

Simulation Package : Massive Haemorrhage Protocol

An open access resource for clinical educators



Optimus
BONUS



Optimus

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Bank Of iNdependently Useful Simulations

Part of the Children's Health Queensland 'Optimus' curriculum.

Massive Haemorrhage Simulation Pack : Optimus BONUS

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An electronic version of this document is available at <https://www.childrens.health.qld.gov.au/research/education/queensland-paediatric-emergency-care-education/optimus-bonus/>

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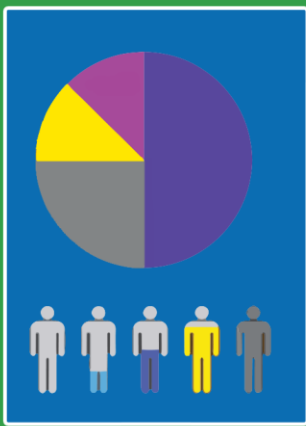
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Contents of this educational package:



Simulation

Safe and efficient transfusion of blood products utilising your hospitals Massive Haemorrhage Protocol



Infographic

For sharing in the weeks before or after your simulation via email or in poster format.



Further Reading

Podcasts and Blog Posts
Online Videos
Journal Articles

Fill out our participant survey
to receive a training certificate

(Select Optimus BONUS as course)



Simulation

How to use this simulation

This scenario is designed to facilitate rehearsal of your hospital's paediatric Massive Haemorrhage Protocol.

MHP is a complex, time critical intervention that is enacted infrequently in most settings. As such it warrants rehearsal, however in designing this simulation we noted that most published MHP simulations feature a complex trauma case that distracts learners from actually rehearsing rapid transfusion.

To keep our learners rehearsing the MHP this scenario presents hospital teams with a continuously draining bag of dialysis fluid that needs to be infused aggressively with blood.

In our experience this has led to valued and focused rehearsal of an MHP and much insight into its complexity and associated challenges.

Use of blood products:

In our pilot of this scenario, the hospital blood bank was incredibly collaborative and set about storing enough expired blood products for 3 Paediatric MHP packs. They also provided a technician during the scenario to role play 'blood bank', and observers came down to identify any QI issues. This allowed us to use real, expired blood in the sim which was physically realistic and did not run the risk of simulated blood being returned accidentally to blood bank.

If this is not possible or appropriate in your service, then you will need to prepare enough simulated blood products for 3 x Paediatric MHP packs suitable for your service.

A simple, low cost solution would be to add food colouring to expired fluid bags.

ROTEM vs Pack based Transfusion

We have provided ROTEM results and Blood Gas results for the scenario.

If your hospital does not use ROTEM for Paediatric MHP, do not provide participants with same.

Simulation Safety

Given the sim involves rehearsal of transportation of real or simulated blood to another part of the hospital, we strongly advise labelling all blood products as either 'expired' or 'simulated' in large and unambiguous signage. A safety officer for the sim should be assigned to ensure blood products are collected at the end of the scenario and not returned to the blood bank (to avoid contamination of blood bank stock with simulated or expired blood).

Preparing Staff for the Simulation

This scenario can be overwhelming for staff. We suggest providing education on MHP protocol and Rapid Infuser use prior to the scenario to set up teams best for success. A lecture on MHPs is provided in our resources section that you are welcome to share.

Section I: Scenario Demographics

Scenario Title:	Massive Haemorrhage Protocol
Date of Development:	February 2023
Target Learning Group:	Multidisciplinary Teams that may look after trauma patients

Section II: Scenario Developers

Scenario Developers:	Dr Ben Symon, Mr Kim Gourlay, Ms Leisa Bauer, Dr Dan Hufton
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Section III: Curriculum

Learning Goals & Objectives	
Educational Goal:	<ul style="list-style-type: none">Rehearse a massive haemorrhage protocol
Skills Rehearsal:	<ul style="list-style-type: none">Safe and rapid administration of blood products
Systems Assessment:	<ul style="list-style-type: none">Existence of MHP for ChildrenSuitability of equipment and system for optimal resuscitation

Case Summary: Brief Summary of Case Progression and Major Events

This is a relatively unique 'part task' simulation designed to help hospital teams interrogate their capacity to facilitate a paediatric massive haemorrhage protocol (MHP) in a relevant setting.

The patient in this simulation is simply two interconnected dialysis bags, the first of which is labelled 'blood volume' and which continuously leaks into the second bag 'blood loss' upon commencement of the sim.

Participants are advised they have no capacity to escalate care or stop the bleeding and must instead attempt to keep the bag from emptying by facilitating an MHP as efficiently as possible.

In doing so all participants become actively involved in the rehearsal of an MHP and faculty and participants can focus on reflecting on strengths of the team and barriers to effective transfusion in their setting.

