

Inventory Practice Survey November 2003 -- Working Practices --

Headline Summary

- 226 hospitals (89%) returned completed questionnaires
- 93% of hospitals perform at least one dereservation per weekday in the morning.
- 61 hospitals (27%) have entered a stock share relationship, the main reason being to reduce wastage.
- 60 hospitals (27%) routinely use some form of electronic issue.
- One in three hospitals that have reduced their stock levels reported a rise in *ad hoc* deliveries.
- Regional variations were identified in those hospitals indicating an increase of *ad-hoc* deliveries.
- The high blood usage category and particularly the teaching hospitals, reported that changing their laboratory computer system had brought about improvements in stock control. The private hospitals reported similar improvements.
- Those hospitals indicating that they were satisfied that their staffing level was sufficient to enable effective blood stock management also tended to have a transfusion practitioner.
- Training on 'sample labelling' was offered at 66% of returning hospitals, whereas alternatives to transfusion was offered at 19%.

1 Background

The 2001 Inventory Practice Survey (IPS) included questions on routine and ad-hoc deliveries as well as satisfaction with staffing. The November 2003 IPS re-examined some of these areas to identify any changes to practice and opinion.

1.1 *Blood usage categories and hospital type*

The data was analysed on the basis of either hospital category or hospital type or a combination. The number of hospitals by category and type is given in Table 1.

<i>Blood Usage</i>	<i>No. of Hospitals</i>	<i>Hospital Type</i>	<i>No. of Hospitals</i>	<i>Combined usage & type</i>	<i>No. of Hospitals</i>
High	53	DGH	141	High & DGH	22
Moderate	102	Teaching	48	High Teaching	31
Low	71	Private	37	Moderate use	102
				Low use	34
				Private	37
Total	226	Total	226	Total	226

Table 1. Hospital categories with corresponding number of hospitals
DGH = District General Hospital

2 Current Laboratory Practices

2.1 Dereservation Policies

66 hospitals (29%) perform a daily morning routine dereservation, and a further 67 hospitals (30%) perform a weekday morning routine dereservation and a Saturday dereservation (Table 2). 83 hospitals (36%) do not, as a routine, perform dereservation over the weekend (either Saturday or Sunday), of these 54% are District General hospitals, 27% Private hospitals and 19% Teaching hospitals.

<i>Dereservation performed</i>								
Weekday AM	✓	✓	✓		✓	✓		
Weekday PM				✓	✓	✓		
Weekday Night							✓	
Saturday	✓	✓				✓		
Sunday	✓							
"Other"								✓
Number of Hospitals	66	67	69	5	4	4	4	7
Percentage of Hospitals	29%	30%	30%	2%	2%	2%	2%	3%

Table 2. Dereservation times used at returning hospitals
The 'other' group comprised of 7 hospitals using different dereservation periods, each policy being used by 2 hospitals or less.

2.2 Stock share relationships

61 hospitals (27%) have entered into a stock share relationship, the majority having shared stock for over 2 years or more (Table 3).

<i>Stock share length of relationship</i>	<i>Blood Usage Category</i>		
	<i>High</i>	<i>Moderate</i>	<i>Low</i>
Stock share for <6 Months	2	3	3
Stock share between 6 – 12 Months	2	1	3
Stock share between 12 – 24 Months	2	1	2
Stock share >24 Months	15	14	13
Number of Hospitals	21	19	21
Percentage of Cluster	40%	19%	22%

