

CRITICAL BLEEDING: THE MAJOR HAEMORRHAGE PROTOCOL CHALLENGE

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CRITICAL BLEEDING: THE MAJOR HAEMORRHAGE PROTOCOL CHALLENGE

Facilitator Pack

This editable escape room template for clinical education challenges learners to solve realistic case scenarios through clinical clues and tasks within a set time limit. It can be used as is, or customised to suit your organisation's needs, learning objectives, or current workplace issues, such as wrong blood in tube (WBIT), independent double-checking, or compliance with the 'O statement' for emergency red cell use.

Equipment List (General)

- Download and print the full Critical Bleeding – The Major Haemorrhage Protocol Challenge
- Timer
- Suitable space for movement and table setups
- 3 lockable boxes (2 × **3-digit combination**, 1 × **key lock**) — or you can use envelopes and the facilitator opens once the correct code is stated by the team
- Final "escape" phone number (digits are hidden across tasks)
- Blu tac or tape to fix posters to wall and envelopes to poster backs
- Pens/markers for players
- 6 envelopes
- 3 random keys (as decoys)
- Prop bag (any bag to be used to deliver the 'blood' product and paperwork)
- **Added bonus:** Replace the supplied MHP poster and blood transfusion checklist with a copy of own local health organisation so players are familiar with these.

Facilitator Note: The phone number used for the final 'escape' will vary in number of digits depending on local phone number and if mobile or landline is used. Take note of number of digits and adjust how they are hidden within the tasks to ensure all digits are found at the end of the game.

Running the Game – Quick Guide

Print as cheat sheet for facilitators

1. Brief participants (3–6 per team, 2–4 teams, 30–45 mins).
2. Read **Your Mission** out loud to the groups, then start timer.
3. Give 1–2 hints per team if needed.
4. Warn teams at 10 and 5 minutes left.
5. Debrief after completion.

Task Descriptions – Quick Reference

Task 1: MHP Activation Criteria

- Choose essential info to relay to blood bank for a ratio based MHP
- Correct sequence gives 4-digit code to open Lock Box #1 (**code: 286**)

Task 2: Blood Product Riddles

- Match riddles to components
- Bold letters spell **RATIO**
- Leads to Box #2 (**code: 211**)

Task 3: Blood Pack Distribution

- Box 2 opens and contains: RBCs, platelets, plasma cut outs
- Fact sheet and card say **Blood has arrived** with riddle to solve

Task 4: Choosing O+ or O-

- Riddle guides correct selection of red cells
- Correct choice = receive admin checklist and Task 5
- If incorrect envelope is chosen, team must wait 30 seconds before opening the other envelope

Task 5: Blood Admin Checks

- Identify errors in transfusion documents
- Correct answer = envelope with correct number on front
- Message inside correct envelope leads team to check **blood gas**

Task 6: Blood Gas Interpretation

- Determine metabolic vs respiratory acidosis/alkalosis
- Correct answer = **Metabolic Acidosis**. Retrieve correct **key** to unlock final box

Task 7: Word Find Task

- Hidden message: **DEBRIEFING**
- Leads to fact sheet → final phone number digit. Team call the phone number and either get facilitator to answer or can leave a pre-recorded message to state they are the **WINNERS!**

Debrief Script (hidden in the content)

*"The crisis is over and the patient is stable,
It's time to gather and reflect on the fable.
What went well and what needs repair,
To learn from mistakes and show we care.
This essential step ensures we improve,
It's not just a meeting but a crucial groove.
What am I?"*

Answer: DEBRIEFING

STAGE 1

ACTIVATION

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STAGE 1:

ACTIVATION

Instructions

Materials Needed:

- **Your Mission** information sheet
- **Your Patient** information sheet
- **MHP Poster** (there is one supplied or you can use your health organisation version)
- Envelope
- **MHP Feedback** slip
- **Task 2** instruction and answer strips
- **Phone Number Template**

Setup:

- Place **Your Mission** and **Your Patient** sheets on table
- Cut out **Task 2** question and the answer strips and add to envelope
- Enter phone number digits in **Phone Number Template** and cut out. Take note of how many digits you have as they will all need to be hidden throughout tasks, leaving the remaining digit to be found with the last task to 'escape'.
- In the envelope, place:
 - **MHP feedback slip**
 - **Task 2 clue**
 - **Answer strips**
 - **1st digit of phone number**

Placement:

- Attach envelope to back of **MHP poster**
- Pin MHP poster on a wall

YOUR MISSION

You're working in the hospital's theatre. The clock is ticking, and a new crisis has just unfolded.

Your mission is to work as a team to stabilise the patient.

You have 30 minutes to tackle critical tasks:

- follow the major haemorrhage protocol,
- control the bleeding,
- and safely hand Rita over to ICU staff.

But you do not have the phone number for ICU!

Time is of the essence. Can you manage the pressure and ensure Rita gets the care she desperately needs?

Work through the tasks in order to collect the 10 numbers that will make up the phone number for ICU.
You will need to call the number to complete the escape room!

— — — — —

The clock starts now!

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YOUR PATIENT

Identify:

- Rita Barindji, 62-year-old female, DOB: 03/06/1963 MRN: 172159

Situation:

- Rita was admitted to theatre for a planned hysterectomy and is experiencing a significant intraoperative bleed.

Background:

- Rita has a history of hypertension, well-controlled on Amlodipine.
- No previous surgical complications.
- No known coagulopathy or anticoagulant use.
- The hysterectomy was for symptomatic fibroids.
- She was fasted appropriately and had unremarkable pre-op investigations.

Assessment:

- **Vital Signs:**
 - Temperature: 36.6°C
 - Pulse: 106 beats per minute
 - Respiratory Rate: 21 breaths per minute
 - Blood Pressure: 104/66 mmHg
 - SpO2: 97% on FiO2 40%
 - Urine output is 25ml/hr

Recommendation:

- **Immediate Actions:**
 - Continue monitoring vital signs closely.
 - Assess and control any bleeding.

TASK 1: Rita is showing signs of a critical bleed.
What is your next step?

FACILITATOR INSTRUCTION: Cut out the feedback box, TASK 2 and the answer strips on the next page, place all in an envelope and stick it to the back of the MHP poster, it contains the answer to TASK 1 and the number will open the first lock box on the table.



MHP



You have identified the need to activate the MHP (Major Haemorrhage Protocol). Well done.

Activation criteria can include clinical suspicion or evidence of critical bleeding and one or more of the criteria on the back of the MHP. It is important the transfusion laboratory is notified immediately to ensure rapid provision of blood components. The communication must be clear, precise and include only essential information. You have called the transfusion laboratory to make the activation but need to determine what information needs to be relayed to ensure it is essential and clear.



FACILITATOR INSTRUCTION: Cut out TASK 2 and the answer strips, add them all to an envelope.



TASK 2: You are now activating a ratio based MHP. When calling to make this activation, what essential information does the transfusion laboratory require? Select the correct responses to find the code to the box!



