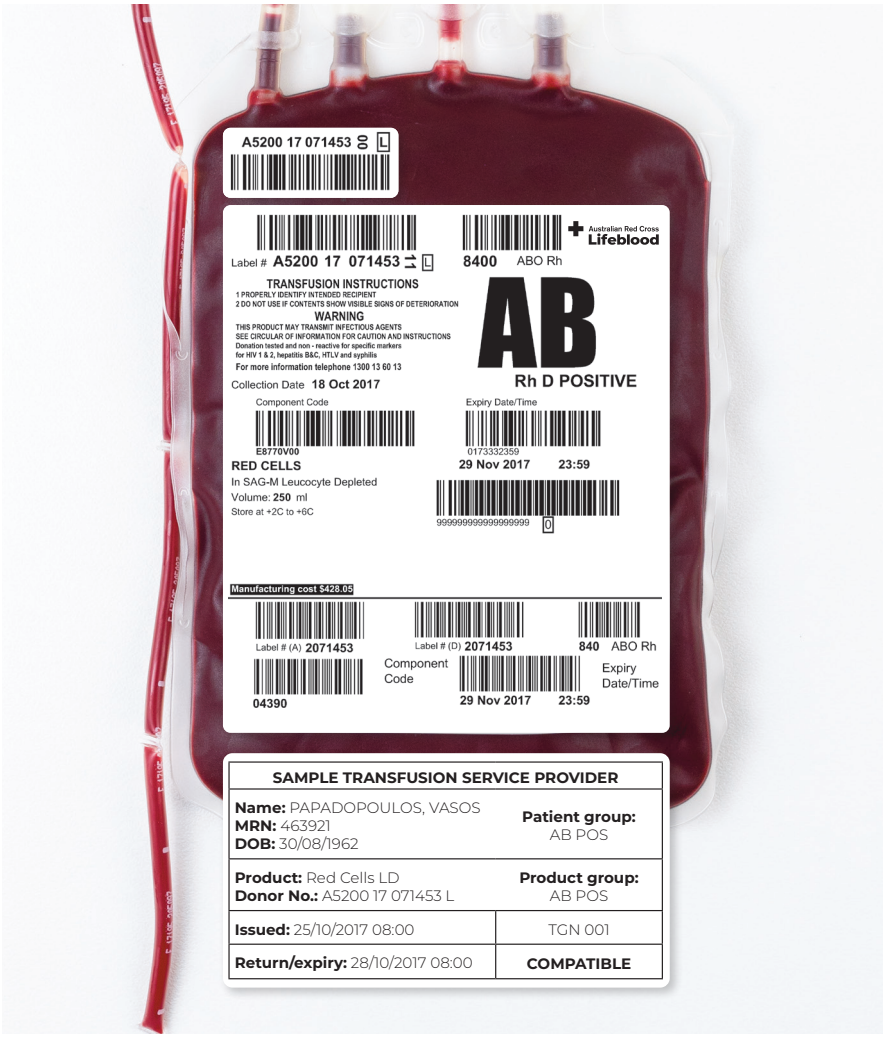
This condition results in severe anaemia requiring regular red cell transfusions, approximately every three to four weeks. He is undergoing a transfusion today (25/10/17).

Activity

With a partner, check Vasos Papadopoulos's blood component pack. Use the appropriate documentation to ensure it matches the component to be transfused.

Additional learning

1. What is thalassaemia major?
2. What is the indication for a person with thalassaemia major requiring frequent red cell transfusions?
3. What are the clinical uses of red cells?
4. What are the minimum observations required when transfusing red cells?
5. What signs and symptoms are being looked for during the observations?
6. What are the compatible intravenous solutions for red cells?



BLOOD TRANSFUSION RECORD SHEET

HANDWRITE ONLY

SURNAME: Papadopoulos GIVEN NAME(S): Vasos

D.O.B. 30/08/1962 SEX: M UR NO: 463921

AREA/WARD: Day Ward CONSULTANT: T. Roberts.

NHMRC/ANZSBT CLINICAL INDICATIONS **Stable Adult** (please tick):

Ensure that blood products are given only when clearly indicated - when the expected benefits to the patient are likely to outweigh the potential hazards. When in doubt check with senior clinician.