Table 3. Length of stock share relationship by blood usage category

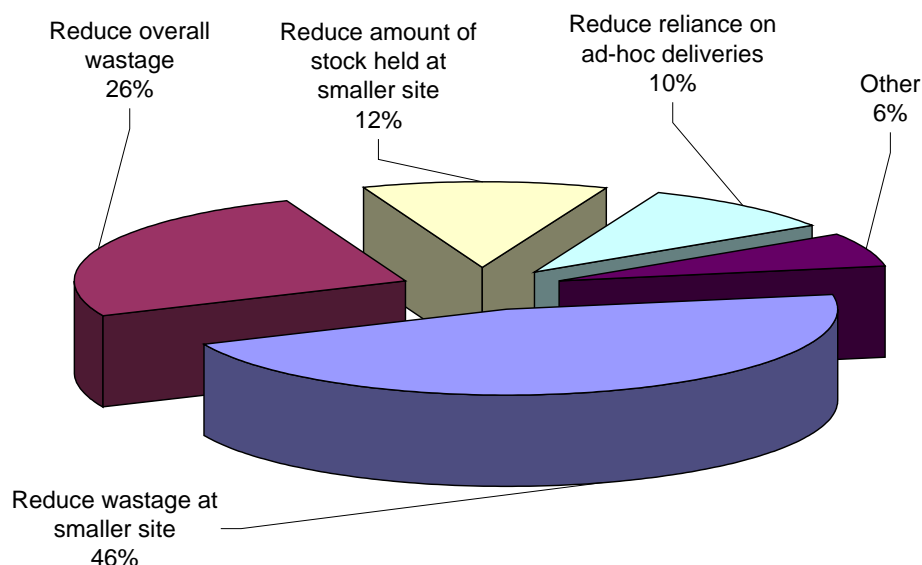


Fig. 1. Stock sharing incentives for hospitals entering into a stock share relationship

The majority of low blood users in a stock share relationship gave one reason as 'reduce wastage at the smaller site'.

Stock share relationship intention	Blood Usage		
	High	Moderate	Low
No plans to enter into stock share	32	81	34
Will be entering into stock share	0	3	5
Would like to, but no willing partner	0	0	10

Table 4. Intentions of hospitals not currently in a stock share relationship.

Of the 165 hospitals currently not in a stock sharing relationship, 8 hospitals (5%) had plans to enter into one. A further 10 hospitals (6%) wished to enter such a relationship but were unable to find a willing partner (Table 4).

2.3 Electronic Issue

60 hospitals (27%) were routinely using electronic issue; of these 30 were in the 'moderate blood usage' category, 26 the 'high blood usage' category and the remaining 4 from the 'low blood usage' category. This is an increase on data collected two years ago when only 27 hospitals were routinely using electronic issue. (BSMS Spotlight no.1 Dec 2003)

Of the 166 hospitals (74%) not currently routinely performing electronic issue, 20 'high usage' hospitals (77%) of the cluster had plans to implement some form of electronic issue, conversely 54 'low usage' hospitals (>80%) of the cluster had no plans to implement electronic issue.

On Demand Issue – Non Emergency		✓	✓	✓		✓	
On Demand Issue - Emergency		✓	✓		✓		✓
Units issued to reserve fridge	✓	✓			✓	✓	
Number of Hospitals	30	15	6	4	2	2	1
Percentage of hospitals using EI	50%	25%	10%	7%	3%	3%	2%

Table 5. Rationales employed for Electronic Issue in hospitals that use Electronic Issue

30 hospitals (50%) used EI for issuing units to a reserve fridge. 27 hospitals (45%) used EI for issuing units on demand for non-emergency cases.

2.4 Changes to Automation

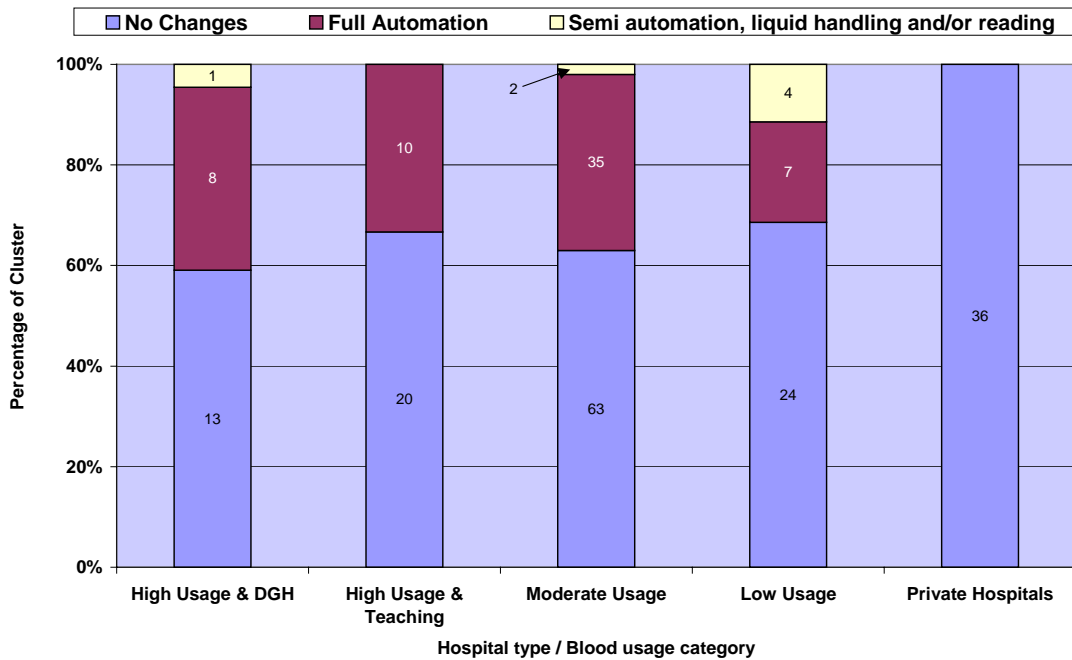


Fig. 2. Changes in Laboratory automation by extended cluster for all hospitals. Numbers within graph bars indicate number of hospitals responding

