

Transfusion in a Rural Laboratory

Bowral NSW





Bowral Blood Bank Laboratory

Sydney South West Pathology Service (SSWPS)



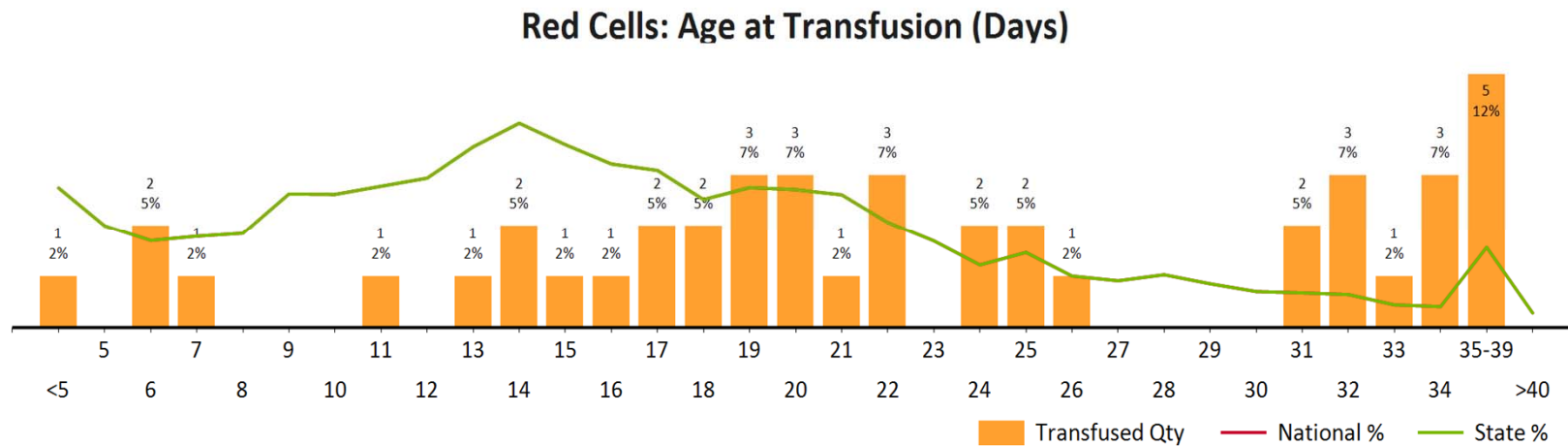
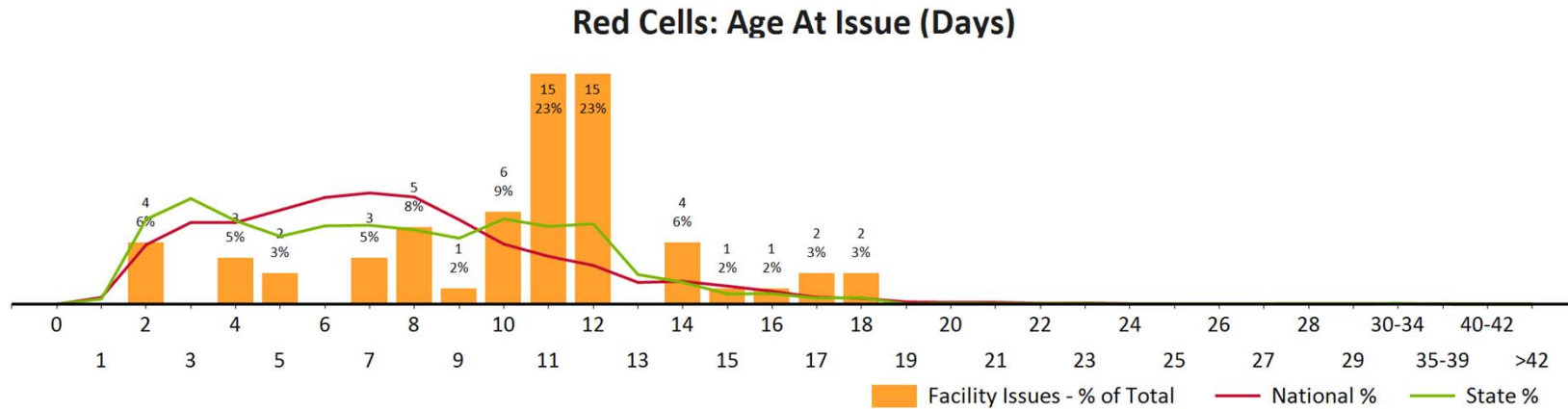
Courier Service

