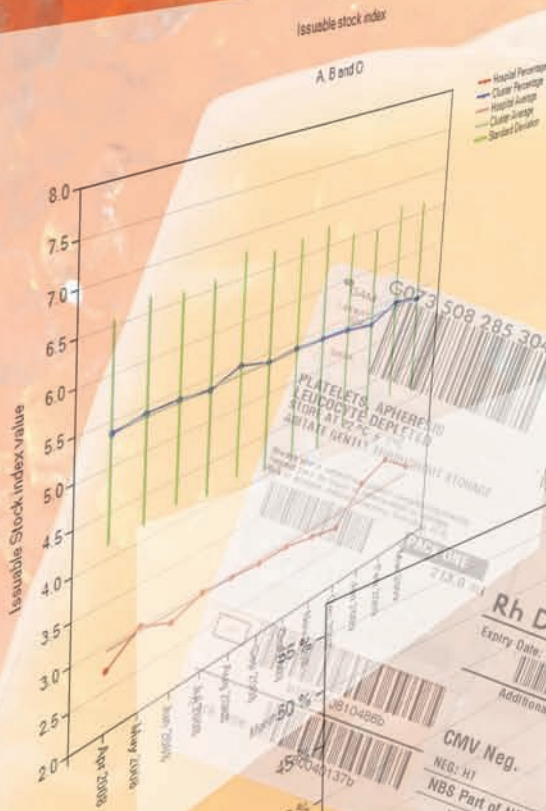


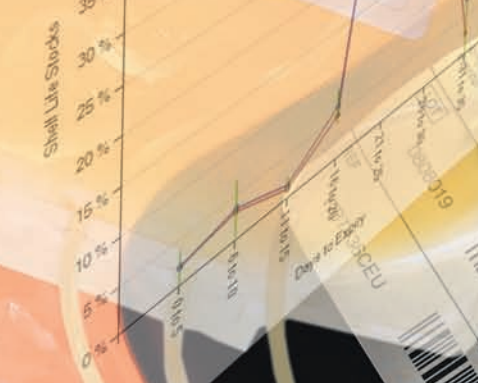
Blood Stocks Management Scheme



PLATELETS, APHERESIS
LEUCOCYTE DEPLETED
STORED AT 20°C
ADJUTANT DENITRIFICATION STORAGE

Rh D POSITIVE
Expiry Date: 18 Nov 2008

Additional Information
CMV Neg.
NEG: H1
NBS Part of NHSBT
Date Bred: 13 Nov 2008



RED CELLS IN ADDITIVE SOLUTION
LEUCOCYTE DEPLETED
STORED AT 4°C ± 2°C

Rh D POSITIVE
Expiry Date: 07 Dec 2008

Additional Information
NEG: H1 & e
F +
e +

Wasteage as a percentage of use

Category	Percentage
Stock Use	~15%
Expiry	~10%
Quality Control	~5%
Unusable	~5%
Returned	~5%

Table of Contents

1. Table of Contents	2
2. Foreword	3
3. Headline Summary	4
3.1. Red cell issues	4
3.2. Red cell wastage¹	4
3.3. Platelet issues	4
3.4. Platelet wastage¹	4
3.5. O Neg	5
4. Purpose	5
5. BSMS achievements 2008-2009	5
6. Other Activities	6
7. Current Activity	6
8. Red Cell Blood Supply System	7
8.1. England and North Wales (NHSBT)	7
8.1.1. NHSBT issuable stock index (ISI)	7
8.1.2. England and North Wales hospital ISI	7
8.1.3. NHSBT red cell issues	8
8.1.4. England and North Wales BSMS hospital wastage	8
8.2. Northern Ireland (NIBTS)	9
8.2.1. NIBTS ISI	10
8.2.2. Northern Ireland hospital ISI	10
8.2.3. NIBTS red cell issues	10
8.2.4. NIBTS wastage	10
8.2.5. Northern Ireland BSMS hospital wastage	11
8.3. South Wales (WBS)	11
8.3.1. WBS ISI	12
8.3.2. WBS hospital ISI	12
8.3.3. WBS red cell issues	12
8.3.4. WBS wastage	12
8.3.5. WBS hospital wastage	12
9. Platelet Supply System	13
9.1. England and North Wales (NHSBT)	13
9.1.1. NHSBT ISI	14
9.1.2. NHSBT issues	14
9.1.3. England and North Wales BSMS hospital wastage	14
9.2. Northern Ireland (NIBTS)	14
9.2.1. NIBTS issues	14
9.2.2. NIBTS wastage	14
9.2.3. Northern Ireland hospital wastage	14
9.3. South Wales (WBS)	15
10. Inventory Practice Survey 2008	15
11. Regional Roadshows 2008	16
12. Research	17
13. Further information	18
14. Steering Group members	18
15. Glossary of terms	18

