

BLOOD TRANSFUSION REACTION

MODULE: CRITICAL INCIDENTS

TARGET: ALL ANAESTHETISTS

BACKGROUND:

Serious blood transfusion reactions are rare but important entities which anaesthetists must be able to manage. The most recent report from SHOT and the MHRA revealed nearly 2200 serious adverse reactions between Nov 2005 and Dec 2010, of which the most common reaction was anaphylaxis/hypersensitivity.

(NB: This scenario is designed to be utilised in tandem with BL_CRIT_20 Major Haemorrhage, as the follow-on scenario after institution of measures to deal with a significant bleed).

RELEVANT AREAS OF THE ANAESTHETIC CURRICULUM

IO_BS_07	Demonstrates role as team player and when appropriate leader in the intra-operative environment
IO_BS_08	Communicates with the theatre team in a clear unambiguous style
IO_BS_09	Able to respond in a timely and appropriate manner to events that may affect the safety of patients [e.g. hypotension, massive haemorrhage] [S]
CI_BK_01	Cardiac and/or respiratory arrest
CI_BK_02	Unexpected fall in SpO ₂ with or without cyanosis
CI_BK_03	Unexpected increase in peak airway pressure
CI_BK_08	Unexpected hypotension
CI_BK_19	Bronchospasm
CI_BK_22	Adverse drug reactions
CI_BK_23	Anaphylaxis
CI_BK_24	Transfusion reactions, transfusion of mis-matched blood or blood products
CI_BS_01	Demonstrates good non-technical skills such as: [effective communication, team-working, leadership, decision-making and maintenance of high situation awareness]
CI_BS_02	Demonstrates the ability to recognise early a deteriorating situation by careful monitoring
CI_BS_03	Demonstrates the ability to respond appropriately to each incident listed above
CI_BS_04	Shows how to initiate management of each incident listed above
CI_BS_05	Demonstrates ability to recognise when a crisis is occurring
CI_BS_06	Demonstrates how to obtain the attention of others and obtain appropriate help when a crisis is occurring
CI_IS_01	Demonstrates leadership in resuscitation room/simulation when practicing response protocols with other healthcare professionals
CI_IS_02	Demonstrates appropriate use of team resources when practicing response protocols with other healthcare professionals

INFORMATION FOR FACULTY

LEARNING OBJECTIVES:

- Safe commencement of blood product transfusion.
- Recognition of possible drug reaction or blood transfusion reaction.
- Management of possible blood transfusion reaction.

SCENE INFORMATION:

- Location: Anaesthetic Room / Theatre

This scenario can either commence with the patient anaesthetised on the operating table, or in the anaesthetic room awaiting induction. The patient is consistently hypotensive after induction and only transiently responsive to fluid and vasopressors.

Surgeons are very keen to commence surgery immediately. Once surgery commences, the surgeons inform the anaesthetic team that there is a significant amount of blood in the abdomen and that they will likely have to convert to a laparotomy.

EQUIPMENT & CONSUMABLES

Female Manikin – On trolley/bed
 Checked anaesthetic machine with circle circuit
 Stocked Airway trolley

- Laryngoscopes (2 x Macintosh)
- ET Tubes (Various Sizes)
- OP, NP and Advanced Supraglottic airways (iGels, LMAs)

 Anaesthetic drugs drawn up
 Simulated blood for transfusion

PERSONS REQUIRED

Anaesthetic/ACCS junior trainee
 Anaesthetic assistant
 Anaesthetic Senior Trainee
 Surgeon – aggressive and pushing to start surgery
 Scrub nurse

PARTICIPANT BRIEFING: (TO BE READ ALOUD TO PARTICIPANT)

Laura Westall is a 28 year old woman undergoing a laparoscopic salpingectomy for suspected ectopic pregnancy. She has a positive pregnancy test, and increasing abdominal pain. She has become mildly pyrexial and tachycardic (110bpm) in the last few hours. She has a mildly elevated white cell count, and otherwise normal bloods.