- Courier service runs twice daily to Liverpool.
- Non-urgent blood product orders placed via BloodNet are received the following day.
- Additional courier runs may be organised in emergency situations.

Table 1. Fresh Blood Product Inventory (Bowral)

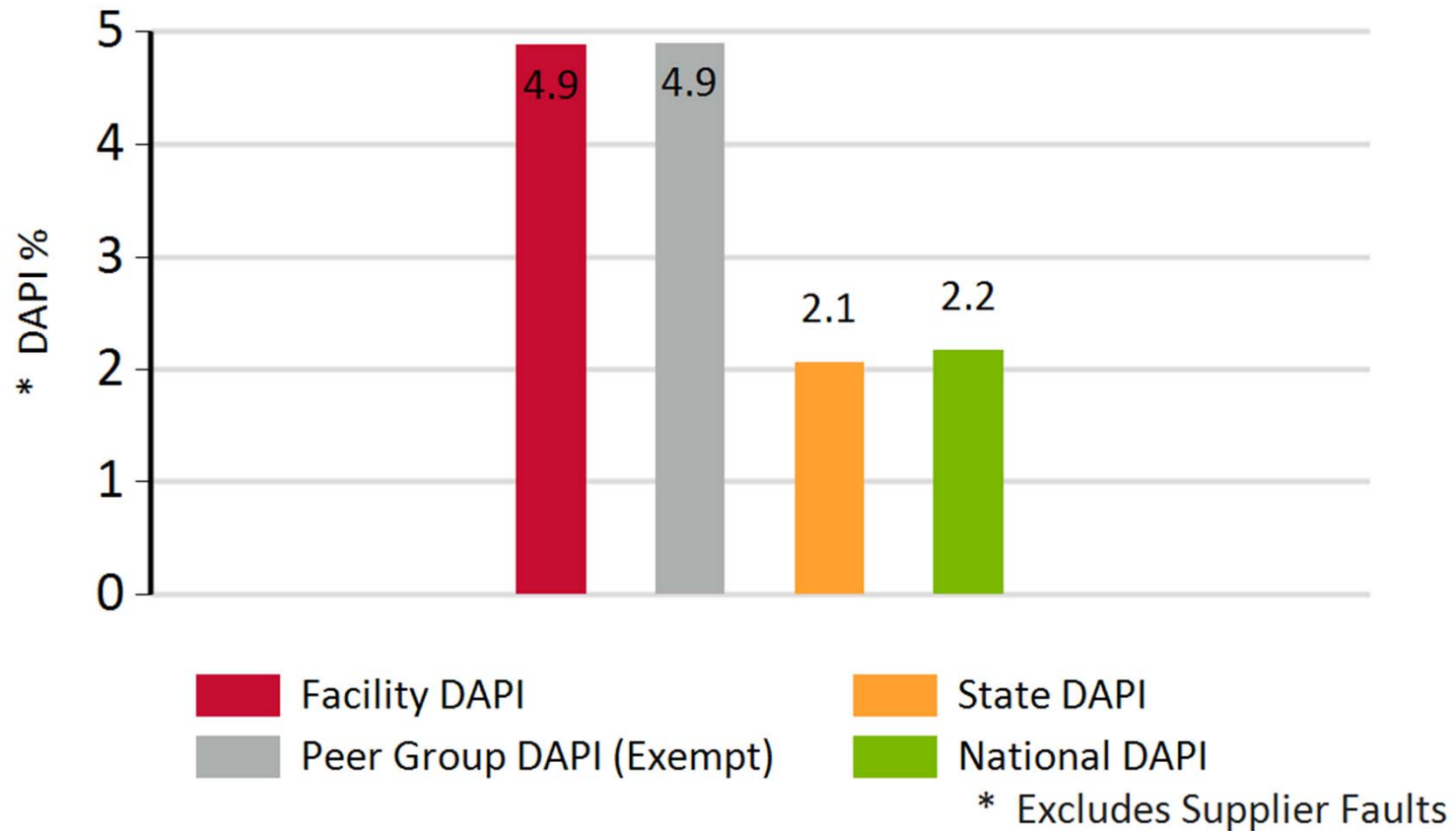
Blood Product		Number of Units
Red Cells	O Positive	12
	O Negative	10
	A Positive	6
	A Negative	5
Fresh Frozen Plasma	O	12
	A	12
	B	4
	AB	4
Cryoprecipitate	O	6
	A	6