Section IV: Equipment and Staffing

Scenario Cast					
Patient:		<input type="checkbox"/> 2 x Training Dialysis Bags [e.g. Haemosol 5L dialysis training bag] See construction guide next page.			
Actors:		Blood bank haematologist via phone			
Clinical Expert		Suggest engaging blood bank and transfusion expert (e.g. emergency / haematology expert)			
Required Equipment					
If running this simulation In Situ, suggest using your authentic equipment if approved by your department. This will help diagnose any actual equipment / availability / layout issues.					
Transfusion equipment:		Medications:		Documentation:	
<ul style="list-style-type: none">- Warmer- Blood filter- Rapid transfusion equipment e.g. Level 1 Rapid Infuser		<ul style="list-style-type: none">- Tranexamic acid- Normal Saline- Calcium Gluconate		<ul style="list-style-type: none">- Massive Haemorrhage Protocol- Simulated patient identification stickers- Pathology forms	
Simulated 'Patient':		Blood Products:			
<ul style="list-style-type: none">- Haemosol 5L Bag x 2- Dual, large bore IV line- IV line with wheel clamp		<ul style="list-style-type: none">• Simulated or expired blood products to suit multiple MHP packs as they would be prepared by your hospital's blood bank.			
Moulage					
See setup guide on next page					
Approximate Timing					
Set-Up:	30m	Prebrief :	10m	Scenario:	40m
				Debriefing:	20m

Patient Set Up Guide

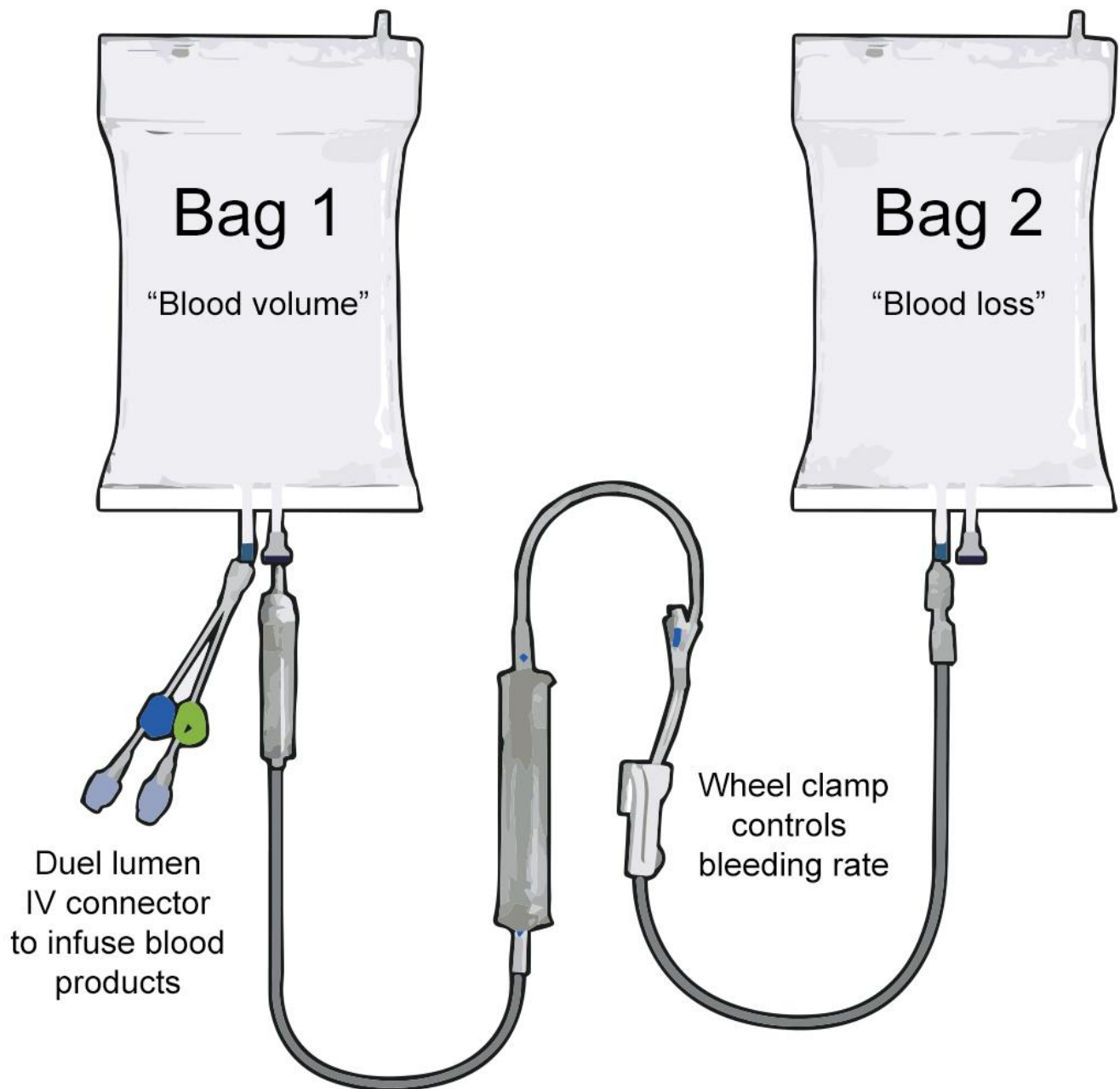
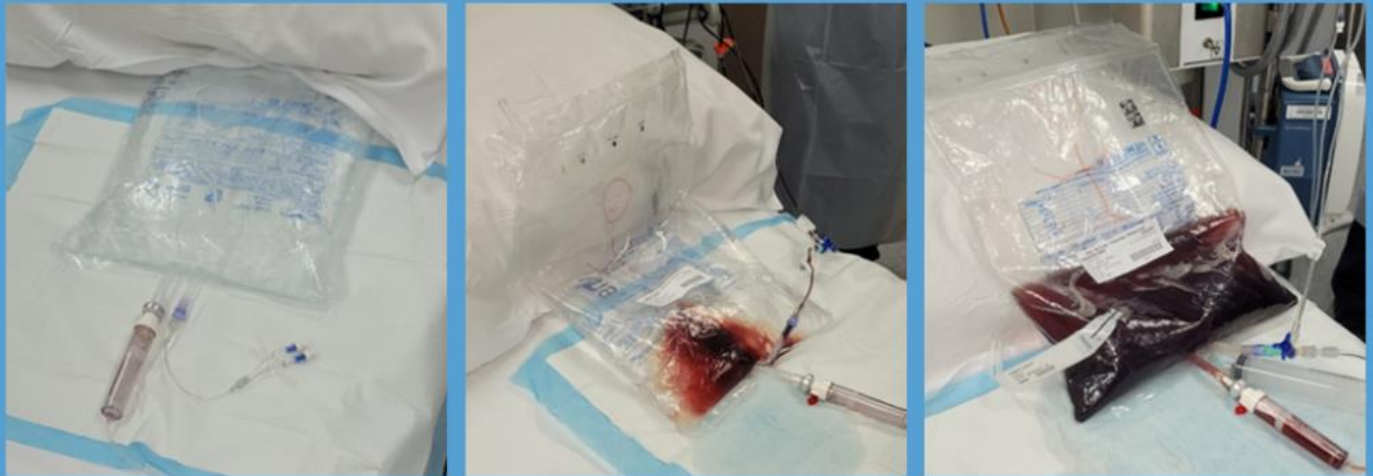