+

+

+

+

+

=



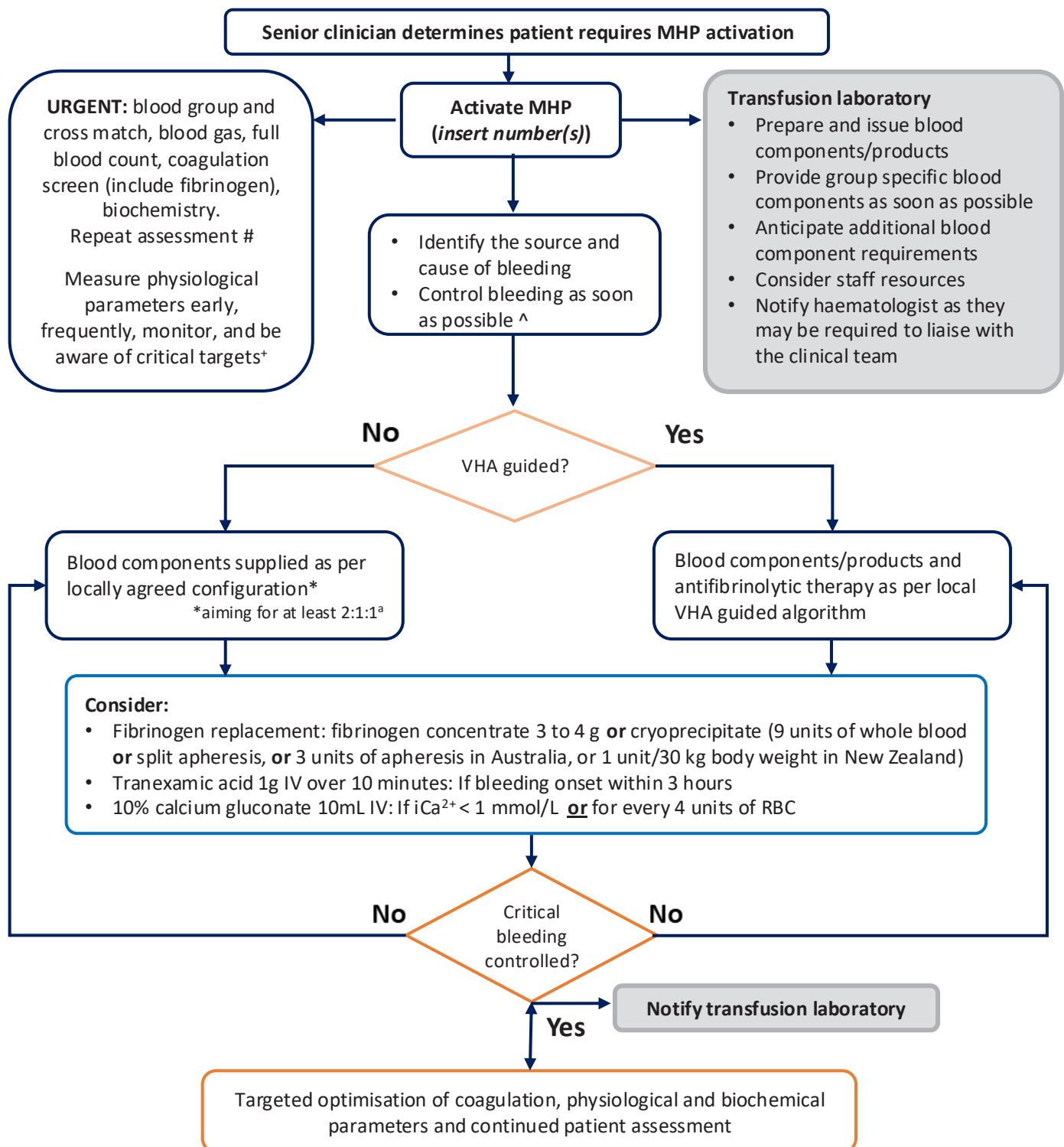
Callers name	31
Patient location	74
Estimation on blood loss	47
Patients details (name, DOB, MRN and sex)	50
Dr responsible for activation decision	16
Patient background	81
Clear directive to activate MHP	25
Liaison contact details	90
Blood components required	66



Adult major haemorrhage protocol (MHP) template*

*must be adapted to local institutional requirements and resources

An MHP includes a multidisciplinary approach to haemorrhage control^a, correction of coagulopathy and normalisation of patient physiological parameters (*insert key contact names and numbers*)



OPTIMISE	# REPEAT ASSESSMENT	*CRITICAL TARGETS	
- Oxygenation - Cardiac output - Tissue perfusion - Metabolic state	(at least every 4 units of RBC): - Full blood count - Coagulation screen - Ionised calcium - Blood gas	- Temperature $\geq 35^{\circ}\text{C}$ - pH ≥ 7.2 - Base excess $\geq -6\text{mmol/L}$ - Lactate $\leq 4\text{ mmol/L}$ - iCa²⁺ $\geq 1.0\text{ mmol/L}$	- Platelets $> 50 \times 10^9/\text{L}$ - PT/APTT $\leq 1.5 \times \text{normal}$ - INR ≤ 1.5 - Fibrinogen $\geq 2.0\text{ g/L}$

^a At least 1 unit FFP for every 2 units of RBC, and 1 adult dose PLT (equivalent to 4 donor units) for every 8 units of RBC.

^b The normal range for base excess is -2 to +2. A base excess of ≥ -6 refers to a base excess of -5, -4, -3 and so forth. A base excess of -7, -8, -9 and so on is associated with worsening prognosis.

Other considerations

^Haemorrhage control

- Early identification of cause of bleeding
- Control bleeding, using:
 - compression
 - packing
 - tourniquet
 - pelvic binder
- Surgical assessment:
 - early surgery or angiography to control bleeding

Suggested criteria for MHP activation

- Clinical suspicion of critical bleeding **and** one or more of:
- Systolic blood pressure < 100 mmHg
 - Heart rate > 100 bpm
 - Positive focused assessment with sonography for trauma (FAST)
 - Estimated blood loss > 1L
 - Pallor

Resuscitation

- Institute active warming, avoid hypothermia
- Warm RBC through an approved blood warming device if available
- Prioritise blood components over crystalloids
- Consider permissive hypotension (systolic BP: 70 to 100 mmHg)

Suggested key contacts (*modify locally*)

- Blood bank/transfusion laboratory
- Anaesthetist
- Surgeon
- Haematologist
- Interventional radiology

Special clinical situations

Direct oral anticoagulants

- Refer to haematologist

Warfarin reversal:

- Refer to [Updated recommendations for warfarin reversal in the setting of four-factor prothrombin complex concentrate](#)

Obstetric haemorrhage:

- Consider additional fibrinogen replacement

Severe traumatic brain injury:

- Permissive hypotension relatively contraindicated

Older adults:

- Hypotension and tachycardia may be late observations
- Caution with permissive hypotension

Acronyms

APTT: activated partial thromboplastin time, **BP:** blood pressure, **bpm:** beats per minute, **iCa²⁺:** ionised calcium, **FFP:** fresh frozen plasma, **INR:** international normalised ratio, **IU:** international unit, **IV:** intravenous, **MHP:** major haemorrhage protocol, **mmHg:** millimetres of mercury, **mmol/L:** millimoles per litre, **PLT:** platelets, **PT:** prothrombin time, **RBC:** red blood cells, **VHA:** viscoelastic haemostatic assays

Notes:

- This template was developed using the recommendations and good practice statements in the *Patient blood management guideline for adults with critical bleeding*. Recommendations in the guideline were based on the results of multiple systematic reviews. Good practice statements were developed based on indirect evidence and expert consensus. For further details see the full guideline.
- The content in this MHP is a guide only and must be adapted to local institutional requirements and resources. Health professionals should use clinical judgement and consider the clinical circumstances and patient preferences, to determine the appropriateness of this template for an individual patient.

This document was updated on 4 September 2025.