Transfusion Requirements

History of transfusion reaction (✓):
☐ Yes ☑ No
If yes ensure documented on alert sheet

Special product requirements (✓):
☑ None ☐ Irradiated
☐ CMV neg
Other_____
☐ Pre-med ☐ Diuretics ☐ Other
If yes - see Medication Chart

Consent (✓): ☑ Yes ☐ No
Offer patient information

Urgency: (please circle)
Emergency (life threatening)
Urgent (clinical deterioration or potential for)
Routine (avoid overnight if possible)
Overnight (please circle): Yes No

Red Cells: Hb 92 g/L
☐ Haemorrhage
☐ Anaemia - Hb 70 - 100 g/L with ongoing blood loss or signs and symptoms of impaired O_2 transport, eg angina, cardiac disease
☐ Severe anaemia (Hb < 70 g/L)
☐ Bone marrow failure (Hb 80 - 100 g/L)
Other (specify): Thalassaemia

Cryoprecipitate:
(recommended dosage 5 - 10 units for adults)
Fibrinogen level: _____ g/L
☐ Fibrinogen deficiency associated with bleeding, DIC, massive transfusion or invasive procedure
Other (specify):

Platelets: Pl _____ x 10^9/L
A standard adult dose is one adult pack
☐ Bone marrow failure - Plt count < 10 x 10^9/L, or < 20 x 10^9/L with risk factors
☐ Bleeding in a patient in whom thrombocytopenia or impaired platelet function is considered the major contributory factor
☐ Invasive surgical procedure to maintain pl count > 50 x 10^9/L or if high risk of bleeding >100 x 10^9/L (eg ocular/neurosurgery)
☐ Massive haemorrhage/transfusion, with platelet count < 50 x 10^9/L or < 100 x 10^9/L in diffuse microvascular bleeding
Other (specify) :

Other Product:
Indication:

Fresh Frozen Plasma (FFP):
(recommended dosage 10 - 15 ml/kg)
INR _____ APTT _____
☐ Warfarin effect, significant bleeding, and immediate haemostasis required
☐ Acute DIC, with bleeding and abnormal coagulation
☐ Liver disease with bleeding and abnormal coagulation
☐ Following massive transfusion or cardiac bypass with bleeding and abnormal coagulation
☐ TTP and related syndromes for plasma exchange
☐ Replacement of single clotting factor deficiency, or natural anticoagulant, where specific factor concentrates not available
Other (specify):

Date	Patient Location	Blood product	Volume (amount) (dose)	Route	Rate (Maximum 4 hrs for RC, Platelets, FFP & Cryo)	Prescriber Sign & Print Name & Pager	Serial number of pack	Bedside Check Sign & Print Name (see reverse) 1	2	Date and time started	Date and time ended	Volume given	Collector at IMVS (Sign Date Time)	Receiver Clinical area (Sign Date Time)
25/10/17	DV	Red Cells	1 unit	IV	over 2 hrs	T. Roberts.				/ / hrs	/ / hrs			
										/ / hrs	/ / hrs			
										/ / hrs	/ / hrs			
										/ / hrs	/ / hrs			
										/ / hrs	/ / hrs			
										/ / hrs	/ / hrs			

Catalogue 7550F 2548 Created 11/2007

Please use a new sheet for each transfusion episode eg when the indication and/or laboratory parameters have changed

Scenario 6: Neonatal transfusion

Asadi Yousefzai is a neonate with anaemia due to RhD incompatibility and requires red cells.

A young mother (pregnant three times, birthed twice) presents to hospital in labour today (25/10/2017). She is RhD negative and did not receive anti-D prophylaxis during her previous pregnancies. Maternal anti-D antibodies have been detected for the first time late in her third pregnancy.

She gives birth to a 32-week preterm baby boy, weighing 2 kg. The infant appeared pale and needed low flow oxygen supplement. The infant also has mildly low arterial BP and significant anaemia with a Hb of 100 g/L. The doctor prescribes 30 mL of red cells (15 mL/kg) to increase BP and start correcting the anaemia.

Activity

With a partner, check Asadi Yousefzai's blood component pack. Use the appropriate documentation to ensure it matches the component to be transfused.

