

# **Overnight transfusion audit within five centres in New Zealand**

**March 29<sup>th</sup> – April 5<sup>th</sup> 2004**

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# Overnight transfusion pilot audit

## Introduction

Routine transfusion's administered overnight are not always in the patient's best interest. The need for clinical observations during the transfusion can dramatically disturb sleep patterns; the cover of darkness can prevent early detection of a transfusion reaction and the reduced staff FTE overnight in the majority of units can affect the physical ability to monitor the recipient of a blood component or product safely. Results from the *Serious hazards of transfusion* (SHOT) reporting system in the UK highlight that the risks associated with human error increase during overnight transfusion.<sup>1</sup>

## Method

A pilot audit recording overnight transfusion activity was undertaken to provide baseline data and to identify if there were clinical practice issues that may require addressing. The transfusion nurse specialists (TNS's) in Auckland, Hamilton, Wellington, Christchurch and Dunedin collected blood component issuing data (red cells, platelets, fresh frozen plasma and cryoprecipitate) within their local major hospital between the hours of 9pm (2100 hours) and 7 am (0700 hours) each day from 9pm on Monday 29<sup>th</sup> March until 7am on Monday 5<sup>th</sup> April. Each TNS, after investigating local issuing activity, identified those transfusions that could be seen as inappropriate (i.e. a transfusion that could have commenced after 7am or before 9pm without jeopardising the patient's clinical outcome). Two of the TNS group then collated this data for comparison and review.

## Criteria for transfusion to be considered appropriate overnight

- Patient located in high care clinical area with high patient:staff ratio enabling ongoing monitoring – e.g. ICU, HDU, ED, OT
- Blood screen indicative of urgent need (and in line with ANZSBT guidelines)
- Clinically unstable e.g. chest pain associated with anaemia, active bleeding, haemodynamically unstable
- Presence of co-morbidities that may increase risk to patient if NOT transfused

## Exclusions for acceptable overnight transfusion

- Haemoglobin level above 70 in asymptomatic patient with no risk factors justifying urgent transfusion
- Unit(s) transfused overnight was 2<sup>nd</sup> or 3<sup>rd</sup> unit prescribed for transfusion episode and could have been withheld until after 7am
- Full blood count/coagulation results available several hours prior to transfusion commencing meaning delay in transfusion related to time management rather than clinical need

## Results

Five hospitals were audited throughout New Zealand. The largest hospital was resourced for 609 beds and the smallest with a resourced bed number of 355. Population serviced by these hospitals ranged from 350,000+ to 119,200. The majority of overnight transfusion activity was generated by cardiac surgery, trauma and/or acute presentations through the Emergency Departments. Those that fell out of those categories, in general, could have commenced earlier (i.e. before 9 pm) or

waited till the following day (i.e. after 7am) without posing clinical risk to the patient. There existed a group of patients on the margin that could be seen as potentially inappropriate recipients. Further investigation and discussion with clinicians would be necessary to obtain consensus.

A total of 317 units were transfused to 136 patients over the five sites during the audit; 49 (15%) of these were assessed to be inappropriate. There were variances between sites. The two sites that produced the lowest numbers of inappropriate transfusions, 6% and 12.5% respectively, either had a “culture” of discouraging overnight transfusion (but no written policy) or had written IV policy discouraging routine transfusion overnight. The other three sites demonstrated comparable results with 17%, 20.5% and 22% of the transfusions deemed inappropriate, none of these sites had IV policy that discouraged routine transfusion overnight.

99% (n = 135) of the patients had a blood screen taken pre transfusion to assess clinical need for the component and 94% (n = 128) had the relevant blood screen checked within 24 hours for response.