Foreword

The past year has been another busy one and the Scheme has seen some major changes, the most significant of which is the appointment of a new Scheme manager. Sue Cotton has been looking after the Scheme for a little while on a temporary basis and I am pleased to say that she has now been appointed on a substantive basis. Sue has a long and distinguished background in transfusion in both hospital laboratories and NHSBT. Sue has done a fantastic job so far in picking up where Judith left off and I am sure that we would all wish to welcome her and wish her well for her future with the Blood Stocks Management Scheme (BSMS).

Following successful pilots on the de-anonymisation of data last year, the Scheme has now rolled this out to all regions, and I would encourage all participants to make use of this facility as a tool in improving stock management.

There has over the last few years been a feeling that the BSMS should be publishing the results of inventory practice surveys and other research into inventory management given the lack of published work in this area. I am please to say that April 2009 saw the publication of the first paper from the BSMS in recent years and we look forward to the publication of further papers in the future. The Scheme's links with Cranfield School of Management continue and the work done is providing valuable insights.

I would like to thank all the staff at the BSMS for their hard work over the last year and congratulate them on their dedication and progress.

I would like to thank all of you who participate in the Scheme, providing information on blood inventory management and ensuring that voluntary donated blood is used effectively.

If you have any comments about the Scheme please do not hesitate to contact any of the steering group members who you will find listed at the end of the report.

Craig Taylor
Steering Group Chair
Blood Stocks Management Scheme
December 2009

3. Headline Summary

3.1 Red cell issues

- 1,858,000 adult red cell units were issued by NHS Blood and Transplant (NHSBT) in England and North Wales, an increase of 1.8% from 2007/8.
- 51,707 adult red cell units were issued by the Northern Ireland Blood Transfusion Service (NIBTS) a reduction of 3.2% from 2007/8.
- 91,609 adult red cell units were issued by the Welsh Blood Service (WBS), a reduction of 3.8% from 2007/8.

3.2 Red cell wastage¹

- Total NIBTS wastage was 2823 units, an increase of 222 units (8.5%) from 2007/8. Average monthly WAPI was 5.4%.
- Total WBS wastage was 1409 an increase of 548 units (63%) from 2007/8. Average monthly WAPI was 1.6%.
- Average wastage per NHSBT BSMS participant was 155 units, an increase of 22 units per participant. Average monthly WAPI was 4.7%.
- Average wastage per NIBTS BSMS participant was 171 units, an increase of 1 unit per participant. Average monthly WAPI was 4.9%.
- Average wastage per WBS BSMS participant was 106 units. Average monthly WAPI was 6.7%. Insufficient WBS supplied hospitals were participating during 2007/8 to ensure the validity of the data. Therefore comparison with 2007/8 not appropriate.

3.3 Platelet issues

- 226,652 adult platelet units were issued by the NHSBT, an increase of 3.8% from 2007/8.
- 6,867 adult platelet units were issued by the NIBTS, a decrease of 6.8% from 2007/8.
- Platelet data is not available from the WBS.

3.4 Platelet wastage¹

- 1,408 platelet units were wasted by the NIBTS a decrease of 8 units (0.56%) from 2007/8.
- Average platelet wastage per NHSBT participant was 43 units, an increase of 6 units from 2007/8. Average monthly WAPI was 6.0%.
- Average platelet wastage per NIBTS BSMS participant was 44 units a decrease of 8 units from 2007/8. Average monthly WAPI was 11.2%.