Note: If a baby's full name is not known yet, it may be identified using "baby of" mother's first and last names (e.g. baby of Mary Moore), and the baby's DOB and baby's medical record number.

Additional learning

1. What are the clinical benefits of using a paediatric red cell component?
2. What considerations need to be taken into account when obtaining consent to perform blood transfusions in neonates?
3. What special equipment might be required for a neonatal blood transfusion?
4. What special requirements need to be fulfilled in order for the red cell transfusion to be safe for the neonate?
5. What are the signs and symptoms of adverse events in a neonate?
6. What if the baby has not been named yet?

SAMPLE TRANSFUSION SERVICE PROVIDER	
Name: YOUSEFZAI, ASADI **MRN:** 257509 **DOB:** 25/10/2017	**Patient group:** O POS
Product: Red Cells LD **Donor No.:** A5300 17 071006 H	**Product group:** O POS
Issued: 25/10/2017 15:00	TGN 001
Return/expiry: 28/10/2017 15:00	**COMPATIBLE**

NEONATAL / PAEDIATRIC TRANSFUSION / INFUSION FORM

MRN: 257509
Surname: YOUSEFZAI
Forename(s): ASADI
Gender: M DOB: 25/10/2017

PRE-TRANSFUSION CHECK LIST

Eight steps to be completed	Staff initials
1. Check pre-transfusion blood sample has been sent to blood bank (Ext 9818)	
2. A Patient's guide to neonatal and paediatric blood transfusion provided	
3. Consent section completed by doctor and parent / guardian.	
4. Previous transfusion history documented	
5. Indications for transfusion completed by doctor.	
6. Dose and rate of transfusion prescribed checked and correct	
7. Patient ID band in situ with correct information.	
8. IV site checked and patency verified prior to retrieving Blood Component from blood bank.	

GUIDELINES FOR PRESCRIBING

Weight: 2 kg

AGE	RED CELLS	CRYO	FFP	PLATELETS
NEONATE and INFANTS < 4 months	10-20ml/kg	5-10 ml/kg	10-20 ml/kg	5-20 ml/kg
PAEDIATRIC PATIENT	< 20kgs 10ml/kg > 20kgs single unit > 50kgs adult dose	1 unit each 10kgs Eg: 20kg child will receive 2units of Cryoprecipitate (increase fibrinogen by 60-100mg/L)	10-20 ml/kg	5-20 ml/kg

SPECIAL REQUIREMENTS – *Request CMV negative blood for all Neonates and Infants <4 months*

DATE / TIME ORDERED	BLOOD PRODUCT AND VOLUME	RATE	CHECK X 2 STAFF	N/SALINE FLUSH	NURSE initials	FRUSEMIDE IV BOLUS State pre or post transfusion and dose	NURSE initials	DR PRINT NAME DR SIGNATURE
25/10 1100	Packed Red cells 30ml (CMV neg)	10ml/hr	Signature 1 Signature 2	/		/		T. DAN
			Signature 1 Signature 2					
			Signature 1 Signature 2					
			Signature 1 Signature 2					
			Signature 1 Signature 2					
			Signature 1 Signature 2					

Scenario 7: Paediatric transfusion

7-year-old Maxwell Ferguson presented to the emergency department with a 2-week history of abdominal pain, fever, malaise, loss of appetite and weight loss.

He was noted to have a distended abdomen with a palpable mass on examination. Following multiple investigations, Max was diagnosed with stage 4 neuroblastoma.

The decision was made for Maxwell to have several courses of high-dose chemotherapy and a stem cell transplant. Today is day +7 following transplant (19/10/17), Maxwell was noted to have a petechial rash and was experiencing nosebleeds. His platelet count was 7×10^9/L. Maxwell's doctor prescribed one unit of platelets.

Activity

With a partner, check Maxwell Ferguson's blood component pack. Use the appropriate documentation to ensure it matches the component to be transfused.

Additional learning

1. What considerations need to be taken into account when obtaining consent to perform blood transfusions in paediatric patients?
2. What special equipment might be required for a paediatric blood transfusion?
3. Are there any additional safety precautions that need to be taken into account for platelet administration?
4. What are the signs and symptoms of adverse events in paediatric patients?
5. If a transfusion reaction does occur with platelets, what should be considered?