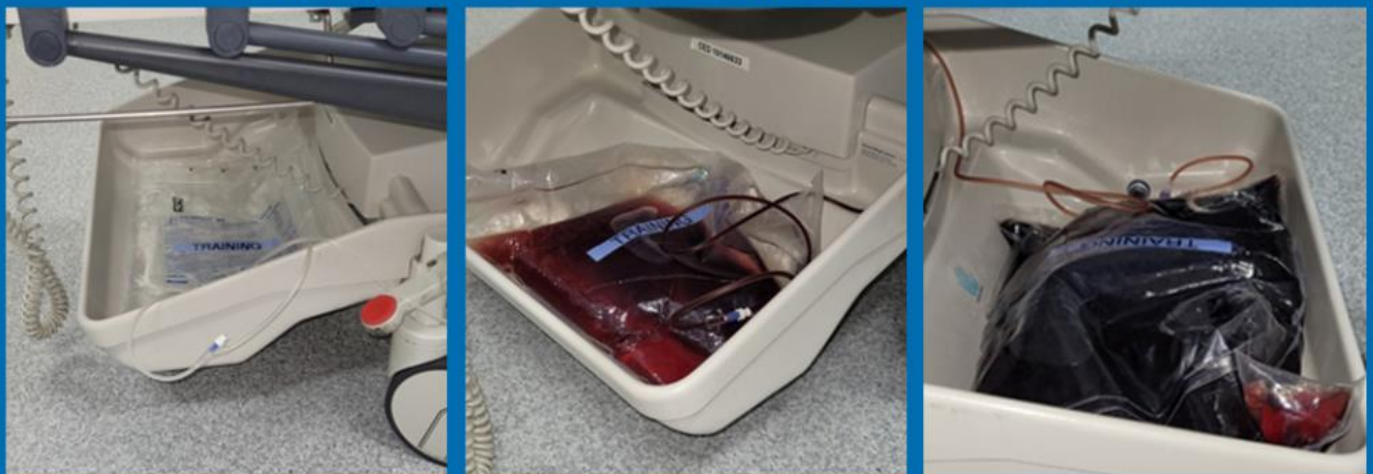
Figure 1. How to set up patient [items not to scale]

Photographs showing simulation set up in resus bay

Bag 1 (Patient) placed on bed



Bag 2 (Drainage reservoir) placed under trolley



As per Figure 1, connect two Hemosol Dialysis Bags or similar to each other via an IV line with wheel clamp.

Attach a dual lumen, large bore IV connector to Bag 1 (“Blood Volume”) and place this bag on the bed.

Attach a patient identification sticker to Bag 1 to allow staff to ‘check’ the identification of the patient.

Place Bag 2 (“Blood loss”) underneath the patient trolley.

Upon commencement of the simulation, open up the wheel clamp to the desired blood loss rate.

Section V : Scripts

Scenario Handover to team



“Welcome to the sim for today. Your goal is to rehearse safely and rapidly transfusing blood via our massive haemorrhage protocol.

To help us concentrate on the MHP itself there will be no other goals for this sim. The patient, (as you can see) is just a dialysis bag with an identification label. He is unfortunately leaking fluid into the lower bag and will continue to do so for the whole of the simulation. There is no way to stop his bleeding and no way to get him to theatre. Our sole task is to keep the top bag from emptying by transfusing blood products safe and fast according to our MHP.

I want you to form a team and communicate directly with blood bank, using our MHP protocol.

The patient’s name is Clayton Fakepatient. For the sake of this rehearsal, we are going to imagine he is a 25kg child. His date of birth and UR sticker are on the dialysis bag to ensure we practice our identification checks prior to transfusion.

When sending blood samples back to pathology, please use the UR stickers provided and send an empty specimen container correctly signed with a pathology form clearly labelled **SIMULATION ONLY**.

Blood sample collection and signing is a core skill being rehearsed in this simulation.

As with any transfusion your PPE is essential. Are there any questions?”

