



Blood Transfusion Randwick Blood Bank Level 4 Campus Centre

**Dr Susan MacCallum
Haematologist , POWH
Sept 2023**

Welcome!
The blood bank at Randwick services....
YOU!

- Prince of Wales Hospital
- Sydney Children's Hospital
- Royal Hospital for Women
- Sydney Hospital
- War Memorial Hospital
- Prince of Wales Private Hospital

How can we help you ?

- Senior scientists
- Haematology registrars –advanced trainees
- Consultant haematologists –on-call
- Haematology CNC
- Liason with Red Cross Blood Bank
- Transfusion policy on POWH intranet

Randwick Blood Bank

- Zero tolerance for sample labelling
- **Sign the form if you collect the sample**
- Powerchart for ordering, PPI function
- Gate keeping , MSBOS
- Prescription form, MOSAIQ blood prescribing
- Consent tool
- Single unit policy
- ROTEM-guided critical bleeding protocol

eMR: Ordering

- Blood group and antibody screen=Group and Screen or Group and Hold
- Blood group, antibody screen and crossmatch
- Crossmatch (add-on)
- Blood group cord/neonatal

eMR: Ordering

- Required details – diagnosis
- Please
 - tell us when you want the blood
 - leave your page number in case there are problems
 - sign the collector declaration if you collect the blood

Group and hold

- Blood is sent to blood bank
 - Blood group determined
 - Screen for antibodies
 - G&H takes about 20 mins
- Request a crossmatch when blood is required
- Crossmatch= blood is assigned to the patient
- Crossmatch may take minutes (electronic, no antibodies) or hours/days if antibodies present

Ordering products

- Fresh products (platelets, FFP, cryoprecipitate) order on eMR
- Current blood group required
- Consider patient's special needs eg irradiated, CMV neg products

Taking the blood sample

- Take the blood
- Label the tube by hand (no stickers) at the bedside
- 3 mandatory identifiers
 - Name, DOB, MRN (NATA)
- All details must be correct
- Form and tube details must match

Taking the blood sample

- The form must be signed by the collector affirming the patient's identity (NATA, NSWDoH)

SEALS

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Zero tolerance

- **Recollect** any samples
 - where there is a **discrepancy** between the information on the tube and the information on the form
 - which do not have a **signed** collector's declaration
 - where the details are **not hand-written** on the tube
- Critical samples may be discussed between the patient's consultant and haematologist on-call

Why so strict?

- Clerical errors remain the major source of incorrect blood transfused
 - Usually at the time of sample (wrong blood in tube)
 - Occas when blood is hung
- Possibility of ABO incompatible transfusion and death

How long does my G&H last?

- Patient Product Inquiry
 - 7 days
 - 3 days if previously transfused or pregnant in the last 3 months or if no information available
 - Ring blood bank if unsure
 - Patient eMR flowsheet not helpful here

- Menu
- Patient Information
- Patient Summaries
- Flowsheet**
- BTF Observation Chart
- Allergies + Add
- Diagnosis, Alerts & Problems
- Alerts View
- Histories
- Quick Orders
- Orders + Add
- Medication List
- Medication Monitoring
- MAR
- MAR Summary
- Warfarin/INR Trending
- ContinuousDoc
- Documentation + Add

Flowsheet Pathology Medical Imaging Clinical Notes View Advance Care Documents

Flowsheet: All Results Flowsheet Level: ALLRESLTSECT Table Group List

Last 300 Results in the Past 1 Years

Navigator	Results	02/08/2019 10:15	01/08/2019 11:45	06/07/2019 12:20	06/07/2019 09:36	06/07/2019 09:00	06/07/2019 00:00	11/05/2019 08:25
<input checked="" type="checkbox"/> HealtNet Info	<input type="checkbox"/> Eosinophils %		0.8 %			3.2 %		
<input checked="" type="checkbox"/> Pathology Results	<input type="checkbox"/> Eosinophils Absolute		0.05 x10 ⁹ /L			0.11 x10 ⁹ /L		
<input checked="" type="checkbox"/> Blood Chemistries	<input type="checkbox"/> Basophils %		0.5 %			1.2 %		
<input checked="" type="checkbox"/> Haematology	<input type="checkbox"/> Basophils Absolute		0.03 x10 ⁹ /L			0.04 x10 ⁹ /L		
<input checked="" type="checkbox"/> Transfusion Medicine	<input type="checkbox"/> Erythrocyte Sedimentation Rate		H 14 mm/h					
<input checked="" type="checkbox"/> HIV Results	Transfusion Medicine							
<input checked="" type="checkbox"/> Endocrinology	Blood Product Red Cells Order		app		u			
<input checked="" type="checkbox"/> Serology	Blood Product Red Cells Availability		Check Patient Pr		Check Patient Pr			
<input checked="" type="checkbox"/> Cancer Care/Haematolo	Blood Group		B POS		B POS			
	Red Cell Antibody Screen Interpretation		Nil Detected		Nil Detected			
	TRANSFUSED			TRANSFUSED, TF				TRANSFUSED, TF
	Crossmatch Summary		Computer XM O		Computer XM O			