A5400 17 072011 8 V

RAD-SURE™
25 Gy INDICATOR
IRRADIATED
Lot No: 032548NU25
Exp: JAN 2021

Label # A5400 17 072011 11 V

6200 ABO Rh

Australian Red Cross Lifeblood

TRANSFUSION INSTRUCTIONS
1 PROPERLY IDENTIFY INTENDED RECIPIENT
2 DO NOT USE IF CONTENTS SHOW VISIBLE SIGNS OF DETERIORATION

WARNING
THIS PRODUCT MAY TRANSMIT INFECTIOUS AGENTS
SEE CIRCULAR OF INFORMATION FOR CAUTION AND INSTRUCTIONS
Donation tested and non - reactive for specific markers
for HIV 1 & 2, hepatitis B&C, HTLV and syphilis
For more information telephone 1300 13 60 13

A

Rh D POSITIVE

Collection Date 18 Oct 2017

Component Code
E3928VAa

Expiry Date/Time
01729623591
23 Oct 2017 23:59

PLATELETS Paediatric
Apheresis Leucocyte Depleted Part Aa
Platelet count: >60 x10^9 per pack
Volume: 50 ml
Store at +20C to +24C
CMV Negative

Manufacturing cost $210.95

Label # (A) 4072011
Label # (D) 4072011
620 ABO Rh
32641
Component Code
23 Oct 2017 23:59
Expiry Date/Time

SAMPLE TRANSFUSION SERVICE PROVIDER	
Name: FERGUSON, MAXWELL **MRN:** 05324019 **DOB:** 26/03/2011	**Patient group:** A POS
Product: Platelets **Donor No.:** A5400 17 072011 V	**Product group:** A POS
Issued: 19/10/2017 08:00	TGN 001
Return/expiry: 22/10/2017 08:00	**COMPATIBLE**

KED11
08/09

INTRAVENOUS FLUID AND ADDITIVE ORDER SHEET.

Med Rec No: 05324019
Surname: FERGUSON
Forename: MAXWELL
Sex: M D.O.B. 26/3/2011

AN ADDITIVE SERVICE OPERATES FROM PHARMACY DEPT. SHEET No.

EACH SOLUTION SHOULD BE ORDERED INDIVIDUALLY AND STRICTLY IN THE SEQUENCE REQUIRED

Bottle/ Bag No.	FLUID–STRENGTH	Volume	ADDITIVE–DOSE	Volume	Date	M.O. Signature	Duration (hrs)	Time to start	Time started	Time finished	Started by
1	A⊕ Platelets (conv neg) irradiated	1 unit			19/10/2017						
2											
3											
4											
5											
6											
7											
8											

ORDERS

MR740 INTRAVENOUS FLUID AND ADDITIVE ORDER SHEET

Additional learning answers

Scenario 1: Red cells

1 What are red cells?

Red blood cells are the major cellular element of the circulating blood and give blood its colour.

The main function of these cells is to transport oxygen from the lungs to all the cells in the body.

2 What are the clinical uses of red cells?

Red cells are transfused to treat people:

- with severe anaemia
- whose red cells do not function adequately, and
- who experience severe bleeding (e.g. from trauma or surgery).

3 What are the minimum observations when transfusing red cells?

- The patient must be observed closely for the first 15 minutes of every pack.
- Temperature, pulse, respirations and blood pressure must be taken prior to commencement, 15 minutes after commencing administration of the blood component, and on completion of each red cell pack.
- Monitor patient closely during and after transfusion for signs of reaction.
- The need for more frequent observations will depend on the patient's clinical status.
- Check your local health service policy for additional observations.

4 What signs and symptoms are being looked for during the observations?

Observations are regularly taken throughout a transfusion to monitor the patient for signs of a transfusion reaction. Signs of a patient experiencing a reaction can include:

- shortness of breath
- allergic reaction (e.g. hives or itching)
- increase in temperature
- increase in pulse, and
- drop or rise in blood pressure.

5 What are the compatible intravenous solutions for red cells?

- Normal saline (0.9% NaCl solution)
- Albumin 4%, or
- ABO compatible plasma.