Over 60% of all clusters had not made any changes to their level of laboratory automation within the last 18 months. Approximately 30% of the high and moderate usage hospitals had introduced full (walk away) automation, but relatively few hospitals had introduced semi-automation. No private hospitals had made any changes.

2.5 Changes to the laboratory computer system

Laboratory Computer system changes	Hospital Type / Blood Usage					
	High DGH	High Teaching	Moderate usage	Low usage	Private hospitals	All Hospitals
Changed system	46%	23%	20%	35%	35%	28%
Tendering	9%	3%	3%	3%		12%
Begin tendering within 12 months	4%	19%	14%	21%	5%	4%
No change	41%	55%	63%	41%	60%	56%

Table 6. Summary of laboratory computer changes by extended cluster

63 hospitals (28%) have changed their computer system within the last five years (Table 6). A further 37 hospitals (16%) were either tendering or will begin tendering within the next 12 months. The 'high DGH' cluster had the highest change with 10 hospitals (46%) of the cluster changing their computer system. A higher percentage of both 'low usage' (35%) and 'private' hospitals (35%) had changed than both the 'high teaching' (23%) and 'moderate usage' (20%) clusters.

Those hospitals that had changed their computer systems were asked to indicate if the change in their computer system had improved stock management. 31 hospitals (49%) reported improved stock management and 26 hospitals (41%) reported no improvement in stock management.

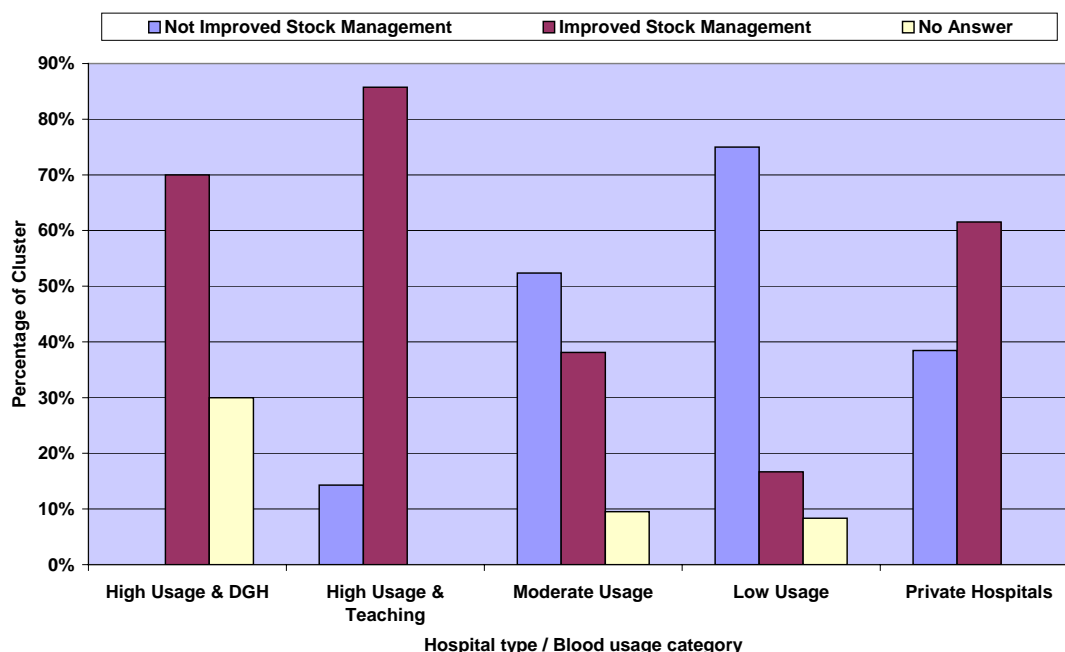


Fig. 3. The impact of laboratory computer changes on improved stock management by extended hospital cluster

12 'low usage' hospitals (35%) had changed their computer system, and of these 9 reported no improvements in stock management. Conversely, of the 13 private

hospitals (35%) that had changed computer systems the majority (62%) reported improvements in stock management (Fig 3).