Task Edit View Patient Chart Links Notifications T

Message Centre Patient List Rounds List Census Ta

IS/SELHD Clinical Systems SCH Clinical Systems Inject

CIAP SEALS Test Manual eMR Support GuidanceM

SavDoc: 0 CoSign: 0 Result: 90

Tear Off Exit Calculator AdHoc Explorer Menu

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Flowsheet Pathol

Flowsheet: All R

Navigator

- HealthNet In
- Pathology Re
- Blood Chemis
- Haematology
- Transfusion M
- HIV Results
- Endocrinolog
- Serology
- Cancer Care/I

PathNet BB Transfusion: Patient Product Inquiry

Task View Alerts Help

Medical record number: 8253441

MRN: 8253441, 8253441, 8253441

ABO/Rh: B Pos **Age:** 30 years **Medicare Number:** 26571063841

DOB: 26/08/1988 **Gender:** Male

Reason for visit: unknown **Hx MRN:** n/a

Hx name: n/a

Antibodies:

Blood Bank Comments:

- >> 27/SEP/18 16:22:00 60051127 Units S- per RX typing. Unable to confirm
- >> 17/NOV/15 09:46:00 STERN D Red Cross unable to identify low. Please do full crossmatch.
- >> 06/NOV/15 13:40:00 COOPER L Full XM required til further notice, potential unidentified antibody present.
- >> 11/SEP/14 15:56:00 MOROZ L Phenotype for S done at RX

Transfusion Requirements:

Alerts

Product List: States: (All): Assigned, Autologous, Directed, Shipped, In Progress, Quarantined, ... Dates: All dates Change Retrieve

Number	Type	ABO/Rh	Comment	Accession	States	Reason	Date/T
0 item(s)							

Ready 0 item(s) SEPRD 53034465 15:43 43 AEST

Task Edit View Patient Chart Links Notifications T

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PathNet BB Transfusion: Patient Product Inquiry

Medical record number: 8253441

MRN: 8253441, 8253441, 8253441

ABO/Rh: B Pos

Medicare Number: 26571063841

Gender: Male

Available Specimens

Specimens:

	Collected	Accession	Order	Status	Expires
1	01/08/2019 11:45	19-186-0294	Blood Group Antibody Screen Crossmatch Order Blood Product Red Ce BBT History and Anti-I RAN BB Sample BBT Finance	Completed Completed Completed Completed Completed Completed	04/08/2019 11:45

OK

Transfusion Requirements:

Product List: States: (All): Assigned, Autologous, Directed, Shipped, In Progress, Quarantined, ... Dates: All dates [Change] [Retrieve]

Number	Type	ABO/Rh	Comment	Accession	States	Reason	Date/T
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Ready 0 item(s) SEPRD 53034465 15:43 43 AEST

Patient Blood Management

Shifts the focus from the Bloodproduct to the Patient

3 Pillars:

1. Optimise patient's erythropoiesis
 2. Minimise blood loss and bleeding
 3. Optimise physiological reserves for anaemia tolerance
- Benefits of transfusion must outweigh risks

Gate –keeping

- Blood bank scientists are not authorised to issue blood and blood components outside guidelines for clinically stable patients
- These cases should be discussed with the haematology registrar

Transfusion Prescription

- Blood is prescribed on a separate form
- Designed to capture reason for transfusion and consent
- Patient Information Brochures for consent (*CEC*)
- NSQHS – reason for transfusion and consent to be documented in patient records

Informed consent

- Separate consent required for blood
- CEC brochure exists on all wards and hospital intranet, 13 languages
- JMO consent tool on haem webpage
- Call your registrar, haem AT or consultant on-call for support