6 Why has Linh Nguyen been ordered Frusemide post-transfusion?

After transfusion, some patients have transfusion associated circulatory overload (TACO). Diuretics are given to manage patients at risk of this. Linh Nguyen has a cardiac condition which puts her at risk of TACO.

Scenario 2: Fresh frozen plasma

1 What is fresh frozen plasma (FFP)?

Plasma is the liquid component of blood. Fresh frozen means that the plasma is unchanged and immediately frozen for storage.

2 What are the clinical uses of FFP?

FFP is indicated for patients with a coagulopathy who are bleeding or at risk of bleeding where a specific therapy such as vitamin K or factor concentrate is not appropriate or unavailable. FFP may be indicated in bleeding patients who require replacement of plasma coagulation factors such as in massive transfusion, cardiac bypass, liver disease or acute disseminated intravascular coagulation. It may also be used for patients with thrombotic thrombocytopenic purpura and in cases of warfarin overdose with life-threatening bleeding.

3 What are the minimum observations when transfusing FFP?

- The patient must be observed closely for the first 15 minutes of each pack.
- Temperature, pulse, respirations and blood pressure must be taken prior to commencement, 15 minutes after commencing administration of the blood component, and on completion of each pack.
- Monitor patient closely during and after transfusion for signs of reaction.
- The need for more frequent observations will depend on the patient's clinical status.
- Check your local health service policy for additional observations.

4 What signs and symptoms are being looked for during the observations?

Observations are regularly taken throughout a transfusion to monitor the patient for signs of a transfusion reaction. Signs of a patient experiencing a reaction can include:

- increase in temperature
- increase in pulse
- drop or rise in blood pressure
- shortness of breath, and
- allergic reaction (e.g. hives or itching).

5 What are the compatible intravenous solutions for FFP?

- Normal saline (0.9% NaCl solution)
- Albumin 4%

6 Why does FFP have two expiry dates?

One expiry date refers to the time it can be stored frozen (one year). The other expiry date is added by the Transfusion Service Provider and refers to the time it is viable after it has been thawed. Extended life plasma is provided by some Transfusion Service Providers, and has a longer than normal shelf life once thawed.

Scenario 3: Platelets

1 What are platelets?

Platelets are small, disc-shaped fragments derived from a cell called a megakaryocyte. Platelets play a crucial role in blood clotting and repairing damaged body tissue. Activated platelets clump together to make a plug which clotting factors then bind to in order to form a clot.

2 What are the clinical uses of platelets?

Platelet transfusions are commonly used in patients with a low platelet count or non-functioning platelets, who are bleeding or at risk of bleeding. This may occur due to or as a result of:

- high-dose chemotherapy
- bone marrow transplantation
- major surgery while on platelet-inhibiting drugs
- liver disease requiring surgery
- severe trauma, or
- leukaemia and bone marrow cancers.

3 What are the minimum observations when transfusing platelets?

- The patient must be observed closely for the first 15 minutes of each pack.
- Temperature, pulse, respirations and blood pressure must be taken prior to commencement and on completion of each platelet pack.
- Monitor patient closely during and after transfusion for signs of reactions.
- The need for more frequent observations will depend on the patient's clinical status.
- Check your local health service policy for additional observations.

4 What signs and symptoms are being looked for during the observations?

Observations are regularly taken throughout a transfusion to monitor the patient for signs of a transfusion reaction. Signs of a patient experiencing a reaction can include:

- increase in temperature
- increase in pulse
- drop or rise in blood pressure
- shortness of breath, and
- allergic reaction (e.g. hives or itching).

5 If a transfusion reaction does occur with platelets, what should be considered?

Bacterial contamination. This is because platelets are not refrigerated and are kept between 20–24°C. This means that they are at an increased risk of bacterial growth and hence have a short shelf life of seven days.

6 What are the compatible intravenous solutions for platelets?

- Normal saline (0.9% NaCl solution)
- Albumin 4%

7 What are the incremental changes/ responses in platelet count that you would expect following the transfusion?

Usually an incremental increase of $20x10^9$ is expected. Suboptimal increases in platelet count (refractoriness) could be due to:

- fever
- active bleeding (due to which platelets get used up), and
- the development of antibodies e.g. human leucocyte antigen (HLA) alloimmunisation, which would indicate the need for HLA or human platelet antigen (HPA) matched platelets.