Age of Red Cells Report (Bowral Hospital) 1st July 2016 - 31st July 2016



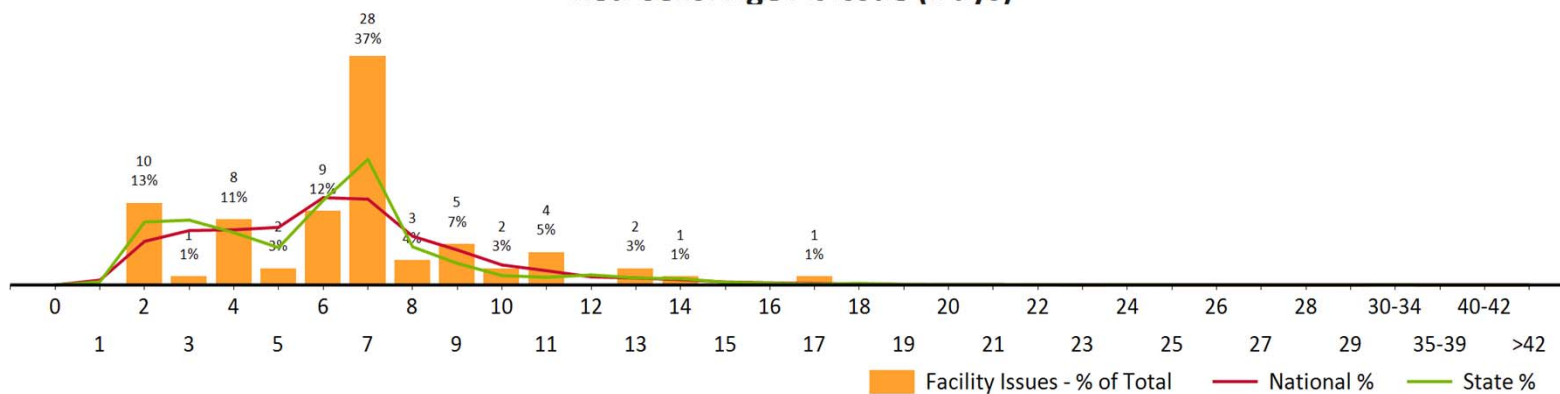
Discarded Red Cells as a Percentage of Net Issued (Bowral Hospital) 1st July 2016 - 31st July 2016