Informed consent -risks

- Major risks are **not** viral transmission (all less than 1:1 million with NAT testing)
- ~1% red cells transfusions result in fluid overload
- 1-3% plasma transfusions cause an allergic reaction
 - www.transfusion.com.au

Transfusion Reaction	Incidence
ABO/Rh mismatch	1:40,000
Allergic reactions (mild)	1% - 3% of transfusions
Anaphylaxis	1:20,000 – 1:50,000
Febrile non-haemolytic	0.1% - 1%
Septic reaction	Platelets at least 1:75,000 Red blood cells at least 1:500,000
TRALI	1:1,200 – 1:190,000
TACO	Less than 1% patients

www.transfusion.com.au

ARCBS website

eMR: Is the blood ready?

- Check Patient Product Inquiry, not flowsheet
- Delay if patient has antibodies
- Platelets are ordered on a named –patient basis from Red Cross and have a 5 –day expiry
- Plasma has to be thawed in blood bank (20 minutes)
- Beware of the chute -use only in the ASB
- Porters (and you!) need an ‘**Authority to Issue**’ pink form to pick up blood

Transfusion Reaction

- During or within 4 hours of a transfusion
 - Rise in temp - $> 1^{\circ}\text{C}$ above baseline and $> 38^{\circ}\text{C}$.
 - Hypotension - diastolic BP drop of $> 10\%$ of baseline
 - Respiratory difficulty – shortness of breath, wheeze.
 - Sudden onset of pain – flank, back or chest pain
 - Urticaria or pruritis
- Flow sheet in Transfusion Clinical business rule



Transfusion Reaction Algorithm

Immediate Management

- Stop Transfusion
- Call a MET if necessary
- **Check the blood pack, patient ID, labels and forms for discrepancies**
- Inform medical staff
- Vital signs every 15 minutes until stable
- Keep IV line open with normal saline
- Do not discard blood product
- Call Transfusion Medicine Unit (TMU) on extension 834018

Symptoms Of Acute Transfusion Reaction Include

- Chills
- Collapse
- Flushing
- Hypo/Hypertension
- Nausea/Vomiting
- Pain – Loin, Back, Chest, IV site
- Rigors
- Tachycardia
- Unexplained bleeding e.g. haematuria
- Urticaria
- Fever
- Dysnoea

Clinical Management of a Severe Transfusion Reaction

Maintain Airway, Breathing, Circulation (A, B, C)

Take down unit and giving set, return intact with any other units to the blood bank.

Commence IV 0.9% Normal Saline Infusion

Inform Transfusion Medicine (x 834018)

Proceed with transfusion medicine investigation

Monitor FBC, Urea & Electrolytes, Coagulation Profile and Haemolytic Markers (Bilirubin, LDH, DAT, Haptoglobins)

Seek Urgent Haematologist and ICU Advice

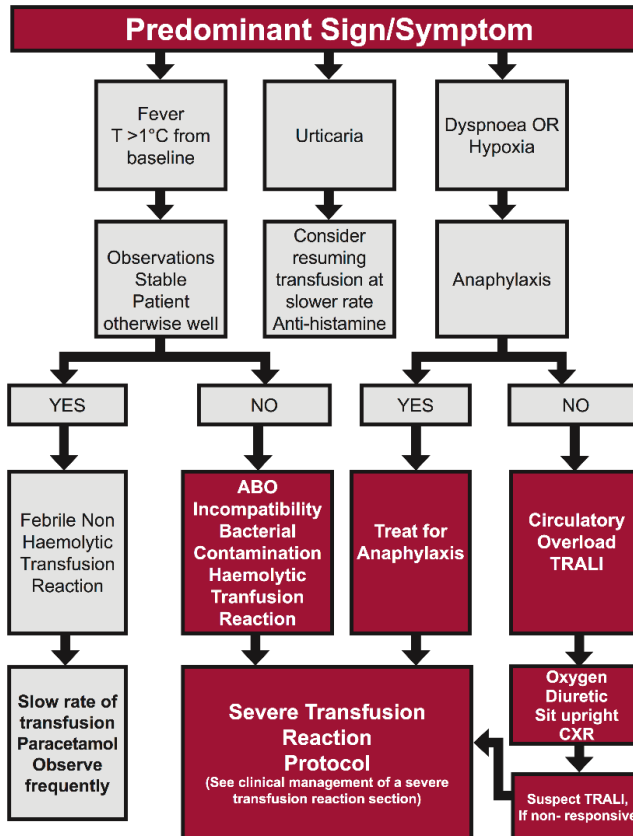
Monitor Urine Output – Aim >100ml/hr, consider diuretics

If hypotensive, inotropes maybe required

If bacterial contamination is suspected, institute broad spectrum antibiotics and blood cultures

If DIC use appropriate blood products to correct.