STAGE 2

GROUP 0

RED CELLS DECISION

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STAGE 2:

GROUP O RED CELLS DECISION

Instructions

Materials Needed:

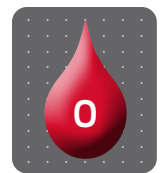
- Two envelopes
- **Envelope Answer Slips**, cut out
- **National Statement for the Emergency Use of Group O Red Blood Cells** poster
- A bag (any bag is fine for this)
- **Patient Update 2**
- **Task 5** prompt
- **Blood label and patient ID information** page
- **Blood transfusion form**
- **4th** and **5th digits** of phone number

Setup:

- Label two envelopes, one with **O-** and one **O+**
- Inside the **O-** envelope place the '**incorrect**' answer slip
- Inside the **O+** envelope place the '**correct**' answer slip as well as the **4th digit** of phone number
- Attach the two labelled envelopes (**O+** and **O-**) to the back of the national statement poster
- Attach the **National Statement for the Emergency Use of Group O Red Blood Cells** to the wall
- Prop bag (any bag) containing:
 - **Patient Update 2**
 - **5th digit** of phone number
 - Blood administration checklist, provided or swap out for your health organisation version (with intentional errors - match number to "errors" clue)
 - **Task 5** prompt
 - Printable blood label, transfusion sticker, ID band
 - (Optional) Fake blood bag

Placement:

- Facilitator to hand over prop bag to players only when correct envelope is chosen



NATIONAL STATEMENT FOR THE EMERGENCY USE OF GROUP O RED BLOOD CELLS

Critical Bleeding Situation - Emergency Blood Required

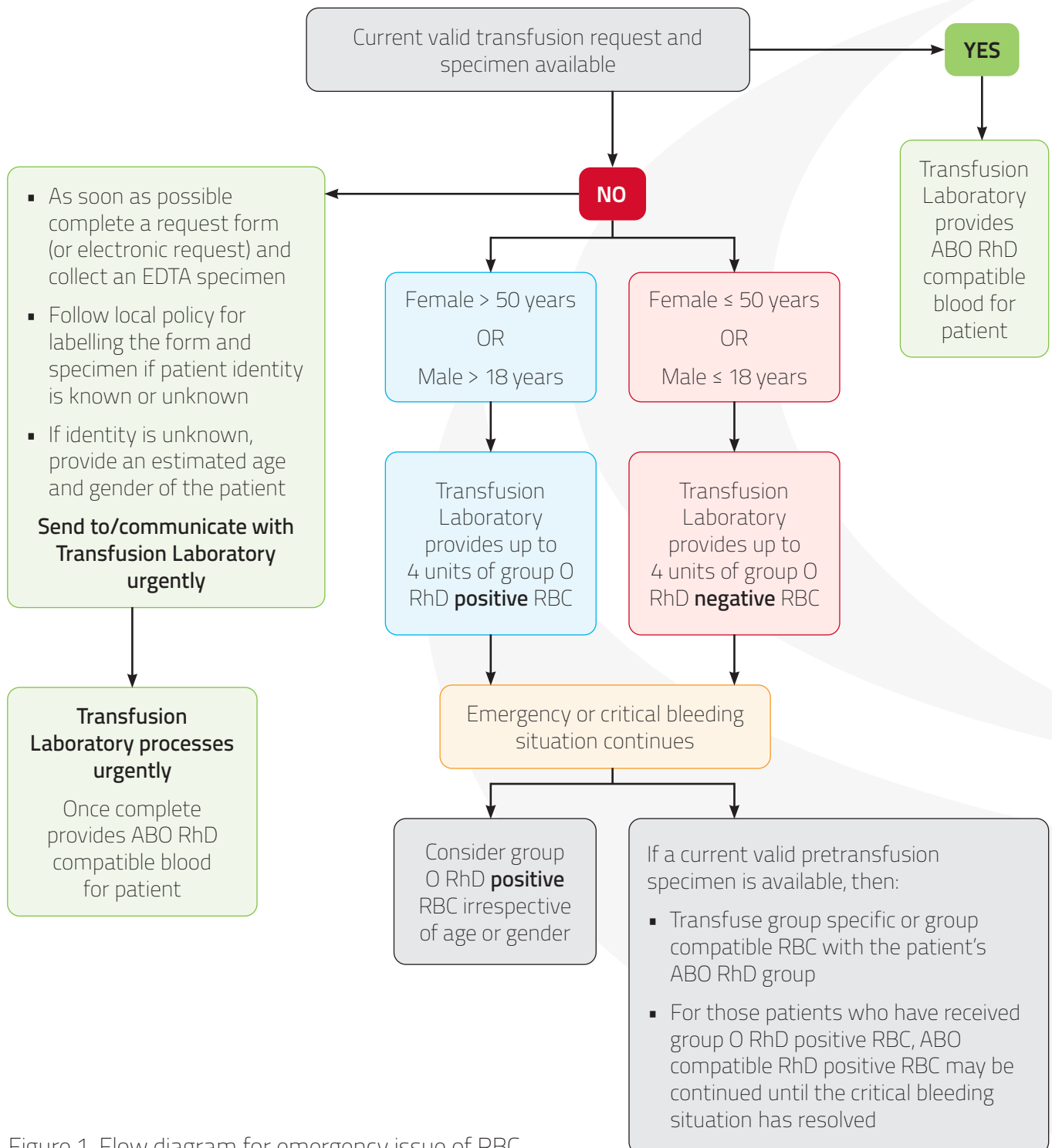


Figure 1. Flow diagram for emergency issue of RBC

ENVELOPE ANSWER SLIPS



Correct!

See blood administration checklist and prescription to continue.

0+



Incorrect.

As Rita is female and over 50 year of age, Rita is recommended to be issued group RhD positive uncrossmatched red blood cells until her ABO RhD blood group has been determined using a current specimen.

0-

Your team has incurred a 30 second time penalty.



PATIENT UPDATE

UPDATE 2: Rita needs further stabilisation as she continues to bleed.

BP 80/50, RR 36, P 142, SpO2 94% 12L via non-rebreather, temperature is 35.3°C.



TASK 5

The rapid infuser and blood warmers are being set up now.
You need to work through all blood administration checks
before being able to start the transfusion.

*Count each error, let none slip by,
The number you seek will be your guide.
Among the envelopes lined in a row,
Only one holds what you need to know.*

How many errors can you find?

TRANSFUSION SERVICE			
NAME: BARINDJI RITA		BLOOD PRODUCT RED CELLS FILTERED	
UR: 172159		DOB: 03/06/1966	
		BATCH/DONOR No. = A53002520343700	
LOCATION WARD ED	PATIENT GROUP *****	DONOR GROUP 0 RhD Negative	
XMATCH DATE 03/11/2025	EXP DATE/TIME 12/11/2025	EMERGENCY ISSUE	
REQUIRES: LEUCODEPLETED			
PEEL AND STICK INTO PATIENT NOTES			

STAGE 2 | Page 5

OFFICIAL: Sensitive/Medical in confidence

EMR DOWNTIME FORM

BLOOD TRANSFUSION

HOSPITAL:

SURNAME: BARINDJI

GIVEN NAME: RITA

MRN: 172159

DOB: 03/06/1963

SEX: F

Date/time
transfusion commencedDate:
Time:

Product put up by:

MO/RN signature

Checked by:

MO/RN signature

Any untoward effects:

AFFIX LABEL HERE

Date/time
transfusion commencedDate:
Time:

Product put up by:

MO/RN signature

Checked by:

MO/RN signature

Any untoward effects:

AFFIX LABEL HERE

Date/time
transfusion commencedDate:
Time:

Product put up by:

MO/RN signature

Checked by:

MO/RN signature

Any untoward effects:

AFFIX LABEL HERE

Date/time
transfusion commencedDate:
Time:

Product put up by:

MO/RN signature

Checked by:

MO/RN signature

Any untoward effects:

AFFIX LABEL HERE

STAGE 3

LOCKED BOX

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STAGE 3:

LOCKED BOX

Instructions

Materials Needed:

- Box and a three-digit combination lock
- Task 3 prompt
- Answer riddles cut out along dotted lines
- Patient Update 1
- 2nd digit of phone number

Setup:

- Place the following inside box:
 - Task 3 prompt
 - Answer cards
 - Patient Update 1
 - 2nd digit of phone number

Placement:

- Set the combination lock on the padlock to **286**
- Once everything is inside box, close box and lock with padlock

PATIENT UPDATE

UPDATE 1: Blood samples have been taken and sent for:

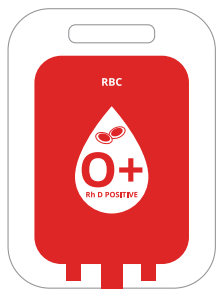
- blood group, antibody screen and cross match
- blood gas and ionised calcium level
- biochemistry
- extended coagulation screen
- full blood count

BP 95/55, RR 22, P 130, SpO2 98%, temperature is 36°C.



TASK 3

Match the description with the correct blood component to find the missing word.



RBC



PLT



FFP

According to the 'Patient Blood Management Guidelines', what is the recommended

for blood component administration?