### **Limitations**

1. Small number of patients captured during audit timeframe
2. Variable interpretations of inappropriate transfusion possible
3. Did not include patients who were **not** transfused but clinically unstable

### **Conclusions**

This pilot study provided the authors with interesting data and an indication of current trends within New Zealand. The majority of patients across the five centres were monitored appropriately and had pre and post relevant blood screens completed. 15% of the total transfusions that were administered during the audit period were identified as being clinically inappropriate, lower than had been expected. Those that were transfused inappropriately were within a ward setting that had fewer staff to safely monitor the patient or were asymptomatic and could have waited until the following day. Inappropriate overnight transfusion potentially puts the patient at increased clinical risk, disturbs sleep patterns of the transfused patients as well as others sharing the same cubicle and creates unnecessary work for nursing and in some cases medical night staff. It also may put other patients in the same clinical area at risk as the night-staff’s time and attention has a specific focus on the patient who requires close monitoring. Education to clinical staff and an inclusion or emphasis to discourage routine overnight transfusion through the local blood policy is indicated and should be beneficial in reducing this practice.

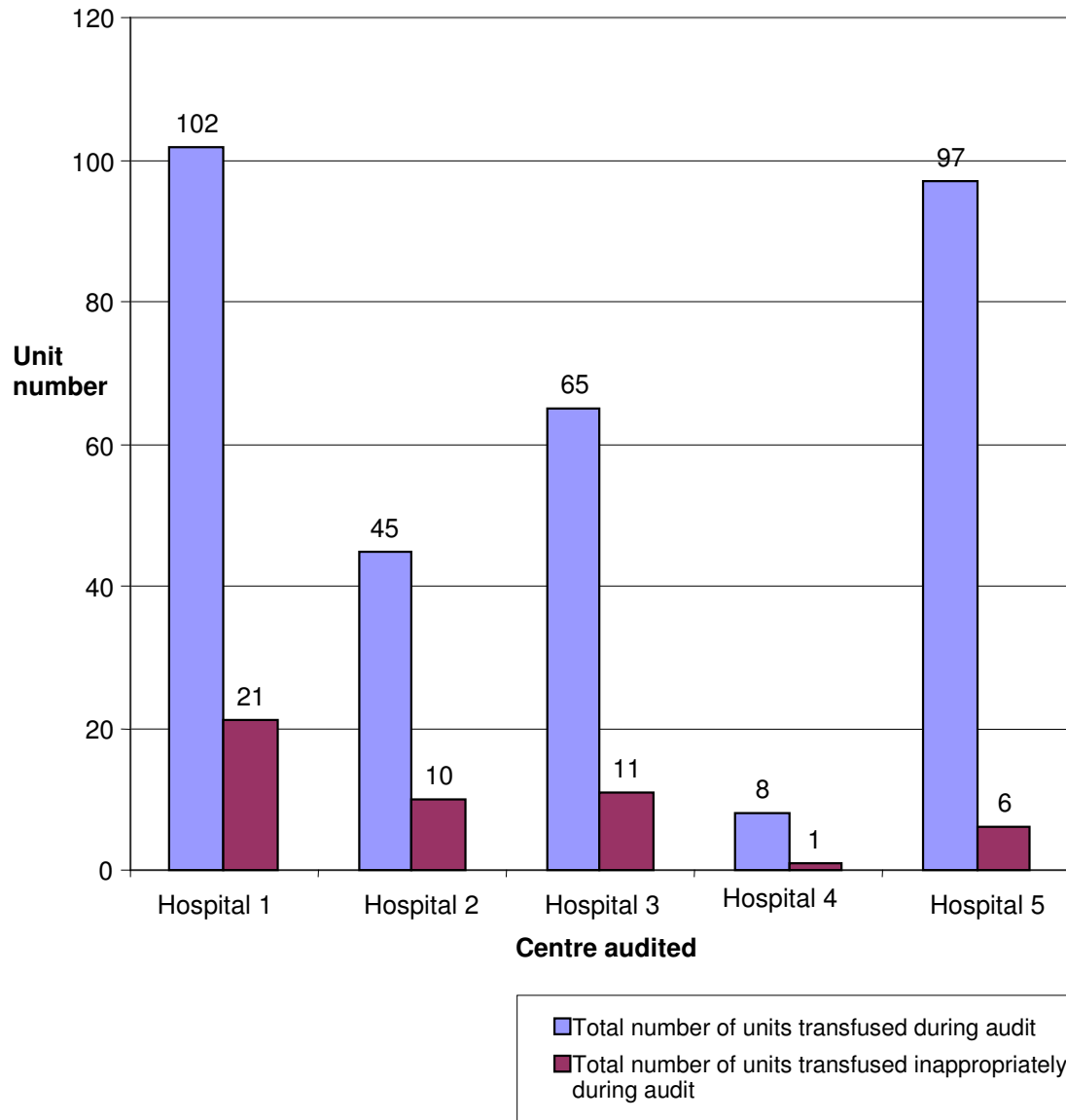
### **Recommendations**

1. Provide educational support to improve or change practice in those areas where routine transfusion was initiated overnight when the risk to the recipient of the transfusion was higher and clinical benefit questionable.
2. Target local IV policy for change: to reflect safe practice and discourage routine transfusion overnight
3. Consider and discuss acceptable % targets for overnight transfusion: could these be applicable? obtainable? clinically manageable?
4. After feedback from CAG, provide feedback to each DHB of the results and possible approaches to reduce unnecessary risks for patients.