2.6 Calculation of daily stock requirements

Daily stock order calculation	Hospital Type/ Blood Usage					
	High DGH	High Teaching	Moderate use	Low use	Private hospitals	All Hospitals
Laboratory computer system	23%	23%	11%	12%		12%
Manual (min or ideal stock levels)	55%	61%	62%	47%	38%	56%
Review fridge contents	14%	13%	21%	32%	32%	23%
Review fridge contents & XM's	5%		5%	9%	14%	6%
"Other"	3%	3%	1%		16%	3%

Table 7. Methods used to calculate the daily stock order by extended cluster
"Other" category includes different combinations of the above protocols used by individual hospitals.

A manual technique, using either minimum or ideal stock levels was the most common technique used for calculating the daily blood order (Table 7). 12 (23%) 'high usage hospitals used 'the laboratory computer system' and conversely 31 (44%) of 'low usage hospitals' 'reviewed the fridge contents'. Overall the findings are similar to those of the November 2001 IPS.

3 Changes to Laboratory Working Practices

Discussion in this section is limited to those triggers, which resulted in changes to the number of *ad-hoc* orders, both weekday and weekend, or an increase in the number of routine weekend deliveries at a significant number (>10%) of hospitals either overall or within a specific category.

	No Change	No Impact	Increased deliveries	Reduced ad-hoc's
Potential triggers for change	A	B	C-F	G
Increased number of day cases	32%	58%	10%	0%
Changes in patient admissions policy	48%	38%	12%	2%
Changes in patient discharge policy	54%	42%	4%	0%
Changes in hospital specialisation	80%	15%	4%	1%
Laboratory has extended working day	81%	18%	1%	<1%
Laboratory has 24hr shift work (WEEKDAYS)	89%	9%	2%	0%
Laboratory has 24hr shift work (WEEKEND)	89%	10%	1%	0%
Laboratory has 24 hr On Call at weekends	92%	8%	0%	0%
Reduction in total stock held at laboratory	61%	25%	13%	1%
Changes made by NBS to delivery schedule	86%	8%	1%	5%

Table 8. Percentage of hospitals indicating the reasons for changes to their ordering schedule

Table 8 uses the same codes used in question 13, with codes C – F grouped together as ‘increased deliveries’ as these covered increases in either *ad-hoc* deliveries or an increase in weekend routine deliveries.

More than 80% of hospitals reported that they had not experienced changes to their working day structure, either as a result of an extended working day or a change to shift work.

171 hospitals (80%) reported no changes to hospital specialisation, and 181 (86%) no changes to their NBS delivery schedule. 11 hospitals (5%) indicated that changes to the NBS delivery schedule had resulted in a decrease in the number of *ad-hoc* deliveries requested.

Around 50% of hospitals reported changes in their hospitals patient admission/discharge policies. Nine hospitals (4%) indicated that a change in discharge policy resulted in increased blood deliveries and 27 hospitals (12%) indicated that a change in admissions policy caused an increase in blood deliveries.

147 hospitals (68%) reported an increase in the number of day cases, of which 125 (58%) reported no impact on any ordering schedule. The remaining 22 (10%) indicated an increase in blood deliveries. 84 hospitals (39%) indicated they had reduced their red cell inventory, of which 54 (25%) reported no impact on any ordering schedule and 2 (1%) reporting a reduction in *ad-hoc* deliveries. However, the remaining 28 (13%) did indicate an increase in deliveries.

3.1 **Effect of reducing the red cell inventory**

30 hospitals that reduced their red cell inventory level reported changes to their ordering pattern. 28 hospitals indicated an increase in deliveries; of these, 10 reported an increase in *ad-hoc* deliveries in more than one time frame.

<i>Changes to deliveries</i>	<i>Blood usage category</i>			
	<i>High</i>	<i>Moderate</i>	<i>Low</i>	<i>All Hospitals</i>
Weekday day <i>ad-hoc</i> increase	8%	10%	10%	10%
Weekday night <i>ad-hoc</i> increase	16%	4%	1%	6%
Weekend <i>ad-hoc</i> increase	8%	6%		5%
Weekend routine delivery increase		2%		1%
Reduction in <i>ad-hoc</i> deliveries		2%		1%

Table 9. Percentage of hospitals in each blood usage category reporting a change to ordering pattern as a result of reducing red cell inventory.