MHP Scenario Option 1: Pack Based Protocol

Scenario States for Standard Massive Haemorrhage Protocol (Pack Based)

State 1 : Blood loss begins

Patient Status	Learner Actions, Modifiers & Triggers to Move to Next State	
Bleeding commences.	<input checked="" type="checkbox"/> Activate MHP <input checked="" type="checkbox"/> Allocate roles including blood bank liaison <input checked="" type="checkbox"/> Collect appropriate blood samples <input checked="" type="checkbox"/> Consider administration of IV fluid while awaiting first bag of blood <input checked="" type="checkbox"/> Set up blood warmer/ rapid infuser	Open the wheel clamp to an appropriate rate of blood loss at commencement of sim. Inform staff the bleeding has commenced and they need to active and facilitate a MHP.

State 2 : Blood loss continues until end of scenario

Patient remains unchanged throughout sim.	<input checked="" type="checkbox"/> Receive first blood gas <input checked="" type="checkbox"/> Administer blood products as per your local MHP	Team continues to facilitate MHP. Provide 1 st and 2 nd blood gas results at appropriate times for sim. End scenario at appropriate time, eg. 30 minutes or earlier if time does not permit
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MHP Scenario Option 2: ROTEM Protocol

Scenario States for ROTEM based Massive Haemorrhage Protocol

State 1 : Blood loss begins

Patient Status	Learner Actions, Modifiers & Triggers to Move to Next State	
Bleeding commences.	<input checked="" type="checkbox"/> Activate MHP <input checked="" type="checkbox"/> Allocate roles including blood bank liaison <input checked="" type="checkbox"/> Collect appropriate blood samples <input checked="" type="checkbox"/> Consider administration of IV fluid while awaiting first bag of blood <input checked="" type="checkbox"/> Set up blood warmer/ rapid infuser	Open the wheel clamp to an appropriate rate of blood loss at commencement of sim. Inform staff the bleeding has commenced and they need to active and facilitate a MHP.

State 2 : Blood gas received

unchanged	<input checked="" type="checkbox"/> Receive first blood gas <input checked="" type="checkbox"/> Administer blood products as per your local MHP	Team continues to facilitate MHP.
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State 3 : ROTEM result

unchanged	<input checked="" type="checkbox"/> Receive ROTEM result <input checked="" type="checkbox"/> Administer blood products as per your local MHP	Team continues to facilitate MHP. Close sim at appropriate time.
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Hi, I'm the Haematologist from Pathology reviewing the ROTEM for Clayton.
Based on the progression of his ROTEM, the suggested treatment currently would be:

- Administration of tranexamic acid 15mg/kg (maximum 1g) if you haven't already
- Cryoprecipitate 5mL/kg (maximum 8 bags) or fibrinogen concentrate 50mg/kg (maximum 4g).
- We will send down some cryo now.

Section VII: Supporting Documents, Laboratory Results, & Multimedia

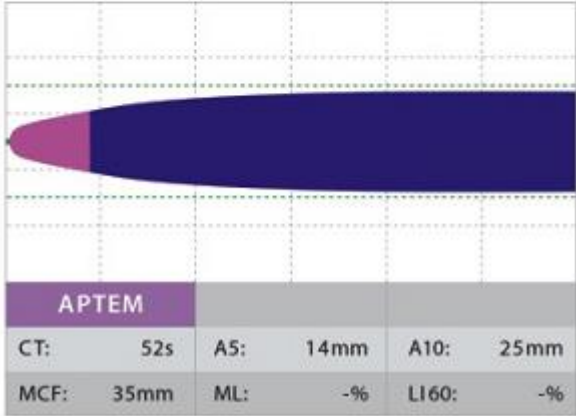
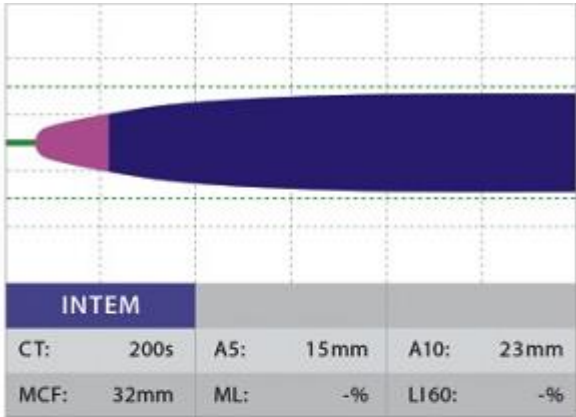
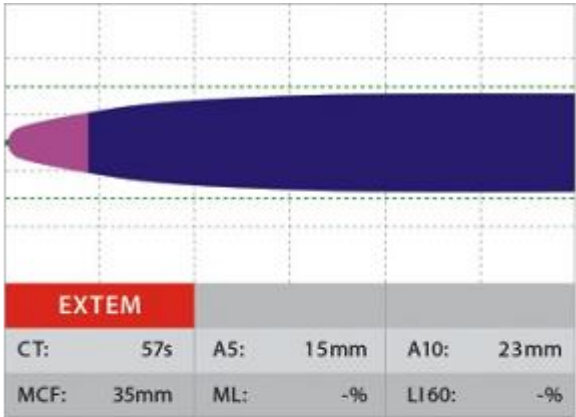
Blood Gas 1

	Results	Units	Normal Range
pH	7.28		7.32 – 7.42
pCO2	49	mmHg	41 - 51
pO2	55	mmHg	25 - 40
O2 Saturations	88	%	40 - 70
Bicarb	21.3	mmol/L	22 - 33
BE	-6	mmol/L	-3 - +3
HCT	0.29		0.3 - 0.42
Hb	99	g/L	105 - 135
Na+	145	mmol/L	135 - 145
K+	3.5	mmol/L	3.2 - 4.5
Ca++ (ionised)	0.8	mmol/L	1.15 – 1.35
Glucose	8	mmol/L	3.0 – 7.8
Lactate	1.7	mmol/L	0.7 – 2.5