She has suffered from fairly frequent urinary tract infections and other minor infections, but has had no serious illnesses. There are no allergies of note.

‘VOICE OF MANIKIN’ BRIEFING:

You are anxious and in quite a lot of lower abdominal pain. The surgeons have told you that you probably have an ectopic pregnancy and that they need to investigate with a diagnostic laparoscopy.

You are a previously fit and well 28 year old. You have suffered from frequent urinary tract infections and sinusitis, but never any serious infections. No allergies. Last ate 2 hours ago.

OTHER IN-SCENARIO PERSONNEL BRIEFING:Anaesthetic Assistant:

Assist the anaesthetist in inducing the patient and 'transferring' the patient to theatre. The patient is hypotensive post-induction which is only transiently responsive to fluids and vasopressors.

At some stage the anaesthetist should ask for blood to transfuse the patient – do not offer to check this in (leave it to the anaesthetist). There will be a transfusion reaction regardless of whether the blood is checked properly.

Voice of Telephone Help:

Consultant anaesthetist will arrive in 20 mins.

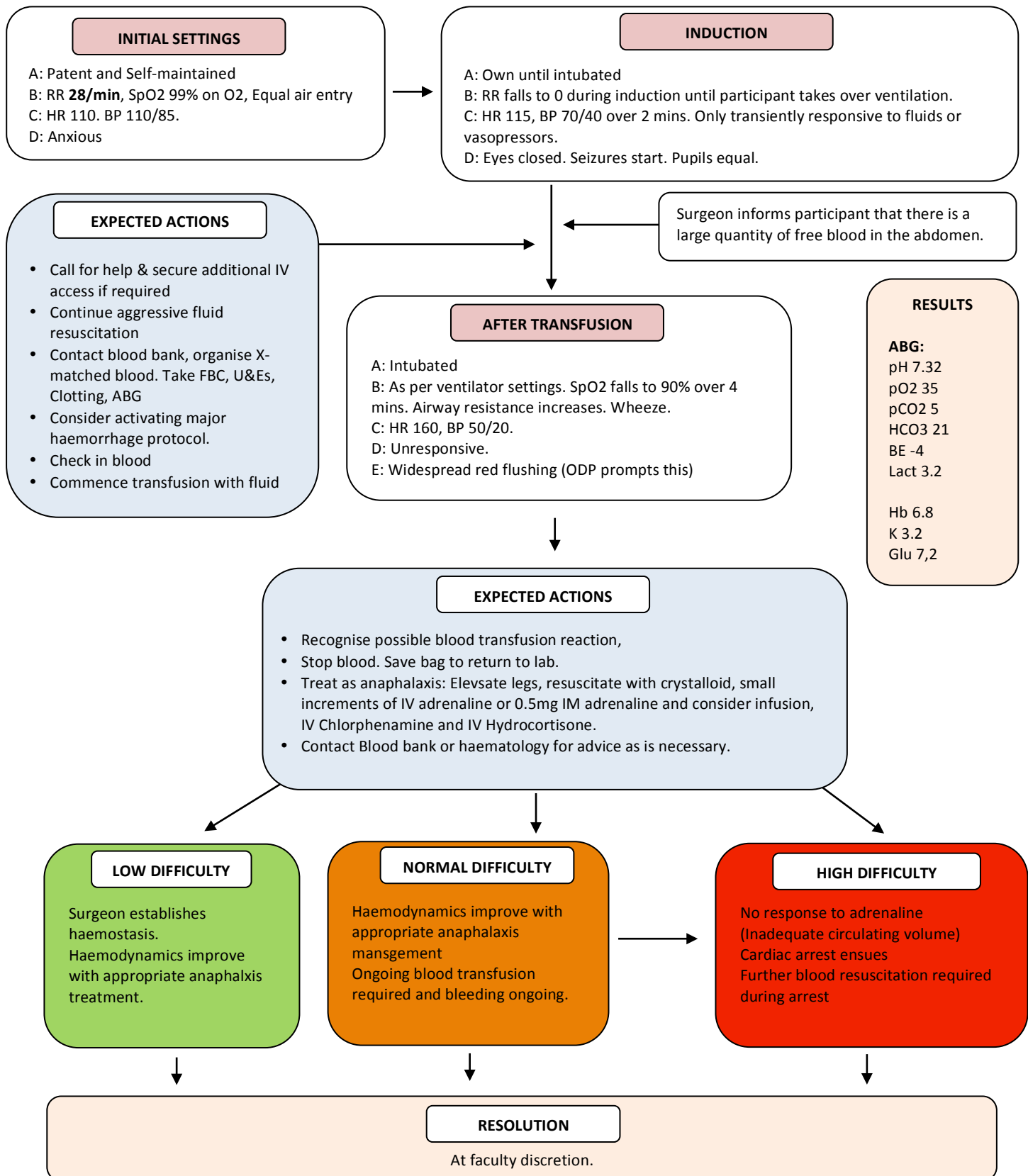
Blood Bank:

If the participant calls blood bank for advice, they are advised to keep the bag of blood under suspicion, and take 2 group and save samples from the patient, and label the samples with '?blood transfusion reaction'. After the blood transfusion reaction, any further blood they provide will be red cells washed in saline.

ADDITIONAL INFORMATION

Patients with hereditary IgA deficiency are at a higher risk of developing hypersensitivity and anaphylactic reactions to transfused blood – as they possess anti-IgA antibodies that react against the IgA in transfused blood. These patients should receive blood that is washed in 0.9% saline first. Hereditary IgA deficiency may be asymptomatic, but may manifest as a predisposition to bacterial infections resulting in frequent minor infective ailments.

CONDUCT OF SCENARIO



ANAESTHETIC RECORD SHEET

PATIENT DETAILS / ADDRESSOGRAPH
Hospital No. _____

SURNAME: **Laura Westall**
(Block Letters)
FORENAMES: _____

Address: **28 years old**
Ward/Hosp. _____

DOB: _____ Sex: M / F

Royal Berkshire

NHS Foundation Trust

Procedure(s) proposed:
Laparoscopic salpingectomy

CEPOD CLASS: ELECTIVE / SCHEDULED / URGENT / EMERGENCY

Anaesthetist's preoperative assessment by

Name: _____	Grade: <input type="checkbox"/> Cons <input type="checkbox"/> AS <input type="checkbox"/> SG <input type="checkbox"/> Trainee _____
Date: _____ Time: _____	Signature _____