* Red Cells: DAPI Comparators

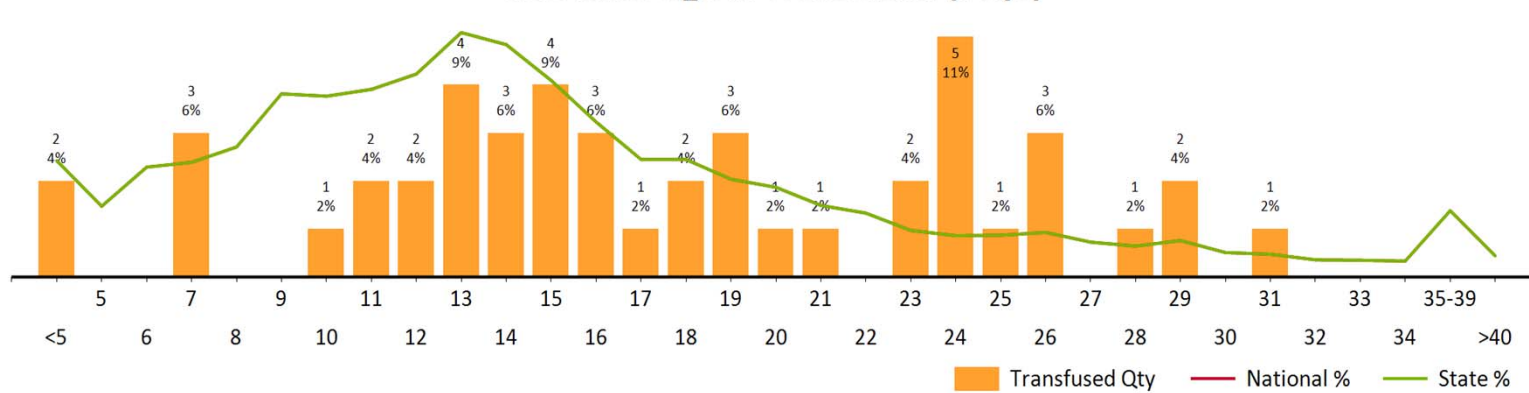


Age of Red Cells Report (Bowral Hospital) 1st September 2016 - 30th September 2016

Red Cells: Age At Issue (Days)