Blood Gas 2

	Results	Units	Normal Range
pH	7.3		7.32 – 7.42
pCO2	50	mmHg	41 - 51
pO2	29	mmHg	25 - 40
O2 Saturations	55	%	40 - 70
Bicarb	21	mmol/L	22 - 33
BE	-6	mmol/L	-3 - +3
HCT	0.3		0.3 - 0.42
Hb	90	g/L	105 - 135
Na+	135	mmol/L	135 - 145
K+	4	mmol/L	3.2 - 4.5
Ca++ (ionised)	1.1	mmol/L	1.15 – 1.35
Glucose	5	mmol/L	3.0 – 7.8
Lactate	2	mmol/L	0.7 – 2.5

ROTEM



Simulated Pathology Service

PRODUCT NO: **336854**
PRODUCT GROUP: **O Negative**
PRODUCT TYPE: **Packed Red Blood Cells**

UR NO : **MEDEVAC**
SURNAME: _____
GIVEN NAMES: _____
DATE OF BIRTH: _____
HOSP: **QCH** WARD: **DEM**
PATIENT GROUP: **Unknown**
DATE: **Today**
INITIALS: **TP**

Simulated Pathology Service

PRODUCT NO: **478956**
PRODUCT GROUP: **O Negative**
PRODUCT TYPE: **Packed Red Blood Cells**

UR NO : **MEDEVAC**
SURNAME: _____
GIVEN NAMES: _____
DATE OF BIRTH: _____
HOSP: **QCH** WARD: **DEM**
PATIENT GROUP: **Unknown**
DATE: **Today**
INITIALS: **TP**

Simulated Pathology Service

PRODUCT NO: **486523**
PRODUCT GROUP: **A Positive**
PRODUCT TYPE: **Packed Red Blood Cells**

UR NO : **326589**
SURNAME: **FAKEPATIENT**
GIVEN NAMES: **CLAYTON**
DATE OF BIRTH: **17/05/2017**
HOSP: **QCH** WARD: **DEM**
PATIENT GROUP: **A Positive**
DATE: **Today**
INITIALS: **TP**

Simulated Pathology Service

PRODUCT NO: **523698**
PRODUCT GROUP: **A Positive**
PRODUCT TYPE: **Packed Red Blood Cells**

UR NO : **326589**
SURNAME: **FAKEPATIENT**
GIVEN NAMES: **CLAYTON**
DATE OF BIRTH: **17/05/2017**
HOSP: **QCH** WARD: **DEM**
PATIENT GROUP: **A Positive**
DATE: **Today**
INITIALS: **TP**

Queensland Health Pathology
Service

PRODUCT NO: **698372**
PRODUCT GROUP: **AB Positive**
PRODUCT TYPE: **FFP**
UR NO : **326589**
SURNAME: **FAKEPATIENT**
GIVEN NAMES: **CLAYTON**
DATE OF BIRTH: **17/05/2017**
HOSP: **QCH** WARD: **DEM**
PATIENT GROUP: **Unknown**
DATE: **Today**
INITIALS: **TP**

Queensland Health Pathology
Service

PRODUCT NO: **589467**
PRODUCT GROUP: **AB Positive**
PRODUCT TYPE: **Cryoprecipitate**
UR NO : **326589**
SURNAME: **FAKEPATIENT**
GIVEN NAMES: **CLAYTON**
DATE OF BIRTH: **17/05/2017**
HOSP: **QCH** WARD: **DEM**
PATIENT GROUP: **Unknown**
DATE: **Today**
INITIALS: **TP**


Queensland Health Pathology
Service

PRODUCT NO: **867432**
PRODUCT GROUP: **AB Positive**
PRODUCT TYPE: **Pooled Platelets**
UR NO : **326589**
SURNAME: **FAKEPATIENT**
GIVEN NAMES: **CLAYTON**
DATE OF BIRTH: **17/05/2017**
HOSP: **QCH** WARD: **DEM**
PATIENT GROUP: **Unknown**
DATE: **Today**
INITIALS: **TP**

Queensland Health Pathology
Service


PRODUCT NO: **684231**
PRODUCT GROUP: **AB Positive**
PRODUCT TYPE: **Cryoprecipitate**
UR NO : **326589**
SURNAME: **FAKEPATIENT**
GIVEN NAMES: **CLAYTON**
DATE OF BIRTH: **17/05/2017**
HOSP: **QCH** WARD: **DEM**
PATIENT GROUP: **Unknown**
DATE: **Today**
INITIALS: **TP**

Blood Bag Labels- enter details for your scenario in the red text boxes



336854

01/01/2030



d620b

Packed
Red Blood
Cells

Donation Tested and non-reactive
for specified markers for HIV 1&2,
hepatitis B&C, HTLV and syphilis

Collecte

Australian Red

SIMULATION TRAINING USE ONLY



478956

01/01/2030



d620b


Packed
Red Blood
Cells

Donation Tested and non-reactive
for specified markers for HIV 1&2,
hepatitis B&C, HTLV and syphilis