Scenario 4: Cryoprecipitate

1 What is cryoprecipitate?

Cryoprecipitate is a concentrated blood component made from FFP. This component contains some clotting factors including Factor VIII, fibrinogen, Factor XIII, von Willebrand factor and fibronectin. Fibrinogen is the most abundant of the clotting factors and can be thought of as the “glue” that binds the clot together.

2 What are the clinical uses of cryoprecipitate?

Cryoprecipitate is indicated for the treatment of fibrinogen deficiency or dysfibrinogenaemia (poorly functioning fibrinogen) when there is clinical bleeding, an invasive procedure, trauma or disseminated intravascular coagulation.

3 What are the minimum observations when transfusing cryoprecipitate?

- The patient must be observed closely for the first 15 minutes of each pack.
- Temperature, pulse, respirations and blood pressure must be taken prior to commencement and on completion of each cryoprecipitate pack.
- Monitor patient closely during and after transfusion for signs of reactions.
- The need for more frequent observations will depend on the patient’s clinical status.
- Check your local health service policy for additional observations.

4 What signs and symptoms are being looked for during the observations?

Observations are regularly taken throughout a transfusion to monitor the patient for signs of a transfusion reaction. Signs of a patient experiencing a reaction can include:

- increase in temperature
- increase in pulse
- drop or rise in blood pressure
- shortness of breath, and
- allergic reaction (e.g. hives or itching).

5 What are the compatible intravenous solutions for cryoprecipitate?

- Normal saline (0.9% NaCl solution)
- Albumin 4%

6 What is critical bleeding?

In trauma situations, large blood volumes can be lost. Multiple blood components are required to address volume loss, impaired oxygen exchange and also the resulting coagulopathy. Cryoprecipitate is often needed to treat coagulopathy in critical bleeding.

Scenario 5: Thalassaemia

1 What is thalassaemia major?

Thalassaemia is an inherited blood disorder that affects haemoglobin production. Haemoglobin (Hb) is the oxygen carrying molecule found in red blood cells. The red blood cells of a person with thalassaemia major can only survive a few weeks, compared to normal red cells that survive for approximately four months. Patients with thalassaemia major cannot make enough haemoglobin to survive into adulthood without transfusions.

2 What is the indication for a person with thalassaemia major requiring frequent red cell transfusions?

Red cell transfusions for those with thalassaemia major are usually given every four weeks to keep the Hb high enough to prevent their own bone marrow from trying to produce red cells.

3 What are the clinical uses of red blood cells?

Red cells are transfused to treat people:

- with severe anaemia
- whose red cells do not function adequately, and
- who experience severe bleeding (e.g. from trauma or surgery).

4 What are the minimum observations when transfusing red cells?

- The patient must be observed closely for the first 15 minutes of each pack.
- Temperature, pulse, respirations and blood pressure must be taken prior to commencing, 15 minutes after commencing administration of the blood component, and on completion of each pack.
- Monitor patient closely during and after transfusion for signs of reactions.
- The need for more frequent observations will depend on the patient's clinical status.
- Check your local health service policy for additional observations.

5 What signs and symptoms are being looked for during the observations?

Observations are regularly taken throughout a transfusion to monitor the patient for signs of a transfusion reaction. Signs of a patient experiencing a reaction can include:

- increase in temperature
- increase in pulse
- drop or rise in blood pressure
- shortness of breath, and
- allergic reaction (e.g. hives or itching).

6 What are the compatible intravenous solutions for red cells?

- Normal saline (0.9% NaCl solution)
- Albumin 4%, and
- ABO compatible plasma.

Scenario 6: Neonatal transfusion

1 What are the clinical benefits of using a paediatric red cell pack?

Paediatric red cell packs are manufactured by Lifeblood by dividing an adult red cell pack into four small volume paediatric packs.

Transfusion Service Providers will try to issue blood from the same donor for subsequent transfusions. This prevents the exposure of neonates and small infants to multiple donors, and reduces blood wastage.