<p>Anaes / Surg history:</p> <p>Previous ERPC – GA OK</p> <p>Medical history:</p> <p>Frequent UTIs and sinus related infections</p>	<p>O/E</p> <p>Nil of note</p> <p style="text-align: center;">Airway Assessment</p> <p>Mouth Opening: MP Score: 1 2 3 4</p> <p>Jaw: Neck: MP1. Good neck and jaw ROM TEETH</p> <table style="width: 100%; text-align: center; border-collapse: collapse;"> <tr> <td style="border-right: 1px solid black;">8</td><td style="border-right: 1px solid black;">7</td><td style="border-right: 1px solid black;">6</td><td style="border-right: 1px solid black;">5</td><td style="border-right: 1px solid black;">4</td><td style="border-right: 1px solid black;">3</td><td style="border-right: 1px solid black;">2</td><td style="border-right: 1px solid black;">1</td><td style="border-right: 1px solid black;"> </td><td style="border-right: 1px solid black;">1</td><td style="border-right: 1px solid black;">2</td><td style="border-right: 1px solid black;">3</td><td style="border-right: 1px solid black;">4</td><td style="border-right: 1px solid black;">5</td><td style="border-right: 1px solid black;">6</td><td style="border-right: 1px solid black;">7</td><td style="border-right: 1px solid black;">8</td> </tr> <tr> <td style="border-right: 1px solid black;">8</td><td style="border-right: 1px solid black;">7</td><td style="border-right: 1px solid black;">6</td><td style="border-right: 1px solid black;">5</td><td style="border-right: 1px solid black;">4</td><td style="border-right: 1px solid black;">3</td><td style="border-right: 1px solid black;">2</td><td style="border-right: 1px solid black;">1</td><td style="border-right: 1px solid black;"> </td><td style="border-right: 1px solid black;">1</td><td style="border-right: 1px solid black;">2</td><td style="border-right: 1px solid black;">3</td><td style="border-right: 1px solid black;">4</td><td style="border-right: 1px solid black;">5</td><td style="border-right: 1px solid black;">6</td><td style="border-right: 1px solid black;">7</td><td style="border-right: 1px solid black;">8</td> </tr> </table> <p style="font-size: small;">X = missing L = loose B = bridge C = caps / crowns D = damaged</p>	8	7	6	5	4	3	2	1		1	2	3	4	5	6	7	8	8	7	6	5	4	3	2	1		1	2	3	4	5	6	7	8	<p>ASA</p> <p>BP: _____</p> <p>HR: _____</p> <p>Temp: _____</p> <p>Weight: _____</p> <p>Height: _____</p> <p>BMI: _____</p> <p>Smoke: _____</p> <p>Alcohol: _____</p> <p>Apfel Score _____</p>
8	7	6	5	4	3	2	1		1	2	3	4	5	6	7	8																				
8	7	6	5	4	3	2	1		1	2	3	4	5	6	7	8																				
<p>V^r _____</p> <p>NBM since Solids: 2 hours ago Pregnancy: Ve+ Clear Fluids: _____ Lactation: _____</p>																																				

Relevant Medication: <p style="text-align: center;">Nil</p>	ALLERGIES <p style="text-align: center;">Nil Known</p>
---	--

Investigations	<input type="checkbox"/> Haematology FBC Hb 10 Sickle:	<input type="checkbox"/> Biochemistry U & E NAD Blood Sugar:	<input type="checkbox"/> Coag. INR 1.0 <input type="checkbox"/> Gp. & Save <input type="checkbox"/> X - Match	<input type="checkbox"/> ECG <input type="checkbox"/> X - Ray	Other: Pelvis USS: - Cystic collection on right adnexae ?Ectopic
-----------------------	--	--	---	--	--

CONSENT: GA Sedation Epidural Spinal Regional Suppository
 PCA EPCA Other

Notes / Discussion / Technique proposed:

Anaesthetic Information leaflet received by patient

For attention of ward staff: (further investigations, fasting, continue/omit current medication, etc.)

DEBRIEFING

POINTS FOR FURTHER DISCUSSION:

- Safe commencement of blood product transfusion.
- Recognition of possible drug reaction or blood transfusion reaction.
- Management of possible blood transfusion reaction.

DEBRIEFING RESOURCES

1. Maxwell MJ, Wilson MJA. Complications of blood transfusion. CEACCP 2006; 6:6 pg225-229 <http://ceaccp.oxfordjournals.org/content/6/6/225.full>
2. UK Blood Transfusion and Tissue Transplantation Services: Transfusion Handbook
Recognition and management of acute transfusion reactions
<http://www.transfusionsguidelines.org.uk/?Publication=HTM&Section=9&pageid=1145>
3. FRCA.co.uk resource on transfusion reactions
<http://www.frca.co.uk/article.aspx?articleid=100094>
4. AAGBI Safety Drill: Management of a Patient with suspected anaphylaxis during anaesthesia.
(Revised 2009)
http://www.aagbi.org/sites/default/files/ana_web_laminate_final.pdf
5. AAGBI Safety Guideline: Suspected Anaphylactic Reactions Associated with Anaesthesia (July 2009) http://www.aagbi.org/sites/default/files/anaphylaxis_2009_0.pdf

INFORMATION FOR PARTICIPANTS

KEY POINTS:

- Safe commencement of blood product transfusion.
- Recognition of possible drug reaction or blood transfusion reaction.
- Management of possible blood transfusion reaction.