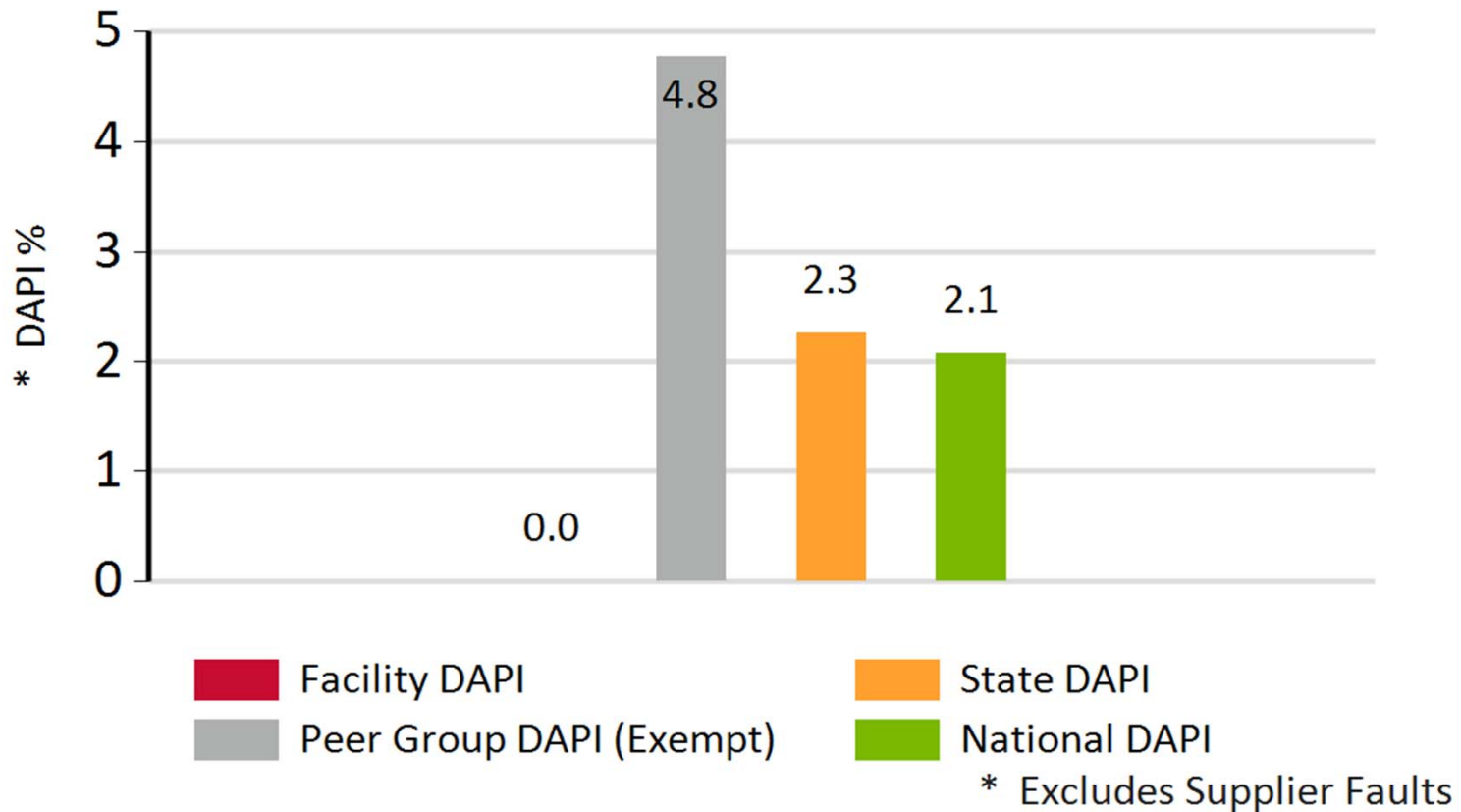


Red Cells: Age at Transfusion (Days)



Discarded Red Cells as a Percentage of Net Issued (Bowral Hospital)
1st September 2016 - 30th September 2016

*** Red Cells: DAPI Comparators**



Massive Transfusion Protocol (MTP) BOWRAL

Senior clinician determines that patient meets criteria for MTP activation

Baseline:
Full blood count, coagulation screen (PT, INR, APTT, fibrinogen), biochemistry, arterial blood gases

Notify transfusion laboratory (ext 269 0800-1800) to:
'Activate MTP'
(After 1800hrs have A/H Nurse Manager contact pathology on-call via switch)
A/H nurse manager or senior nurse to organise a blood runner

Laboratory staff

- Notify haematologist/transfusion specialist (call Liverpool Blood Bank 98285020 & provide Patient ID and Dr's contact details and organise platelets)
- Prepare and Issue MTP pack
- Anticipate repeat testing and blood component requirements
- Minimise test turnaround times (especially fibrinogen as it is a sendaway to Liverpool)
- Consider staff resources
- Suggest senior clinician to activate MTP if 5th unit of red cells issued in 2 hour period

Haematologist/transfusion specialist

- Suggest baseline & repeat blood tests
- Liaise regularly with laboratory and clinical team
- Assist in interpretation of results, and advise on blood component support

Senior clinician

- **Accept MTP pack provided:**
 - 4 units RBC
 - 4 units FFP
 - 5 units Cryoprecipitate
 - 1 dose platelets (every 2nd MTP pack)
- **Blood tests:**
 - Provide regular repeat blood tests (suggest 1 hour intervals)
- **Haematologist assistance:**
 - via Liverpool switch 98283000

Bleeding controlled?

YES **NO**

Notify transfusion laboratory ext 269 :
'Cease MTP'

OPTIMISE:

- oxygenation
- cardiac output
- tissue perfusion
- metabolic state

MONITOR (every 30–60 mins):

- full blood count
- coagulation screen
- ionised calcium
- arterial blood gases

AIM FOR:

- temperature > 35°C
- pH > 7.2
- base excess < -6
- lactate < 4 mmol/L
- Ca²⁺ > 1.1 mmol/L
- platelets > 50 10⁹/L
- PT/APTT < 1.5 normal
- INR ≤ 1.5
- fibrinogen > 1.0 g/L

Factor VIIa:

- Haematologist approval
- Supplies BBank Liverpool

Case Study

- 29 year old patient with postpartum haemorrhage.
- Three hours post Elective LSCS, patient returned to theatre upon severe pain.