This information can also be found on the MHP. **The answer will unlock the next task.**

FACILITATOR INSTRUCTION: Fold TASK 3 and place in first lock box along with the cut out answer cards. The answer to this task leads to opening the next box.



I'm a golden liquid, flowing through your ve l ns, I carry nutrients, hormones, and remove waste strains. Without me, cells would lack the fluid to thrive, In the bl O odstream's symphony, I keep you alive.
What am I?
When T here's a break or a tear, I'm quick to act, I gather and clump to seal up the crack. In the blood's repair team, I play a vital role, Stopping the bleeding is my ultimate goal.
What am I?
I'm small but mighty, on a crucial quest, Carrying a payload that helps you feel your best. Oxygen is my cargo, delivered far and wide, To eve R y cell in your body, I'm your essential guide. I'm not a knight, but I fight for your health, In the bloodstream's journey, I'm A critical help.
What am I?



STAGE 4

BLOOD HAS ARRIVED

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STAGE 4:

BLOOD HAS ARRIVED

Instructions

Materials Needed:

- Box with a three-digit combination lock
- Images of **blood bags**, cut out
- **Blood Has Arrived** card
- **Task 4** riddle
- **3rd digit** of phone number

Setup:

- Place the following inside box:
 - Cut out images of **blood bags**
 - **Blood Has Arrived** card
 - **Task 4** riddle question
 - **3rd digit** of phone number

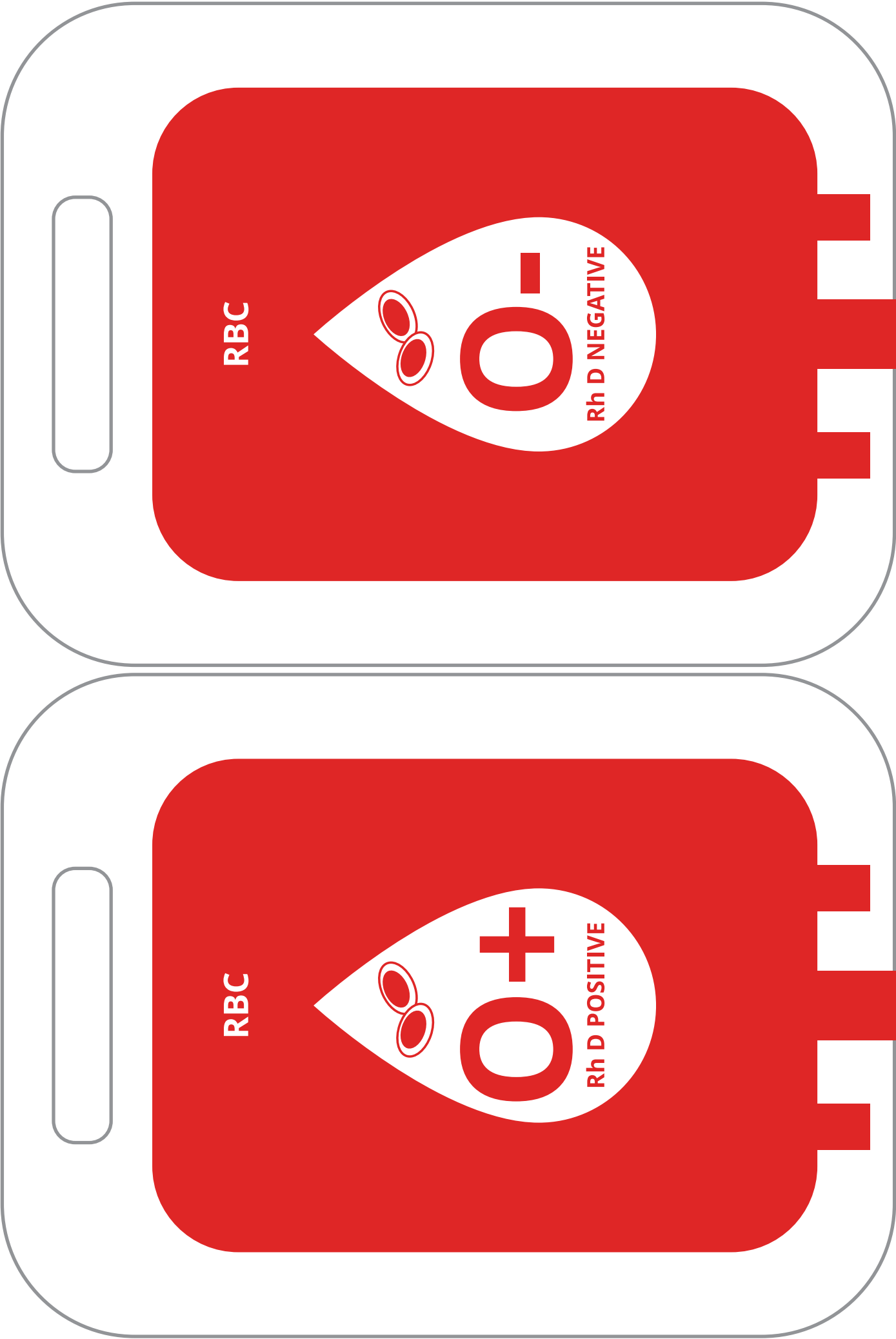
Placement:

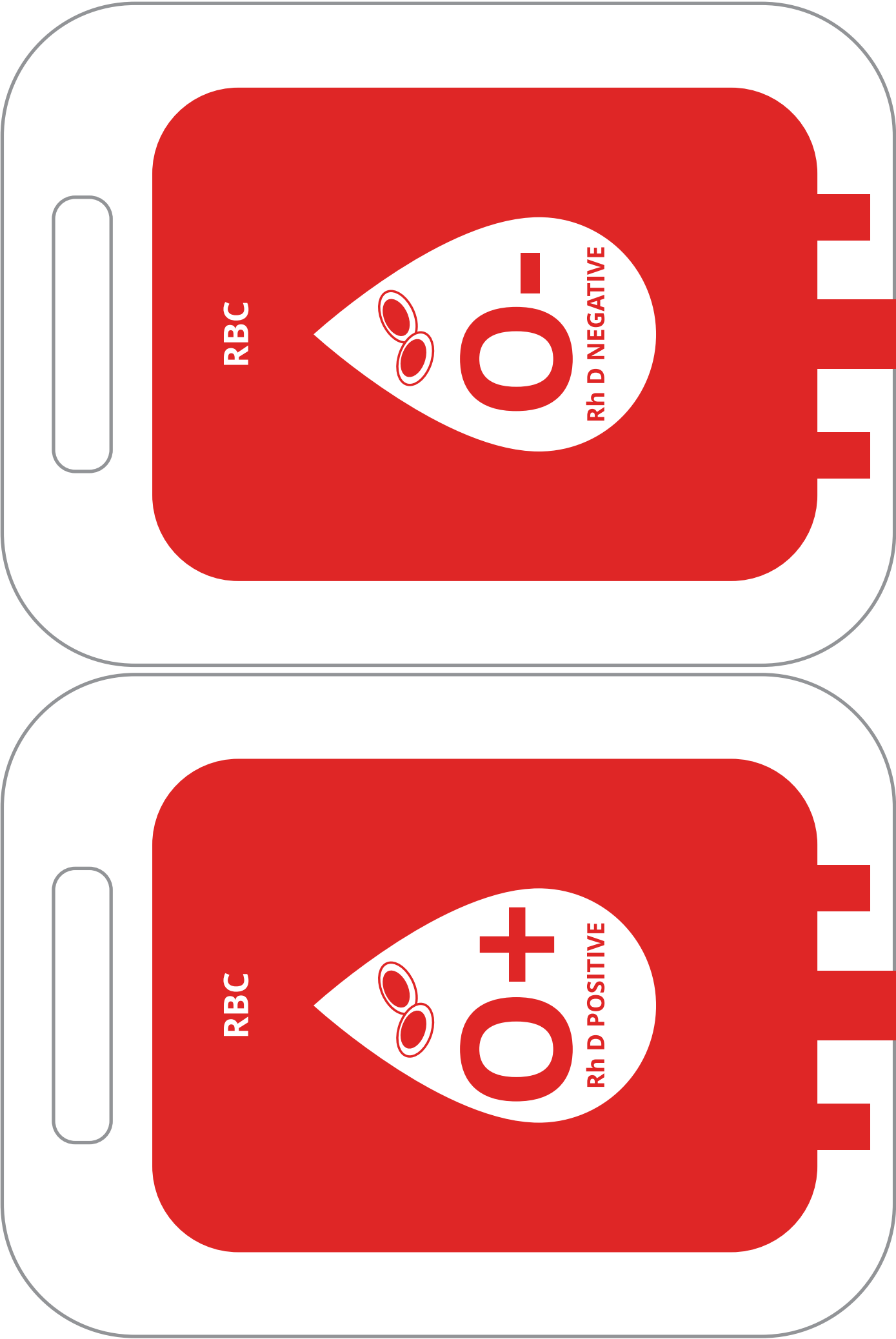
- Lock Box 2 on table, set the three-digit padlock code to **211**
- Once everything is inside box, close and lock with padlock