Collecte


Australian Red

SIMULATION TRAINING USE ONLY



486523

01/01/2030



d620b

Packed
Red Blood
Cells

Donation Tested and non-reactive
for specified markers for HIV 1&2,
hepatitis B&C, HTLV and syphilis

Collecte

Australian Red

SIMULATION TRAINING USE ONLY



523698

01/01/2030



d620b

Packed
Red Blood
Cells

Donation Tested and non-reactive
for specified markers for HIV 1&2,
hepatitis B&C, HTLV and syphilis

Collecte

Australian Red

SIMULATION TRAINING USE ONLY

Patient Location: QCH DEM	UR Number Name Given Name DOB	326589 FAKEPATIENT CLAYTON 17/05/2017
Consultant: SMITHERS		
Req. Officer		

Lab No. 568952146

Blood Product Report

Patient Blood Group: Unknown
Antibody Screen

Special Requirements: Nil

Comment:

Patient Sample compatible with the following units:

Product Type	Product Number	Group	Patient Identity Check by		Commenced Time	Date
			Signature 1*	Signature 2*		
Cryo-Precipitate	589467	AB Positive				
Cryo-Precipitate	684231	AB Positive				

UNITS RESERVED Until:.....

*Signature denotes that each of the following checks have been undertaken by two clinical staff at the patient's bedside prior to the administration of the blood product.

1. Ensure valid consent have been obtained before transfusion is commenced
2. The product type on the blood/blood product label is identical to the prescribed order. Special requirements identified eg CNV status, irradiated, warming.
3. Details on the crossmatch report and blood/blood product label are identical, include expiry date check
4. Patient ID band/stated details and the blood/blood product label details are identical
5. Visual inspection of blood/blood product. Remember to mix gently prior to use

If any check fails, contact medical officer and return to Blood Bank as appropriate

Patient Location: QCH DEM	UR Number Name Given Name DOB	326589 FAKEPATIENT CLAYTON 17/05/2017
Consultant: SMITHERS		
Req. Officer		

Lab No. 568952146

Blood Product Report

Patient Blood Group: Unknown
Antibody Screen

Special Requirements: Nil

Comment:

Patient Sample compatible with the following units:

Product Type	Product Number	Group	Patient Identity Check by		Commenced Time Date
			Signature 1*	Signature 2*	
FFP	698372	AB Positive			

UNITS RESERVED Until:.....

*Signature denotes that each of the following checks have been undertaken by two clinical staff at the patient's bedside prior to the administration of the blood product.

1. Ensure valid consent have been obtained before transfusion is commenced
2. The product type on the blood/blood product label is identical to the prescribed order. Special requirements identified eg CNV status, irradiated, warming.
3. Details on the crossmatch report and blood/blood product label are identical, include expiry date check
4. Patient ID band/stated details and the blood/blood product label details are identical
5. Visual inspection of blood/blood product. Remember to mix gently prior to use

If any check fails, contact medical officer and return to Blood Bank as appropriate

Patient Location: QCH DEM	UR Number Name Given Name DOB	326589 FAKEPATIENT CLAYTON 17/05/2017
Consultant: SMITHERS		
Req. Officer		

Lab No. 568952146

Blood Product Report

Patient Blood Group: Unknown
Antibody Screen

Special Requirements: Nil

Comment:

Patient Sample compatible with the following units:

Product Type	Product Number	Group	Patient Identity Check by		Commenced Time	Date
			Signature 1*	Signature 2*		
Pooled Platelets	867432	AB positive				

UNITS RESERVED Until:.....

*Signature denotes that each of the following checks have been undertaken by two clinical staff at the patient's bedside prior to the administration of the blood product.

1. Ensure valid consent have been obtained before transfusion is commenced
2. The product type on the blood/blood product label is identical to the prescribed order. Special requirements identified eg CNV status, irradiated, warming.
3. Details on the crossmatch report and blood/blood product label are identical, include expiry date check
4. Patient ID band/stated details and the blood/blood product label details are identical
5. Visual inspection of blood/blood product. Remember to mix gently prior to use

If any check fails, contact medical officer and return to Blood Bank as appropriate

Patient Location: QCH DEM	UR Number Name Given Name DOB	326589
Consultant: SMITHERS		FAKEPATIENT
Req. Officer		CLAYTON 17/05/2017

Lab No. 568952146

Blood Product Report

Patient Blood Group: Unknown
Antibody Screen

Special Requirements: Nil

Comment:

Patient Sample compatible with the following units:

Product Type	Product Number	Group	Patient Identity Check by		Commenced Time	Date
			Signature 1*	Signature 2*		
PRBC	486523	A Positive				
PRBC	523698	A Positive				

UNITS RESERVED Until:.....

*Signature denotes that each of the following checks have been undertaken by two clinical staff at the patient's bedside prior to the administration of the blood product.

1. Ensure valid consent have been obtained before transfusion is commenced
2. The product type on the blood/blood product label is identical to the prescribed order. Special requirements identified eg CNV status, irradiated, warming.
3. Details on the crossmatch report and blood/blood product label are identical, include expiry date check
4. Patient ID band/stated details and the blood/blood product label details are identical
5. Visual inspection of blood/blood product. Remember to mix gently prior to use

If any check fails, contact medical officer and return to Blood Bank as appropriate

Patient Location: QCH DEM	UR Number Name Given Name DOB	326589 FAKEPATIENT CLAYTON 17/05/2017
Consultant: SMITHERS		
Req. Officer		

Lab No. 568952146

Blood Product Report

Patient Blood Group: Unknown
Antibody Screen

Special Requirements: Nil

Comment: These products are not cross matched.