21 hospitals (10%) reported an increase in weekday day *ad-hoc* deliveries. ‘High usage’ hospitals (16% of cluster) reported an increase in weekday night-time deliveries.

3.2 **Changes in Admissions Policy**

32 hospitals that saw changes to their admissions policy reported an impact on their ordering schedule. 27 hospitals indicated an increase in deliveries; of these, 14 reported an increase in *ad-hoc* deliveries in more than one time frame.

<i>Changes to deliveries</i>	<i>Blood usage category</i>			
	<i>High</i>	<i>Moderate</i>	<i>Low</i>	<i>All Hospitals</i>
Weekday day <i>ad-hoc</i> increase	14%	6%	1%	6%
Weekday night <i>ad-hoc</i> increase	28%	2%	3%	8%
Weekend <i>ad-hoc</i> increase	20%	2%	3%	6%
Weekend routine delivery increase	4%			1%
Reduction in <i>ad-hoc</i> deliveries	4%		4%	2%

Table 10. Percentage of hospitals in each blood usage category reporting a change to ordering pattern as a result of changes to the hospital admissions policy.

Overall, 18 hospitals (8%) reported an increase in weekday night *ad-hoc* deliveries. The greatest impact of changes to patient admissions policy was observed in the 'high usage' hospital. 10 (20% of cluster) reported an increase in weekend *ad-hoc* deliveries, 7 (14% of cluster) an increase in weekday day-time and 14 (28% of cluster) an increase in weekday night *ad-hoc* deliveries. These changes were concentrated within the 'teaching hospital' cluster where 16 of the 18 hospitals (89%) reported an increase in weekday night *ad-hoc* deliveries and 6 hospitals (43%) an increase in weekday day-time belonged.

3.3 *Increase in number of day cases*

22 hospitals that indicated an increase in the number of day cases reported changes to their ordering pattern. 22 hospitals indicated an increase in deliveries; of these, 4 reported an increase in *ad-hoc* deliveries in more than one time frame.

<i>Changes to deliveries</i>	<i>Blood usage category</i>			
	<i>High</i>	<i>Moderate</i>	<i>Low</i>	<i>All Hospitals</i>
Weekday day <i>ad-hoc</i> increase	24%	7%	4%	10%
Weekday night <i>ad-hoc</i> increase	2%	1%		1%
Weekend <i>ad-hoc</i> increase	8%	1%		2%
Weekend routine delivery increase		1%		<1%
Reduction in <i>ad-hoc</i> deliveries				

Table 11. Percentage of hospitals in each blood usage category reporting a change to ordering pattern as a result of an increase in the number of day cases.

Overall 22 hospitals (10%) reported an increase in weekday day-time *ad-hoc* deliveries. The 'high usage' hospitals were the most affected. 12 (24%) reported an increase in weekday day-time *ad-hoc* deliveries. Again, these changes were mainly within the 'teaching hospital' category where 10 of the 22 hospitals (45%) indicated an increase in weekday daytime *ad-hoc*'s belonged.

3.4 *Summary of changes*

Overall, of the triggers producing significant changes to ordering, there is an increase in the number of *ad-hoc* orders placed by the 'high usage' category and in particular the 'teaching' hospital type. Furthermore, some large increases were reported by the 'moderate usage' category particularly when associated with holding less stock. Of the 11 hospitals that experienced a reduction in *ad-hoc* deliveries as a result of changes made by the NBS, 5 belonged to the 'low usage' category and 5 belonged to the 'moderate usage' category.

3.5 Regional Variation

The data were further analysed with regard to supplying centre to see if there were any regional differences (Fig 4).