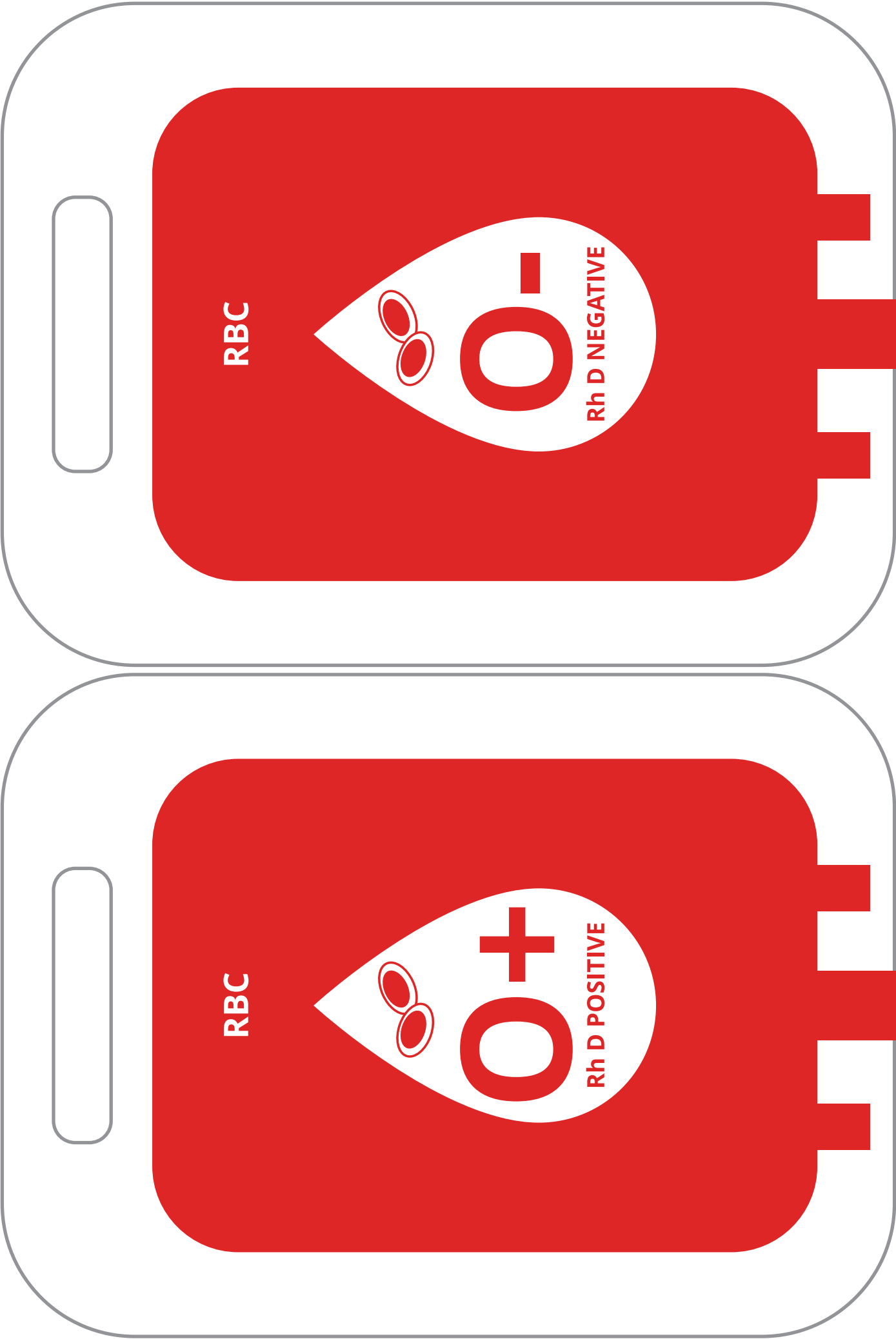
FACILITATOR INSTRUCTION: Cut out blood component bags and place them in the third lock box. Also add the BLOOD HAS ARRIVED page and TASK 4 instructions.