Patient Sample compatible with the following units:

Product Type	Product Number	Group	Patient Identity Check by		Commenced Time	Date
			Signature 1*	Signature 2*		
PRBC	4672969	O Negative				
PRBC	867432	O Negative				

UNITS RESERVED Until:.....

*Signature denotes that each of the following checks have been undertaken by two clinical staff at the patient's bedside prior to the administration of the blood product.

1. Ensure valid consent have been obtained before transfusion is commenced
2. The product type on the blood/blood product label is identical to the prescribed order. Special requirements identified eg CNV status, irradiated, warming.
3. Details on the crossmatch report and blood/blood product label are identical, include expiry date check
4. Patient ID band/stated details and the blood/blood product label details are identical
5. Visual inspection of blood/blood product. Remember to mix gently prior to use

If any check fails, contact medical officer and return to Blood Bank as appropriate

Surname: FAKEPATIENT UR: 123456 Given Names: JAXXXON Date of Birth: 06/06/2016 Gender: MALE Ward:	Surname: FAKEPATIENT UR: 326589 Given Names: CLAYTON Date of Birth: 17/05/2017 Gender: MALE	Surname: FAKEPATIENT UR: 326589 Given Names: CLAYTON Date of Birth: 17/05/2017 Gender: MALE
Surname: FAKEPATIENT UR: 123456 Given Names: JAXXXON Date of Birth: 06/06/2016 Gender: MALE	Surname: FAKEPATIENT UR: 326589 Given Names: CLAYTON Date of Birth: 17/05/2017 Gender:	Surname: FAKEPATIENT UR: 326589 Given Names: CLAYTON Date of Birth: 17/05/2017 Gender: MALE
Surname: FAKEPATIENT UR: 326589 Given Names: CLAYTON Date of Birth: 17/05/2017 Gender: MALE	Surname: FAKEPATIENT UR: 326589 Given Names: CLAYTON Date of Birth: 17/05/2017 Gender: MALE	Surname: FAKEPATIENT UR: 326589 Given Names: CLAYTON Date of Birth: 17/05/2017 Gender: MALE
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Surname: FAKEPATIENT UR: 123456 Given Names: JAXXXON Date of Birth: 06/06/2016 Gender: MALE Ward:	Surname: FAKEPATIENT UR: 326589 Given Names: CLAYTON Date of Birth: 17/05/2017 Gender: MALE	Surname: FAKEPATIENT UR: 326589 Given Names: CLAYTON Date of Birth: 17/05/2017 Gender: MALE
Surname: FAKEPATIENT UR: 123456 Given Names: JAXXXON Date of Birth: 06/06/2016 Gender: MALE	Surname: FAKEPATIENT UR: 326589 Given Names: CLAYTON Date of Birth: 17/05/2017 Gender:	Surname: FAKEPATIENT UR: 326589 Given Names: CLAYTON Date of Birth: 17/05/2017 Gender: MALE
Surname: FAKEPATIENT UR: 326589 Given Names: CLAYTON Date of Birth: 17/05/2017 Gender: MALE	Surname: FAKEPATIENT UR: 326589 Given Names: CLAYTON Date of Birth: 17/05/2017 Gender: MALE	Surname: FAKEPATIENT UR: 326589 Given Names: CLAYTON Date of Birth: 17/05/2017 Gender: MALE

Section VIII: Debriefing Guide

Objectives

Educational Goal:	<ul style="list-style-type: none">• Rehearse execution of a massive haemorrhage protocol
Skills Rehearsal:	<ul style="list-style-type: none">• Safe and rapid administration of blood products
Systems Assessment:	<ul style="list-style-type: none">• Existence of MHP for Children• Suitability of equipment and system for optimal resuscitation

Sample Questions for Debriefing

This was a case of a simulated 25kg child requiring rapid administration of blood products as per our MHP.

What issues came up for you as a team?

Can we explore the use of the Rapid Infuser, were there any challenges?

Let's explore the communication between blood bank and the resus team. What made that work well?

Let's explore the algorithm, what features of the algorithm helped you? Were there any features that were confusing?

Key Moments

Activation and clear role allocation

Set up and administration of blood products

Execution of the MHP

Fill out our participant survey
to receive a training certificate

(Select Optimus BONUS as course)



Diagnostic Report of In Situ Simulation

Simulation can provide important data about unrecognised latent safety threats within your service.
This form is provided to prompt recording of any Quality and Safety / Systems issues that need escalation within your department.

It is **not** to be used as a recording of personal performance management or to violate candidates' confidentiality.

Allocation of MHP roles ☐

Time of blood bank activation: _____

Allocation of Blood Bank Liaison ☐

O -ve : Arrival time: _____ Administration commenced: _____

Pack 1: Arrival time: _____ Administration commenced: _____

Pack 2: Arrival time: _____ Administration commenced: _____

Category	Issue identified	Action recommended	Should be escalated to	Follow up date
Team				
Environment				
System				

Simulation Occurred on _____

Follow up date re : identified issues on _____

Resources : Understanding MHP Concepts



Understanding MHPs
Lecture from Ben Symon



Don't Forget the Bubbles
Massive Transfusion Protocols

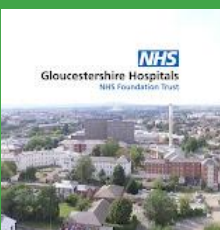
Resources: Understanding Your Equipment



Belmont Rapid Infuser
– Instructional Video



3M Ranger Blood/Fluid Warm Unit
- Instructional Video



Level 1 Rapid Infuser
- Training Video

Curriculum

This package is designed for **individuals** to refresh and retain the following skills learned in previous OPTIMUS courses as well as add new knowledge on specific conditions.