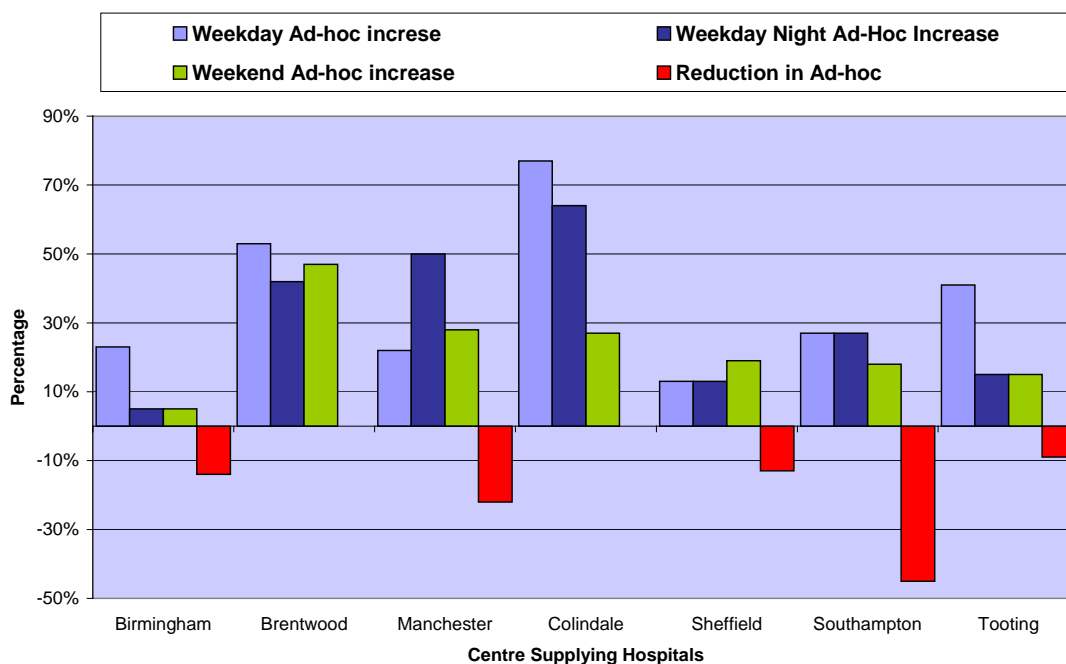


Fig. 4. Changes to blood ordering schedules by blood centre

- Over 50% of hospitals supplied by Colindale and Brentwood and over 40% of hospitals supplied by Liverpool, Cambridge, Tooting and Plymouth reported an increase in weekday daytime *ad-hoc* deliveries
- Over 50% of hospitals supplied by Colindale, Lancaster and Manchester reported an increase in weekday night time *ad-hoc* deliveries
- Hospitals supplied by Bristol reported No increase in *ad-hoc* deliveries
- Over 45% of hospitals supplied by Southampton reported an overall reduction in the number of *ad-hoc* deliveries
- Hospitals supplied by Birmingham, Sheffield and Oxford showed a large number (greater than 10%) reporting an increase in *ad-hoc*'s which was almost balanced by those hospitals reporting a decrease in the number of *ad-hoc* deliveries.

4 Current Staffing

4.1 Staffing satisfaction

28 'moderate usage' hospitals (53%), 40 'high usage' hospitals (39%) and 27 'low usage' hospitals (53%) gave a score of greater than 4 for 'satisfaction with staffing levels', indicating they were satisfied with their staffing level (Fig 5). 15 'high usage' hospitals (28%), 26 'moderate usage' hospitals (25%), and 23 'low usage' hospitals (32%) gave a score of 2 or less indicating they were dissatisfied with staffing levels.