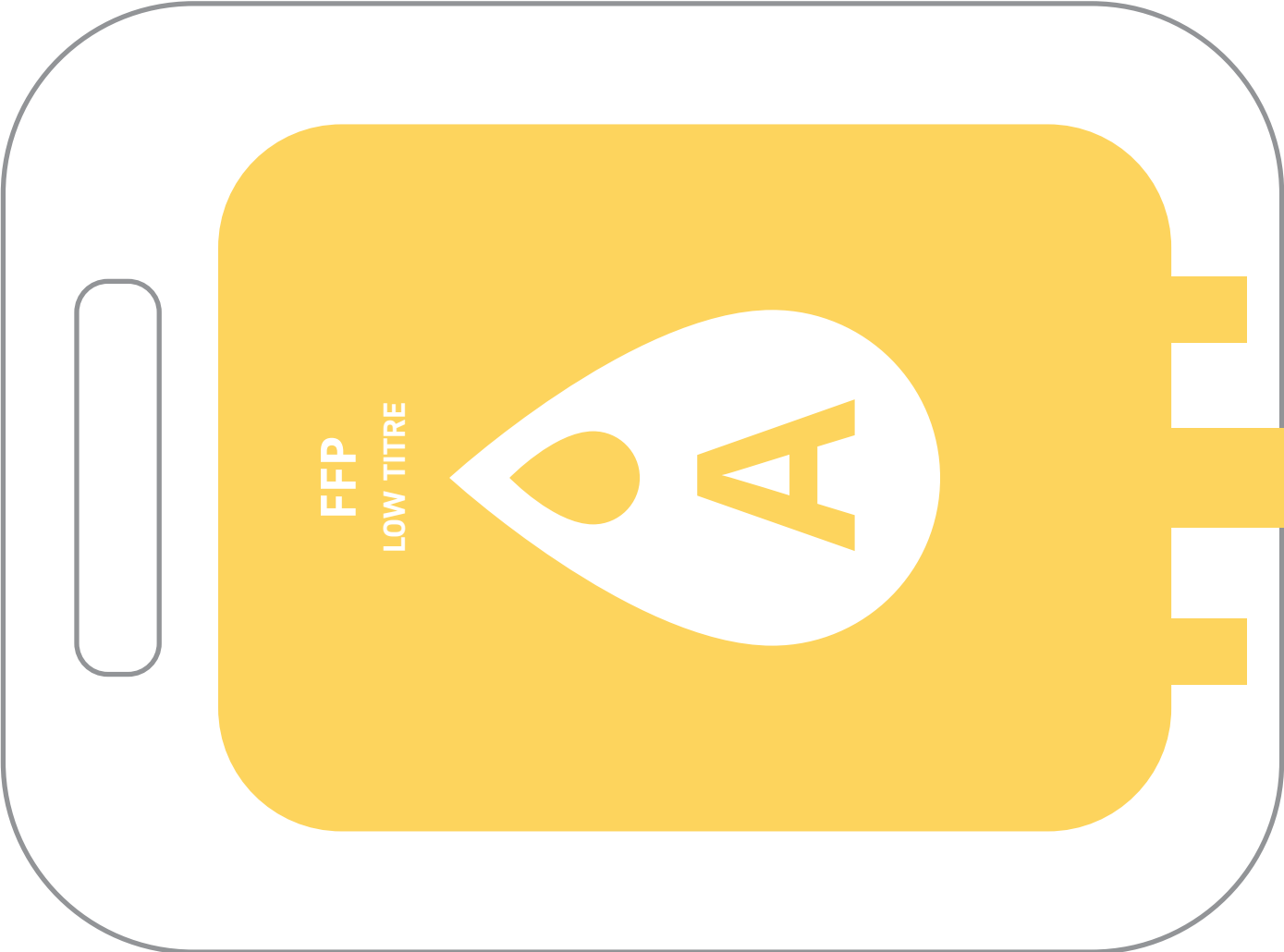
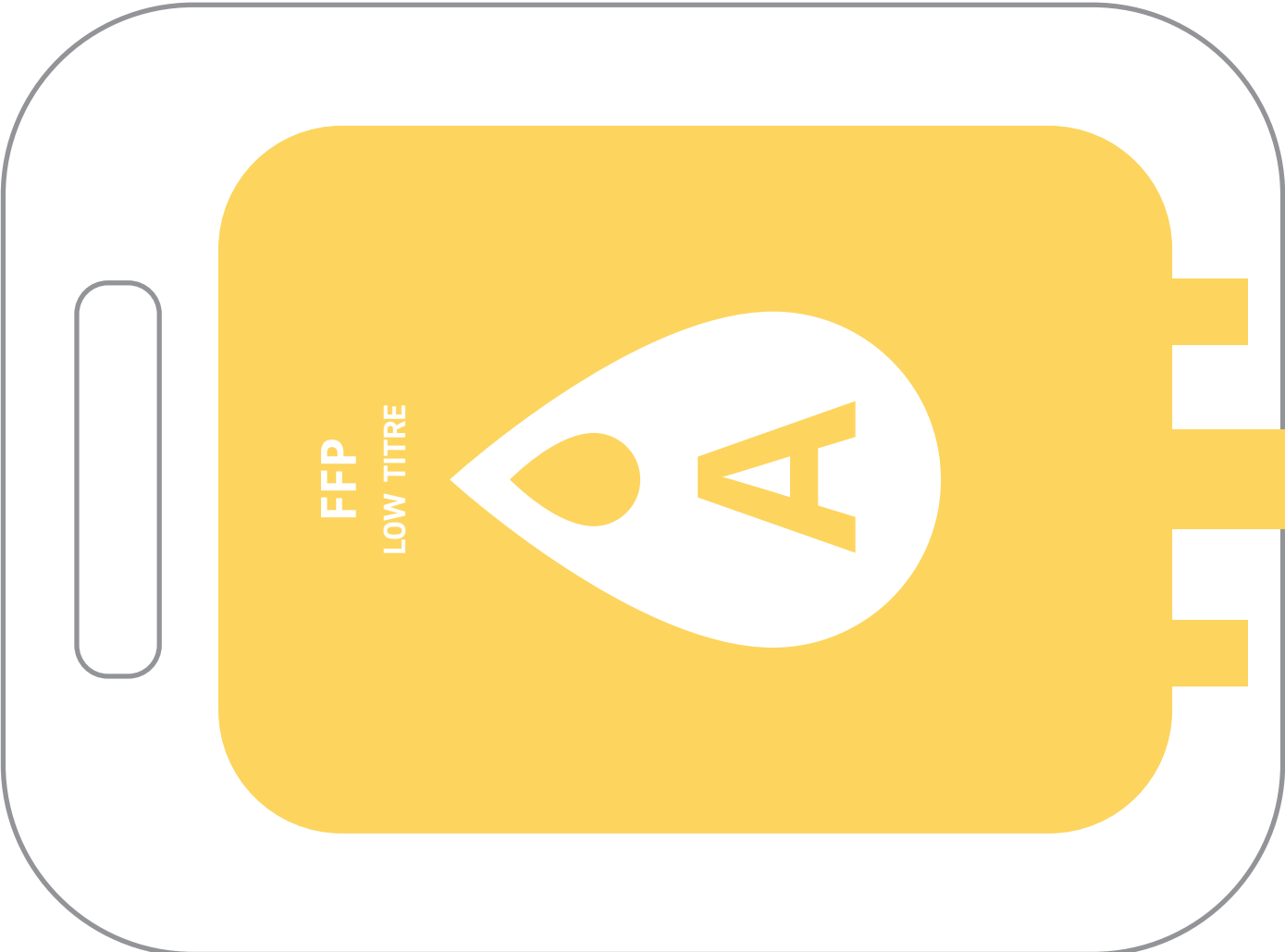
(Code **211** opens this box).