1. There are technical issues with the provision of NHSBT wastage data for both red cells and platelets. The wastage data will follow as an addendum and will be posted on www.bloodstocks.co.uk as soon as it becomes available.

3.5. O Neg

- O Neg as a percentage of total issues was 10.1% for NHSBT supplied hospitals, 13.7% for NIBTS supplied hospitals, and 9.1% for WBS supplied hospitals.
- Average monthly O Neg WAPI was 3.9% in the NIBTS which includes pre-validation wastage, and 0.28% in the WBS, no data available from NHSBT.
- Average monthly O Neg WAPI for NHSBT supplied hospitals was 6.7%, for NIBTS supplied hospitals 7.3% and for WBS supplied hospitals 9.2%.

4. Purpose

The Blood Stocks Management Scheme is a partnership between hospitals and blood services to maximise the use of donated blood by increasing the understanding of blood supply management. It was established in April 2001 with NHSBT and the hospitals it supplies. In April 2004 the NIBTS and the hospitals it supplies joined the scheme; in April 2005 the Welsh Blood Service and the hospitals it supplies joined. Central to the work of the Scheme is VANESA, a data management system where hospital and blood service data is collected. In return participants can view real time data and charts.

5. BSMS achievements 2008-2009

During 2008/9 the BSMS:

- Revised the hospital usage categories for both red cells and platelets.
- Held 1 VANESA 4 DUMMIES course with 9 participants. Significant manpower issues prevented BSMS from providing more training courses.
- Held 6 successful regional meetings with over 150 delegates.
- Undertook and reported on the 2008 Inventory Practice Survey.
- Published a paper in Transfusion Medicine on best practice in blood inventory management.
- Undertook Phase 1 of the move from data anonymity to data transparency for hospitals served by NHSBT and WBS.
- Licensed the BSMS software to Americas Blood Centres.

6. Other Activities

- Presentations at NHSBT blood transfusion laboratory manager's meetings
- Facilitated three workshops at the SpR's training courses at Bristol and Colindale Blood Centres.

7. Current Activity

Membership: 272 out of 285 hospitals directly supplied by the NHSBT, 11/11 hospitals supplied by the NIBTS and 15/15 hospitals supplied by the WBS are registered with the BSMS.

Hospital data entry activity by supplying blood service is shown in Table 1.

Table 1 Hospital activity by supplying Blood Service

Blood Service/ hospitals	Activity status	No. of hospitals	Percentage
NHSBT	Regular	208	76
	Partial	50	18
	None	14	5
NIBTS	Regular	8	73
	Partial	3	27
WBS	Regular	8	50
	Partial	6	38
	None	2	15

Regular - 16 or more entries per month (red cell stock) red cell wastage and platelet wastage

Partial - less than 16 entries per month (red cell stock) or no data entry for red cell or platelet wastage