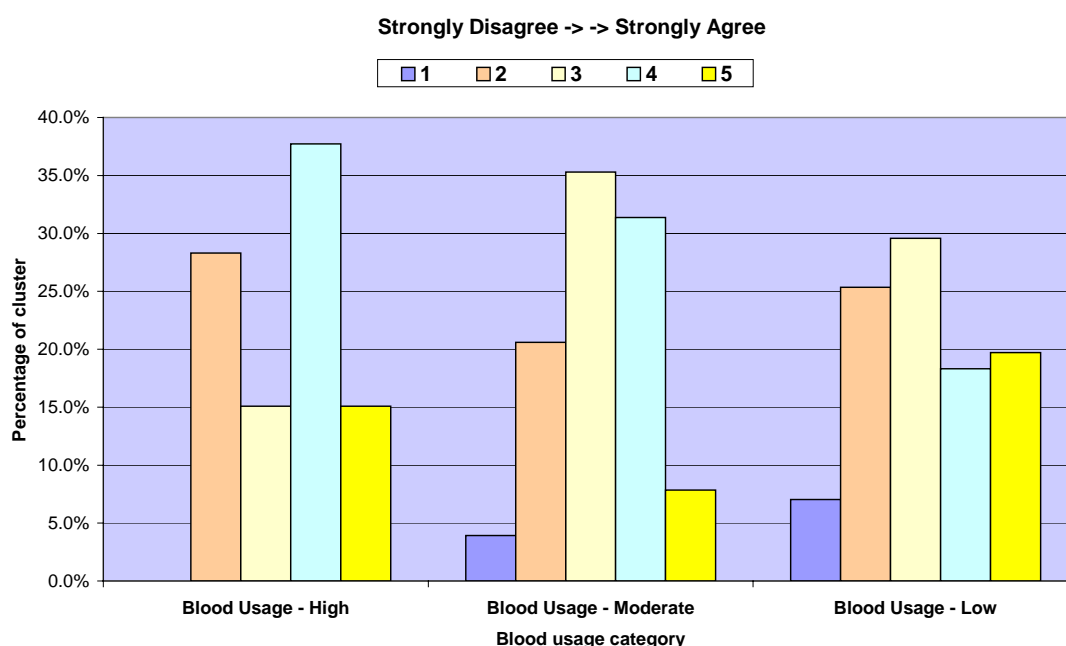


Fig. 5. Sppropriate numbers of laboratory staff to enable efficient blood stock management and blood usage category

4.2 Presence of Transfusion Practitioner

Over 87% of 'high usage' teaching hospitals have a transfusion practitioner. In contrast only 23% of 'private' hospitals have a transfusion practitioner and 42% have no plans to introduce one (Table 10).

Transfusion practitioner status	Hospital Type/ Blood Usage					
	High DGH	High Teaching	Moderate usage	Low usage	Private hospitals	All Hospitals
Have transfusion practitioner	50%	81%	56%	41%	23%	52%
Share transfusion practitioner		6%	6%	12%	9%	7%
None, but plans to introduce one	41%	6%	30%	35%	26%	28%
None, no plans to introduce one	9%	6%	7%	12%	42%	13%

Table 12. Percentage of hospitals employing a transfusion practitioner by extended blood usage category

Of those hospitals that that have less than 1 whole time equivalent (WTE) transfusion practitioner, the majority (60%) have greater than 50% of a WTE. Of those that share a transfusion practitioner, the majority (57%), have greater than 50% WTE access. Nine hospitals had greater than 1 WTE transfusion practitioner.

4.3 Relationship between staffing satisfaction and presence of a transfusion practitioner

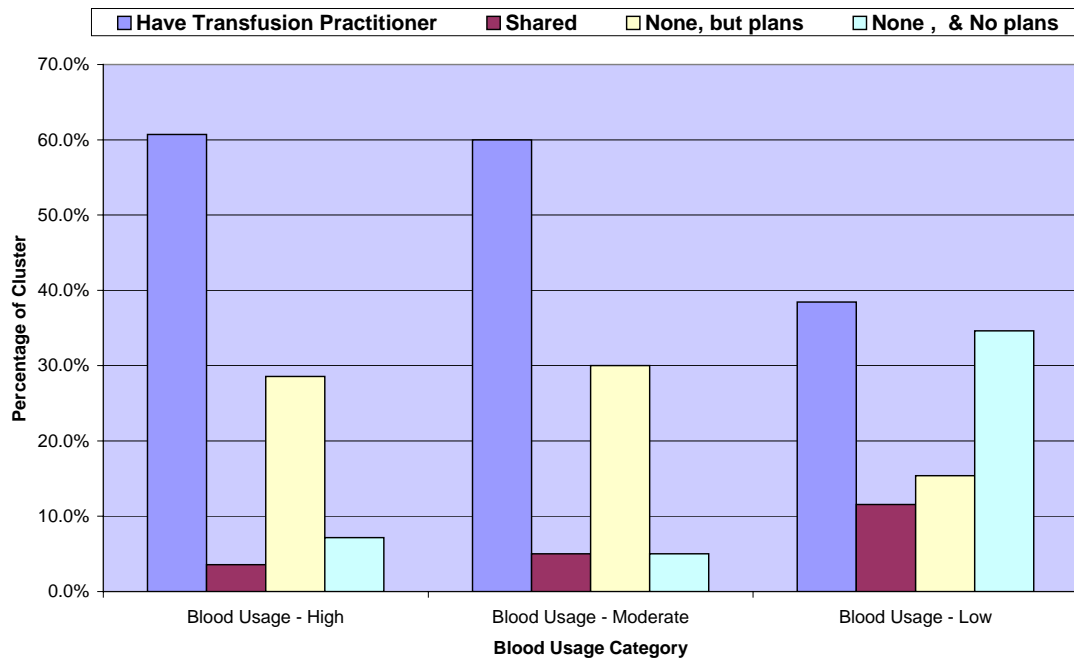


Fig. 6. Satisfied staffing (score 4 or above) and transfusion practitioner status

95 hospitals scored 4 or above in response to 'satisfaction with staffing levels'; of these 81 (85%) either employed or had plans to employ a transfusion practitioner within the next 12 months.