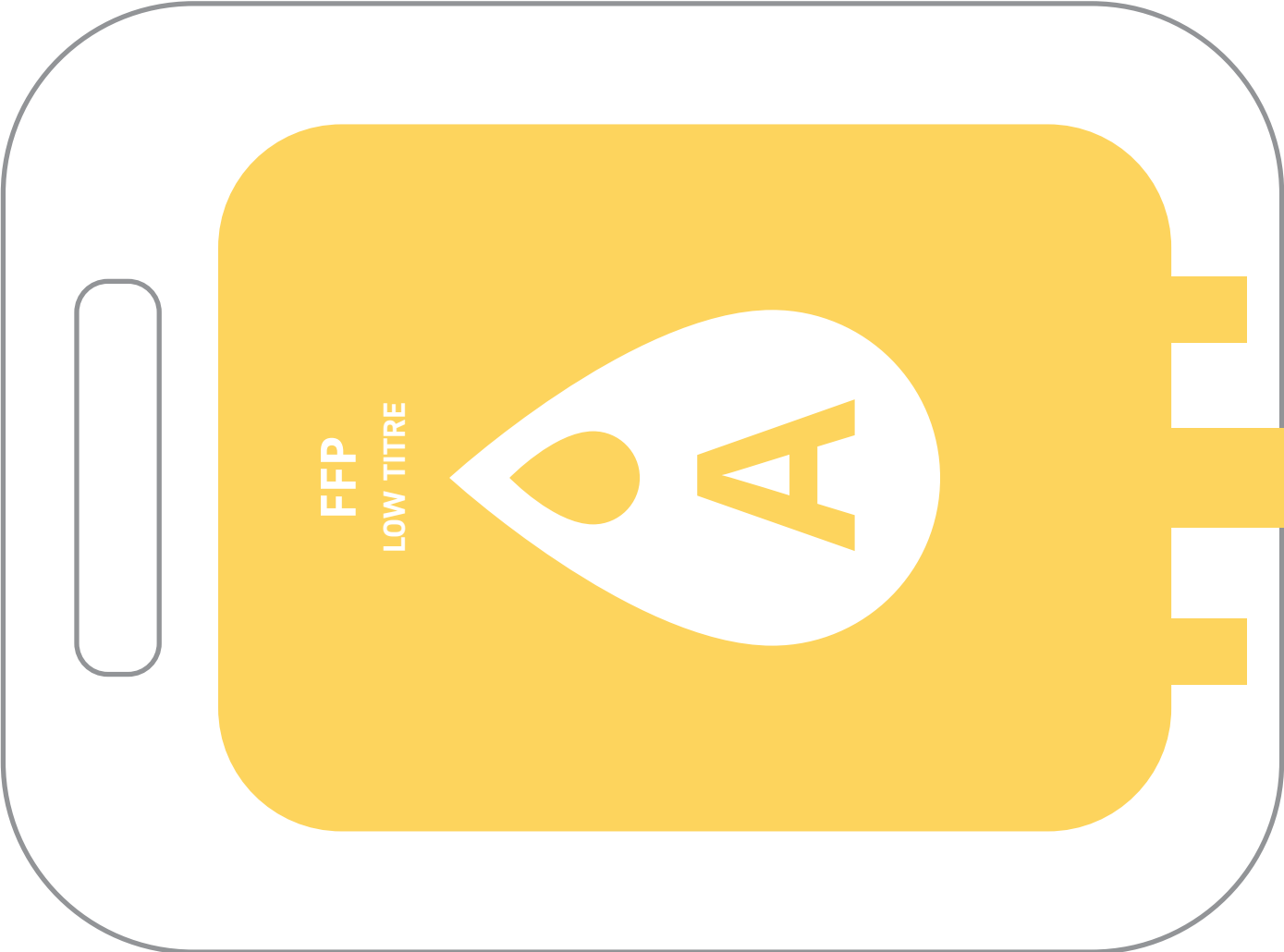
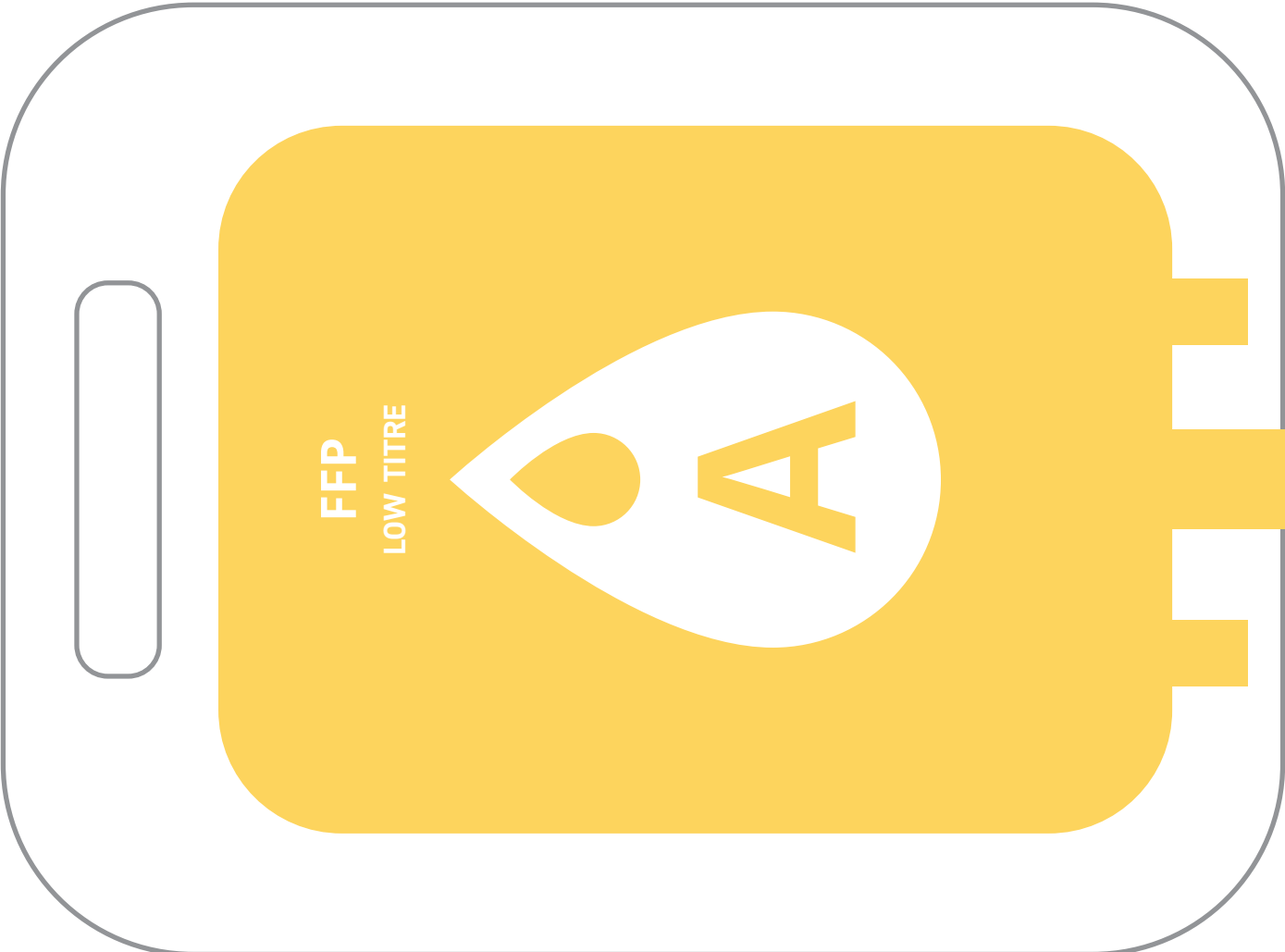