Assisted ventilation maybe required in respiratory distress.



Transfusion Medicine Investigations

Transfusion Reaction Form: (Take the following and send to Transfusion Medicine)

- 1 x EDTA
- 1 x clotted

Transfusion Reaction

- Always check the identity and blood group of patient and product
- Stop the transfusion till rapid assessment made

Critical Bleeding

- ROTEM or non-ROTEM guided
- Depends on patient location and lead clinician preference
- O-neg in blood bank, Sydney Hospital RHW fridge



Prince of Wales Hospital and Community Health Services

Critical Bleeding Protocol

POWH CLIN072

Appendix 1: POWH Adult Critical Bleeding Protocol

POWH Adult Critical Bleeding Protocol



Actual or anticipated 4 units RBC in < 4 hours, + haemodynamically unstable, +/- anticipated ongoing bleeding
Severe thoracic, abdominal, pelvic or multiple long bone trauma, major gastrointestinal, surgical or obstetric bleeding

Senior clinician determines that patient meets criteria for **CRITICAL BLEEDING PROTOCOL** activation

Baseline Bloods

Group and Screen / Cross Match	Full Blood Count	Coagulation Screen	Biochemistry	Blood gas	ROTEM If using ROTEM guidance
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Notify Blood Bank Ext 23232

State: **'ACTIVATE CRITICAL BLEEDING PROTOCOL'** and stipulate **'NON-ROTEM'** or **'ROTEM'**

4 Units of PRBC immediately issued (not necessarily matched)
Send porter to Blood Bank with completed 'Authority to Issue Blood Products' pink form to collect products

NON ROTEM

PACK 1	4 PRBC (initially provided) 4 units ELP 3 units Apheresis Cryoprecipitate
PACK 2	4 PRBC 4 units ELP 1 bag platelets

Consider: IV Tranexamic Acid 1g loading over 10 minutes followed by 1g infusion over 8 hours

For Further advice on managing critical bleeding contact Haematologist on call

If bleeding continues: Alternate Pack 1 and Pack 2

ROTEM

RBC requested as per blood loss or Hb (blood gas or FBC)

Refer to the following Algorithms for critical bleeding management

Cardiac / Vascular Algorithm
General Surgical / Obstetric Haemorrhage Algorithm

Apheresis Cryoprecipitate Dosing & Multiplate Schedules

Bleeding Continues
YES NO YES

AIM FOR

- Temperature > 35°C
- pH > 7.2
- Base excess < -6
- Lactate < 4 mmol/L
- Calcium > 1.1 mmol/L
- Platelets > 50 x 10⁹/L
- PT/APTT < 1.5 normal
- INR ≤ 1.5
- Fibrinogen > 1.5 g/L

Notify Blood Bank to cease protocol
Return unused products to Blood Bank immediately

**MONITOR
Every 30-60 minutes**

- Full Blood Count
- Coagulation Profile
- Ionised Calcium
- Arterial Blood Gas

Special Considerations

- Vitamin K & Prothrombinex for warfarin reversal
- Protamine for heparin reversal
- Contact Haematologist on call for NOAC reversal

Transfusion Education

- BloodSafe eLearning package “Clinical Transfusion Practice”
- On line, aims to educate and assess
- Mandatory for all JMO and registrars to complete, takes 30 minutes
- Several modules available

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Contacts

- Blood bank -senior scientist Steve Lamb x 23228
- Haematology registrars in the laboratory x 23277CNC transfusion (Leanne Crnek page 45155)
- Haematologist on-call through switch or Dr Susan MacCallum x 25111
- POW transfusion standard and Massive Transfusion Protocol on POW intranet

On line

- Haematology services web page
- POW Policies and Procedures
- ARCBS www.transfusion.com.au
- BloodSafe eLearning
- NBA Patient Blood Management Guidelines
- CEC BloodWatch