Optimus CORE	Optimus PRIME	Optimus TRAUMA
Clear role allocation	Fluid administration and structured approach to shock	Safe facilitation of a massive haemorrhage protocol.
Administration of IV fluid using push/pull technique		

This package is designed to offer your **department** a systems level check regarding :

Equipment Check : <ul style="list-style-type: none">• Transfusion equipment appropriate for paediatric MHP	<input type="checkbox"/>
Departmental Protocols for : <ul style="list-style-type: none">• Paediatric Massive Haemorrhage Protocol	<input type="checkbox"/>

If you would like any assistance obtaining access or advice for any of the above issues, please contact stork@health.qld.gov.au

About the Creators :



Dr Ben Symon : Consultant Supervisor, Infographics and Editor

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RACP PEM, MBBS, BAnim

Simulation Consultant and Paediatric Emergency Physician

Queensland Children's Hospital and The Prince Charles Hospital

Director of Clinical Simulation, Mater Health

Dr Symon is a PEM Physician and Simulation enthusiast with a passion for translating clinical and educational research to front line health care workers. He is co-producer of the podcast 'Simulcast' and facilitates the Simulcast Online Journal Club, an online journal club for simulation educators throughout the world. He is faculty on the APLS Educational Skills Development Course and is international faculty for the Master Debriefing Course by [the Debriefing Academy](#). His original degree in Animation has proved surprisingly useful in his career in medical education.



Dr Dan Hufton

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MRCPCH, MBBS (Hons)

Paediatrician and STORK Simulation Fellow, Queensland Children's Hospital

Dan is a husband, father to 3 children and a Paediatrician with a keen interest in Simulation-Based education (SBE) and translational simulation. He has an interest in human factors and how we can use SBE to improve system performance and staff wellbeing. Currently working as simulation fellow with the STORK team based at QCH to deliver, design, and innovate SBE that improves paediatric critical illness and resuscitation training in healthcare settings across Queensland.



Mr Kim Gourlay

Simulation Coordinator – The Prince Charles Hospital

School of Clinical Medicine, University of Queensland, Brisbane, Queensland, Australia

Kim has worked across several specialties including Neurosurgery, Lower GI Surgery and General Medicine, spending several years in Nursing Pool. Kim has not only worked in many specialties, he has worked in hospitals as far as New Zealand, Scotland and England gaining exceptional experiences through his travels.

Kim is the Pocket Centre Lead at The Prince Charles Hospital and works alongside the Nurse and Medical Educators, assisting with the delivery of the 'UQ Critical Care Course', and multiple programs conducted by the Emergency Department for their Registrars and Residents.



Ms Leisa Bauer

Nurse Unit Manager – The Prince Charles Hospital

School of Clinical Medicine, University of Queensland, Brisbane, Queensland, Australia

Leisa Bauer is a registered Nurse for over 23 years. Leisa's experience extends from neonatal, paediatric and adult critical and intensive care across the spectrum of tertiary, quaternary, regional and rural hospitals. Leisa had performed over 200 retrieval's for critically ill children across Queensland. Leisa has been a Nurse Educator for mixed adult and paediatric ICU and ED for over 8 years and recently moved into leadership as the Nurse Unit Manager for the Children's Emergency Department at The Prince Charles Hospital in Brisbane.

About the BONUS Project :

The [OPTIMUS BONUS project](#) is a bank of useful scenarios that are open access and available for free use. It has been designed by the Simulation Training Optimising Resuscitation for Kids team for Children's Health Queensland.

We aim to use the packages to provide :

- Spaced repetition to reinforce learning objectives from CORE, PRIME and PULSE.
- Connections to high quality, up to date paediatric resources for health professionals
- Quality and Safety checks for local hospitals regarding paediatric clinical guidelines, resources and equipment

The scenarios have been designed in response to :

- Paediatric coronial investigations in Queensland, Australia.
- Clinical skills issues revealed through In Situ Translational simulations in hospitals throughout Queensland.
- Quality and Safety Initiatives

About STORK

In 2014, Children's Health Queensland funded the 'Simulation Training Optimising Resuscitation for Kids' service. STORK is a paediatric education team focused on improving healthcare outcomes for children throughout the state.

STORK has developed a number of courses aimed at different phases of paediatric critical care :

- [CORE](#) is a course for first responders to a paediatric emergency, and teaches recognition of the deteriorating patient, Children's Early Warning Tools, and resuscitation competencies.
- [PRIME](#) is a course for mid phase responders who look after unwell patients while awaiting for retrieval or escalation to an Intensive Care. It aims at contextualising Seizure Management, Intubation and Inotrope Administration within host hospital's real clinical environments in order for healthcare teams to generate their own practice improvement strategies as well as link peripheral hospitals with high quality resources.
- [PULSE](#) is a CPR refresher course based on the principles of Rapid Cycle Deliberate Practice.
- [BONUS](#) was proposed as a solution to skill and knowledge decay after these courses are run.

If you would like to know more information about STORK or acquire copies of our resources, please contact us at stork@health.qld.gov.au .

References

- This Simulation Template has been extensively adapted from an original template from emsimcases.com, available at : <https://emsimcases.com/template/>