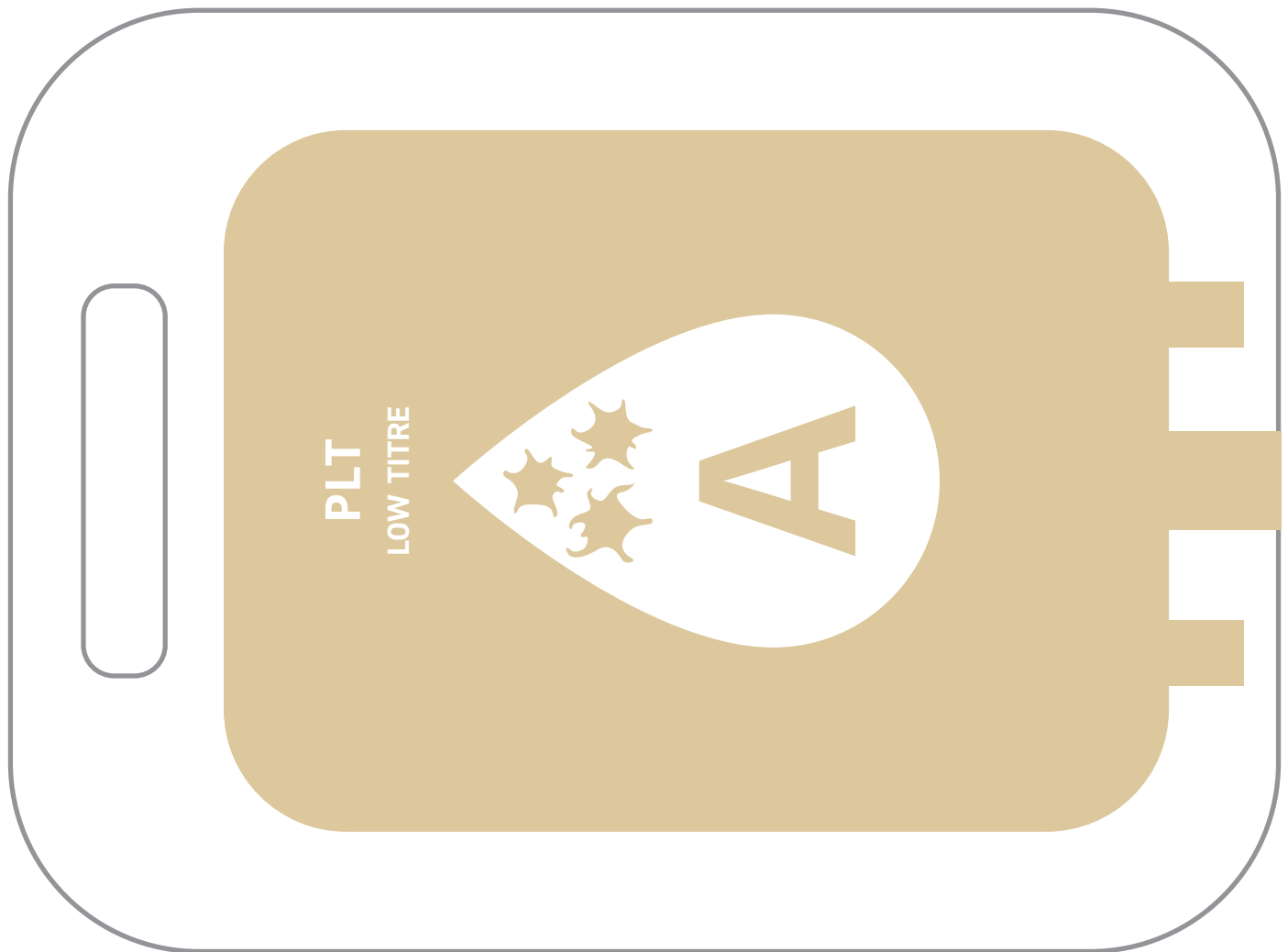












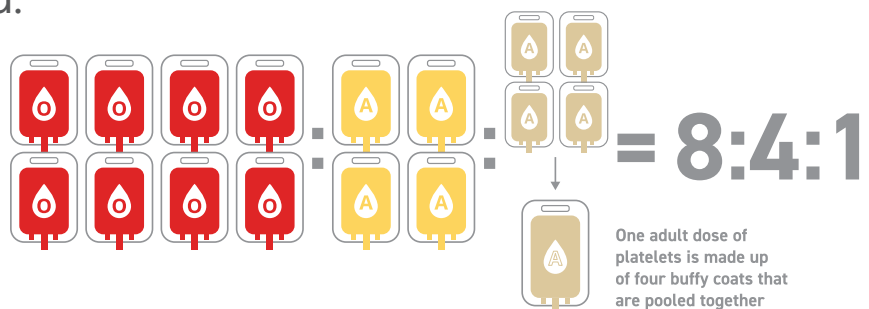
BLOOD HAS ARRIVED!

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You have a ratio of 2:1:1.

In a ratio-based major haemorrhage protocol, it is good practice that the ratio of RBC:FFP:PLT of at least 2:1:1 be achieved as soon as possible and be maintained until critical bleeding is controlled.

In addition,
assess fibrinogen
level and replace
as required.



TASK 4

*In this crucial moment you face a test,
Two types of red cells delivered – one must be best
In a world of types both red and rare,
One's positive and one's not, beware.
To suit the patient and not waste the grace,
Which type of cell should you embrace?*

HINT: The statement holds the key,
To save the precious resource, you'll see.

STAGE 5

BLOOD GAS

INTERPRETATION

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STAGE 5:

BLOOD GAS INTERPRETATION

Instructions

Materials Needed:

- Three envelopes, label these: 2, 3 and 6
- **Task 6** – Blood Gas results
- **6th digit** of phone number

Setup:

- Inside correct envelope (**number 3**) place:
 - **Task 6** blood gas results sheet
 - **6th digit** of phone number
- Incorrect envelope will remain empty

Placement:

- Place 3 labelled envelopes in view, on table or wall
- Envelope 3 corresponds to the total errors that need to be found during the blood and patient check in Task 2.
This escape room is set up to have 3 errors but you can add or remove errors, just make sure the correct number is written on the envelope.

TASK 6

Your team has now administered 4 bags of red cells, 2 FFP and platelets are running.

Blood tests

Complete blood examination	Reference range	Units	Value
Hb	130-170	g/L	125
Platelets	150-400	$\times 10^9/L$	230
Arterial blood gas	Reference range	Units	Value
Base excess	-2– +2	mmol/L	-8
pH	7.35-7.45		7.27
pCO ₂	35-45	mm Hg	40
pO ₂	80-100	mm Hg	80
HCO ₃ ⁻	22-26	mmol/L	18
Biochemistry	Reference range	Units	Value
Ionised calcium	1.1-1.4	mmol/L	1.2
eGFR	90-120	mL/min	100
Coagulation studies	Reference range	Units	Value
PT	10-14	sec	14.0
INR			
APTT	27-35	sec	36
Fibrinogen	1.5-4.0	g/L	

STAGE 6

WORD FIND

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STAGE 6:

WORD FIND

Instructions

Materials Needed:

- Final lock box (this box needs to have a key lock rather than a padlock)
- Patient Update 3
- 7th and 8th digits of the phone number
- Word Find puzzle (leads to the deactivation and inventory information sheet)
- Deactivation and Inventory information sheet
- Debriefing fact sheet

Placement:

- Place **Word Find** puzzle inside the final box along with the **7th digit** of the phone number and **Patient Update 3**, lock with key and place box on table
- **Deactivation and inventory** information sheet is kept by the educator/facilitator and handed to the team along with the **8th digit** of the phone number (if this is your final digit then add this to the final debriefing fact sheet instead) when they call out the correct word find puzzle answer
- **Debriefing** fact sheet placed on table or wall with final digits of phone number attached (this may be one digit or multiple depending on the phone number length used)

FACILITATOR INSTRUCTION: Please place PATIENT UPDATE 3 and TASK 7 (the word find puzzle) in the key lock box for participants to find when they use the Metabolic Acidosis key to open the box.

✂

PATIENT UPDATE

UPDATE 3: Congratulations!

Your team have successfully administered blood products and stabilised Rita, she can be safely transferred to ICU.

The word find will reveal your next steps.

✂

TASK 7

This word search puzzle has a **hidden message**.

First find all the words in the list.

Words can go in any direction and share letters as well as cross over each other.

Once you find all the words. Copy the unused letters starting in the top left corner into the blanks to reveal the hidden message.

M	E	D	E	D	A	T	P	P	B
E	C	V	O	R	R	L	R	T	L
T	I	O	I	A	A	O	V	A	E
A	L	T	U	S	T	P	E	A	E
B	N	M	M	O	S	D	I	I	D
O	A	A	C	N	V	A	E	D	O
L	N	O	S	T	O	P	M	T	C
I	L	E	S	N	O	P	S	E	R
C	O	L	A	C	I	T	I	R	C
A	C	I	D	O	S	I	S	R	Y

ACIDOSIS
BLEED
BLOOD
CODE
CRITICAL
MASSIVE
METABOLIC
PLASMA
PROTOCOL
RAPID
RESPONSE
STOP
TRAUMA

Find the ...

DEACTIVATION AND INVENTORY

Critical bleeding is resolved when *The crisis is over and the patient is stable*, life-threatening haemorrhage is controlled and there is no longer a need for urgent, large volumes of blood component support.^[1]

Promptly communicating the deactivation of the MHP is crucial as it:

- *It's time to gather and reflect on the fable*
- avoids wastage through unnecessary thawing of blood products
- prevents unnecessary transfusion to the patient
- allows reallocation of staff.

When the MHP is deactivated, the administering clinician checks and returns unused blood products to the transfusion laboratory, noting the time out of temperature-controlled storage and any breaches in storage during the MHP. There must be clear communication between the clinical team and transfusion laboratory staff regarding any known breaches of the unused components or any other concerns around

What went well and what needs repair, to learn from mistakes and show we care.

Transfusion laboratory staff will decide on discarding or reintegrating blood components into inventory. The same communication principles outlined for activation, apply for deactivation of the MHP. *This essential step ensures we improve.*

When a patient is transferred to another area, this should be communicated to the transfusion laboratory, clearly identifying where the patient is being transferred to and if the MHP is continuing. If this is not communicated, blood components may be sent to the wrong clinical area, resulting in wasted time and resources, and delayed transfusion. Prior to any handover ensure that all transfused blood components are accurately recorded in the patient's medical record. *Its not just a meeting but a crucial groove.*

What am I?

DEBRIEFING

After the MHP, a debrief with all staff to reflect on:

- what went well
- what could have been done better
- areas for learning.

This is the last digit in the phone number to call the ICU nurse!
Call the number to handover Rita and complete the escape room!



Find more
info about our
critical bleeding
courses here



STAGE 7

KEY SELECTION

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STAGE 7:

KEY SELECTION

Instructions

Materials Needed:

- Key tag sheet
- 4 keys (one will open the final box and three are decoy keys)

Setup:

- Cut out key tags and attach **Metabolic Acidosis** tag to correct key
- Attach incorrect tags to 3 decoy keys

Placement:

- Hide the correct key along with three decoy keys
- They don't need to be placed near the final box - let the players find them during the game and figure out which one unlocks the box after solving the blood gas puzzle

FACILITATOR INSTRUCTION: Please attach the Metabolic Acidosis key tag to the key that opens the lock box. Then attach 3 random keys to the other key tags.