RELEVANCE TO AREAS OF THE ANAESTHETIC CURRICULUM

IO_BS_07	Demonstrates role as team player and when appropriate leader in the intra-operative environment
IO_BS_08	Communicates with the theatre team in a clear unambiguous style
IO_BS_09	Able to respond in a timely and appropriate manner to events that may affect the safety of patients [e.g. hypotension, massive haemorrhage] [S]
CI_BK_01	Cardiac and/or respiratory arrest
CI_BK_02	Unexpected fall in SpO ₂ with or without cyanosis
CI_BK_03	Unexpected increase in peak airway pressure
CI_BK_08	Unexpected hypotension
CI_BK_19	Bronchospasm
CI_BK_22	Adverse drug reactions
CI_BK_23	Anaphylaxis
CI_BK_24	Transfusion reactions, transfusion of mis-matched blood or blood products
CI_BS_01	Demonstrates good non-technical skills such as: [effective communication, team-working, leadership, decision-making and maintenance of high situation awareness]
CI_BS_02	Demonstrates the ability to recognise early a deteriorating situation by careful monitoring
CI_BS_03	Demonstrates the ability to respond appropriately to each incident listed above
CI_BS_04	Shows how to initiate management of each incident listed above
CI_BS_05	Demonstrates ability to recognise when a crisis is occurring
CI_BS_06	Demonstrates how to obtain the attention of others and obtain appropriate help when a crisis is occurring
CI_IS_01	Demonstrates leadership in resuscitation room/simulation when practicing response protocols with other healthcare professionals
CI_IS_02	Demonstrates appropriate use of team resources when practicing response protocols with other healthcare professionals

FURTHER RESOURCES

1. Maxwell MJ, Wilson MJA. Complications of blood transfusion. CEACCP 2006; 6:6 pg225-229 <http://ceaccp.oxfordjournals.org/content/6/6/225.full>
2. UK Blood Transfusion and Tissue Transplantation Services: Transfusion Handbook
Recognition and management of acute transfusion reactions
<http://www.transfusionguidelines.org.uk/?Publication=HTM&Section=9&pageid=1145>

3. FRCA.co.uk resource on transfusion reactions
<http://www.frca.co.uk/article.aspx?articleid=100094>

4. AAGBI Safety Drill: Management of a Patient with suspected anaphylaxis during anaesthesia.
(Revised 2009)
http://www.aagbi.org/sites/default/files/ana_web_laminate_final.pdf

5. AAGBI Safety Guideline: Suspected Anaphylactic Reactions Associated with Anaesthesia (July 2009) http://www.aagbi.org/sites/default/files/anaphylaxis_2009_0.pdf

PARTICIPANT REFLECTION:

What have you learnt from this experience? (Please try to list 3 things)

How will your practice now change?

What other actions will you now take to meet any identified learning needs?

PARTICIPANT FEEDBACK

Date of training session:.....

Profession and grade:.....

What role(s) did you play in the scenario? (Please tick)

Primary/Initial Participant

Secondary Participant (e.g. 'Call for Help' responder)

Other health care professional (e.g. nurse/ODP)

Other role (please specify):

Observer

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
I found this scenario useful					
I understand more about the scenario subject					
I have more confidence to deal with this scenario					
The material covered was relevant to me					

Please write down one thing you have learned today, and that you will use in your clinical practice.

How could this scenario be improved for future participants?
 (This is especially important if you have ticked anything in the disagree/strongly disagree box)



FACULTY DEBRIEF – TO BE COMPLETED BY FACULTY TEAM

What went particularly well during this scenario?

What did not go well, or as well as planned?

Why didn't it go well?

How could the scenario be improved for future participants?