There is a relationship between the presence of a transfusion practitioner and satisfaction with staffing levels enabling effective stock management (Fig 6). For hospitals scoring 4 or above:

- 38 / 40 (95%) 'moderate usage' hospitals either had a specialist practitioner or were planning to recruit a transfusion practitioner.
- 26 / 28 (93%) 'high blood usage' hospitals either had or were planning to recruit a transfusion practitioner.
- 17 / 26 (65%) 'low blood usage' hospitals either had or were planning to recruit a transfusion practitioner.

Of the 63 hospitals that scored 2 or below, indicating dissatisfaction with staffing levels, 30 (47%) did not currently employ a transfusion practitioner.

5 Training

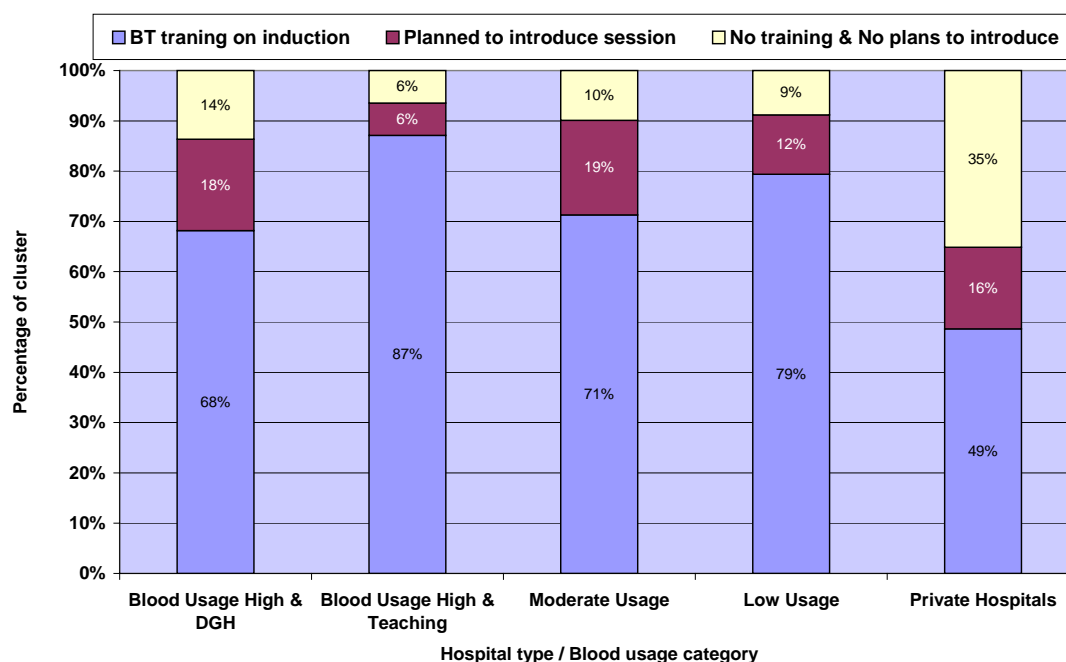


Fig. 7. Link between training given and hospital type / blood usage category.

There is a relationship between training and the blood usage category; only 18/39 of private hospitals (49%) offer blood transfusion training compared to between 68% and 87% for the other four clusters (Fig 7). 13 'private' hospitals (35%) do not offer training and have no plans to introduce training, compared to 2 'high usage teaching' hospitals (6%) and 3 for 'high usage DGH' (14%).

<i>Training covered in transfusion training</i>	<i>Number of hospitals</i>	<i>Percentage of hospitals</i>
Alternatives to transfusion	43	19%
Cut-offs for ordering	64	28%
Indications for blood components	75	33%
Indications for red cells	83	37%
Patient ID for transfusion	127	56%
Positive patient ID	141	62%
Sample labelling	150	66%
Transfusion documentation	108	48%

Table 13. Transfusion topics covered in medical induction programme

The transfusion topics offered were relatively constant, irrespective of the hospital type or the blood usage category. The most common topic was 'training on sample labelling' offered by 150 hospitals (66%), the second most common was 'positive patient ID' offered by 141 (62%) hospitals. The least common subject area was 'alternatives to transfusion', offered by 43 hospitals (19%).