Haemoglobin	78g/L (Pre-op – 121g/L)
Platelets	130 x 10 ⁹ /L

- Haemorrhage due to Broad Ligament Haematoma (estimated 3000ml).
- Massive Transfusion Protocol (MTP) activated.

1.21 MASSIVE TRANSFUSION RECORD SHEET

Patient's Name:

MRN:

Protocol Activated by:
 Activation Date / Time:
 Contact Telephone Number / Pager:

Pretransfusion Accession Number

Blood Group: *A Neg*
 Antibody Screen Result: *passive Anti-D*
 Special Instruction:

	RBC	FFP	PLT	CPT	Time Available	Time Despatched
Preactivation	2	<i>Emergency</i>	Units			1750
Shipment 1	◆ 2	◆				1815
Shipment 2	◆ 2	◆	◆	5		1840
Shipment 3	◆ 3	◆ 2	◆ 1900	◆		1900
Shipment 4	4	4	1	5		
Shipment 5	4	4		5		
Shipment 6	4	4	1	5		
Shipment 7	4	4		5		
Shipment 8	4	4	1	5		
Shipment 9	4	4		5		
Shipment 10	4	4	1	5		
Total / Tally						

O Neg
O Neg
O Neg
A Neg xmid
unassessable

Haem Registrar notified (sectors via Liverpool BBank 87385030 or fax 87385031):

De-activated by:
 Cessation Date / Time: *2050*

A copy of this sheet is to be sent with each shipment with total/tally recorded.
 If unable to provide a product make sure the above tallies are amended.
 Original sheet to remain in the Blood Bank.

patient transferred to LV ~ 2100

Table 2. ISTAT Arterial Blood Gas results for MTP patient.

ISTAT	Ref Interval	Units	18:52	19:11	20:00
pH	7.36-7.44		7.2	7.2	7.2
pO2	80-100	mmHg	127	109	131
pCO2	35-45	mmHg	39	48	50
Bicarbonate	22-30	mmol/L	15	19	20
Base Excess	-2 - 2	mmol/L	-13	-9	-8
Lactate	0.36-1.25	mmol/L	2.33	2.42	2.38
Ionised Calcium	1.15-1.29	mmol/L	0.99	1.10	
Haemoglobin	115-165	g/L	68	92	

Table 3. Haematology, Clinical Chemistry and Coagulation Studies results for MTP patient.

	Ref Interval	Units	19:40
WCC	40-10.0	X10 ⁹ /L	24.6
Haemoglobin	120-150	g/L	120
Platelets	150-400	X10 ⁹ /L	69
Albumin	38-48	g/L	21
Corrected Ca	2.10-2.60	mmol/L	2.31
PT	12.0-15.0	sec	15.5
APTT	25-37	sec	32
INR	0.9-1.2		1.2
D-Dimer	0.00-0.25	mg/L	9.97
Fibrinogen	2.0-4.3	g/L	2.0

Case Study Continued.

- Patient stabilised and haematoma tamponaded.
- MTP ceased at 20:50.
- Patient transferred to Liverpool Hospital by Careflight helicopter.
- Unused stock delivered during MTP sent to Liverpool Blood Bank the following morning.

Transfusion in a Rural Laboratory

- Management of stock needs to be tightly controlled and well-organised to minimise waste and ensure provision of 'fresh as possible' blood products.
- Good communication between medical and laboratory staff, Australian Red Cross Blood Service and courier services are essential to ensure timely dispense of required blood products.
- The rural blood service is supported by a larger laboratory at Liverpool SSWPS.

References

Sydney South West Pathology Service . LIV-BB SOP-Methods DOCID-304-1 Version 2.2 p. 34. Retrieved from <http://swaps05:30000/sites/iqms/liv/bloodbank/standardoperatingprocedures/liv-b-sop-methods.docx>

National Blood Authority Australia. 1st July 2016-31st July 2016. Fresh Blood Product Management Report. Bowral Hospital (21ABWR), p. 3.

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