## Overnight transfusion within five hospitals in New Zealand: March 29<sup>th</sup> – April 5<sup>th</sup> 2004

Hospital	Hospital 1		Hospital 2		Hospital 3		Hospital 4		Hospital 5		Five Centre Totals	
Resourced Bed Number	569 beds		550 beds		435 beds		355 beds		609 beds		2518 beds	
	Patients	Units	Patients	Units	Patients	Units	Patients	Units	Patients	Units	Patients	Units
Night 1	13	40	4	6	4	12			10	26	31	84
Night 2	4	6	4	7	5	5	4	6	5	6	22	30
Night 3	6	11	2	5	3	3			7	11	18	30
Night 4	3	5	2	16	9	13	1	1	7	13	22	48
Night 5: Friday	4	28	4	4	5	11			6	34	19	77
Night 6: Saturday	4	10	1	1	4	9	1	1	3	5	13	26
Night 7	2	2	2	6	5	12			2	2	11	22
<b>TOTALS</b>	<b>36</b>	<b>102</b>	<b>19</b>	<b>45</b>	<b>35</b>	<b>65</b>	<b>6</b>	<b>8</b>	<b>40</b>	<b>97</b>	<b>136</b>	<b>317</b>
Patients transfused over-night: Units: beds	<b>1 : 16</b>		<b>1 : 29</b>		<b>1 : 12</b>		<b>1 : 59</b>		<b>1 : 15</b>		<b>1 : 18</b>	
Total No. units transfused inappropriately	<b>21</b>		<b>10</b>		<b>11</b>		<b>1</b>		<b>6</b>		<b>49</b>	
Total No. units transfused (day & night)	<b>472</b>		<b>248</b>		<b>289</b>		<b>71</b>		<b>322</b>		<b>1402</b>	
Night: Total units transfused (%)	<b>21.6%</b>		<b>18.1%</b>		<b>22.5%</b>		<b>11.3%</b>		<b>30.1%</b>		<b>22.6%</b>	
Unnecessary: Night units transfused (%)	<b>20.6%</b>		<b>22.2%</b>		<b>16.9%</b>		<b>12.5%</b>		<b>6.2%</b>		<b>15.5%</b>	
Inappropriate: Total units transfused (%)	<b>4.4%</b>		<b>4.0%</b>		<b>3.8%</b>		<b>1.4%</b>		<b>1.9%</b>		<b>3.5%</b>	
Pre/post blood screen completed	<b>Pre: 97% Post: 100%</b>		<b>Pre: 100% Post: 95%</b>		<b>Pre: 100% Post: 83%</b>		<b>Pre: 100% Post: 83%</b>		<b>Pre: 100% Post: 100%</b>		<b>Pre: 99% Post: 94%</b>	
Night transfusion policy	<b>No</b>		<b>No</b>		<b>No</b>		<b>Yes</b>		<b>No – oral culture</b>		<b>1 in 5 (20%)</b>	
Blood Bank staffed overnight	<b>Yes</b>		<b>Yes</b>		<b>Yes</b>		<b>No – on call</b>		<b>Yes</b>		<b>4 in 5 (80%)</b>	

### Comparison of the number of units transfused vs. number of units transfused inappropriately



*References:*

1. *Serious hazards of Blood Transfusion (SHOT), UK, 2001*