2 What considerations need to be taken into account when obtaining consent to perform blood transfusions in neonates?

Neonates are unable to provide consent. Care must be taken to inform and educate the parents or legal guardians of the patient about the treatment. The parents/legal guardians must also be informed about the risks and benefits, including possible complications and adverse reactions of the blood components being administered to their child. Verbal and written consent must be obtained and documented. Consent must be obtained as per local health service policy.

3 What special equipment might be required for a neonatal blood transfusion?

Syringe drivers may be used in neonatal transfusion because a very small volume (15–30 mLs) may need to be infused over 2–3 hours. These must be used in keeping with health service guidelines. Aseptic technique must be maintained and an approved blood filter (170–200 micron) must be used.

4 What special requirements need to be fulfilled in order for the red cell transfusion to be safe for the neonate?

The prescriber is responsible for prescribing, ordering and documenting the special requirements. These must be communicated to the Transfusion Service Provider to ensure that these are met in time. The following special requirements may be requested for neonatal transfusions:

- Fresh red cells: There is little evidence to support the use of red cells which have shorter storage over older cells. The main concern around the age of red cells relates to large volume transfusions. As red cells age, changes such as metabolic derangements, changes in cell shape, and reversible decreased oxygen carrying capacity occur. Practice is varied between neonatal units; however a general recommendation is to use red cells that are less than five days old.
- CMV negative: Blood components that are CMV seronegative reduce the risk of cytomegalovirus being transmitted via the transfused blood component.
- Kell-negative blood is given to neonates as a safety precaution in order to prevent a possible immune response to the Kell antigen.

5 What are the signs and symptoms of adverse events in a neonate?

Observations are regularly taken throughout a transfusion to monitor the patient for signs of a transfusion reaction. Neonates must be monitored especially closely as they may be unable to alert staff if they are feeling unwell. Signs of a neonatal patient experiencing a reaction can include:

- increased work of breathing or decreased oxygen saturations
- allergic reaction (e.g. rash or hives)
- increase or decrease in pulse, and
- increase or decrease in temperature.

6 What if baby has not been named yet?

For the purpose of checking ID, sometimes neonates are known as ‘baby of’ until they have been given a legal name. In the event that the neonatal patient’s identification details change, a new identification band must be attached to the patient.

Scenario 7: Paediatric transfusion

1 What considerations need to be taken into account when obtaining consent to perform blood transfusions in paediatric patients?

Paediatric patients may not be able to provide consent. Care must be taken to inform and educate the parents or legal guardians of the patient about the treatment. If possible, provide the patient with education and information relevant to their development age. The parents/legal guardians must be informed about the risks and benefits and any alternative treatment, along with possible complications and adverse reactions of the treatment. Verbal and written consent must be obtained and documented. Consent must be obtained as per institutional/health service policy.

2 What special equipment might be required for a paediatric blood transfusion?

Platelets may be administered via gravity feed but are commonly administered via a pump in children to control flow rates.

3 Are there any additional safety precautions that need to be taken into account for platelet administration?

Platelets must not be transfused through a blood administration set which has been used for red cells, as red cell debris may trap infused platelets.

4 What are the signs and symptoms of adverse events in paediatric patients?

Observations are regularly taken throughout a transfusion to monitor the patient for signs of a transfusion reaction. Paediatric patients must be monitored especially closely as they may be unable to explain to staff if they are feeling unwell. Signs of a patient experiencing a reaction can include:

- increased temperature
- increased pulse
- increased work breathing or decreased oxygen saturations
- allergic reaction (e.g. itching or hives), and
- sudden onset of irritability or distress in the younger child or infant should trigger reassessment of the patient.

5 If a transfusion reaction does occur with platelets, what should be considered?

One of the reasons a transfusion reaction could occur with platelets is bacterial contamination. This is because platelets are not refrigerated and are kept between 20–24°C. Therefore, they are at an increased risk of bacterial growth and have a short shelf life of seven days.

Platelets can also induce allergic reactions or a febrile non-haemolytic transfusion reaction. The former can be treated with antihistamines. The latter will need to be managed with antipyretics and other strategies depending on the severity. In both cases, the transfusion must be stopped immediately and local health policy must be followed.

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