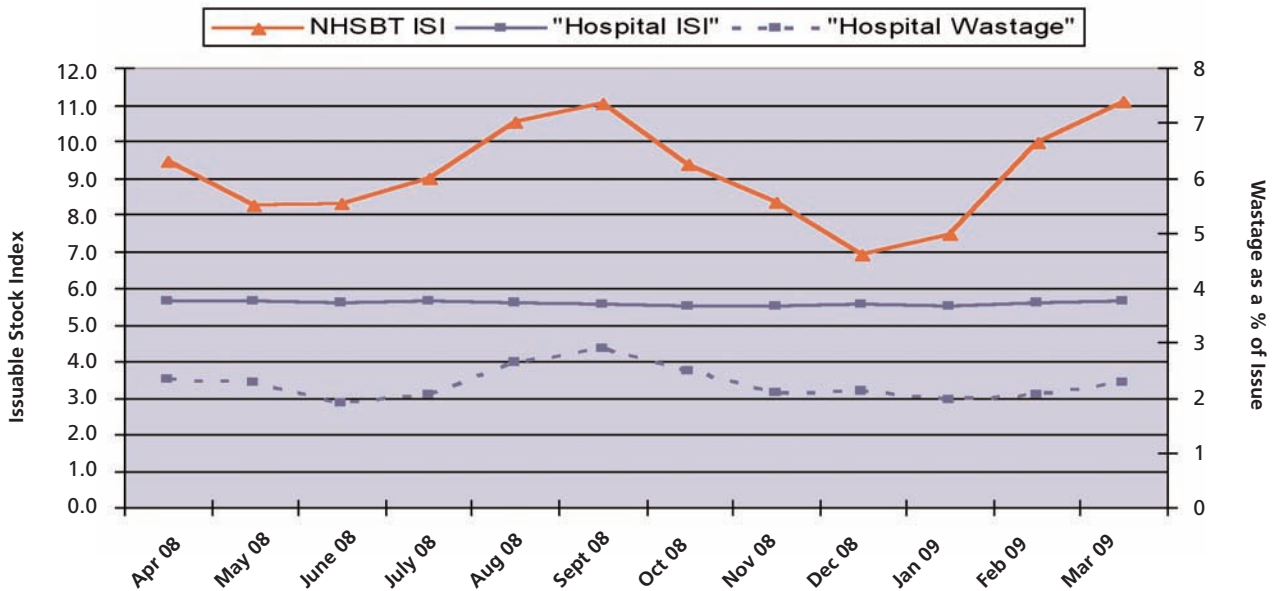
None - no data has been entered

8. Red Cell Blood Supply System

8.1. England and North Wales (NHSBT)

Fig 1 shows an overview of the red cell supply chain using data taken from NHSBT BSMS participants and the NHSBT as a whole. The graph highlights the relationships across the supply chain.

Fig 1 Total red cell stock (ISI) held in all NHSBT BSMS hospitals and in NHSBT and total WAPI for all NHSBT BSMS hospitals.



When the NHSBT inventory level is on target (40,000–50,000 units) there will be between 67,000 and 77,000 units in the blood supply system. Hospital wastage continues to mirror the NHSBT stock level.

8.1.1. NHSBT issuable stock index (ISI)

No red cell shortages were declared. The NHSBT ISI has fluctuated between a high point of 11 during September 2008 and March 2009 to a low point of 7 during December 2008 (Fig 1).

The lowest and highest ISI levels in 2008/9 were different from those experienced in 2007/8 where for 10 out of 12 months the ISI fluctuated between 6 and 8 before rising to a high point of 9 in March 2008.

8.1.2. England and North Wales hospital ISI

The average ISI by hospital category remains variable, the lowest ISI was found in the 'Very High usage' hospital category (Table 2).

For group O Negative the ISI for the 'Very Low' and 'Low' categories remained higher than hospitals in the 'High' and 'Moderate Usage' categories.

Table 2 Average ISI by hospital category for NHSBT BSMS hospitals

	Very High	High	Moderate	Low	Very Low
All Groups	4.8	5.5	6.5	11.0	22.8
O Neg	6.8	7.9	8.9	16.1	21.1

Very High - >10,001 red cell units per annum, High - 6,501 - 10,000 Moderate - 4,001 - 6,501 units per annum, Low - 801 - 4,000 units per annum, Very Low - 0 - 800 units per annum

8.1.3. NHSBT red cell issues

NHSBT issued 1,858,000 adult red cell units between April 2008 and March 2009, an increase on the previous year of 1.81% (cf. 1,825,000).

The median number of days to expiry at issue was 22 days in 2008/9, compared to 24 days in 2007/8. The percentage of units with at least 20 days to expiry ranged from over 76% of issues during January 2009 to 41% of issues in September 2008 and March 2009.

Total monthly issues of group O Neg showed an increase of 0.47% in 2008/9 compared to an increase of 1.8% for all groups. O Neg issues as a percentage of total issues was 10.1% in 2008/9.

8.1.4. England and North Wales BSMS hospital wastage

Average TIMEX wastage per participant hospital for all blood groups rose from 133 per participant in 2007/8 to 155 per participant in 2008/9. An increase of 12 units (Table 3).

Previous annual reports have noted the fact that NHSBT stock levels drive hospital TIMEX and any change in average TIMEX per BSMS participant generally reflects changes in stock level rather than hospital practice. As evident by Fig. 1 there have been higher red cell stock levels in NHSBT during 2008/9 when compared with 2007/8.

Average hospital monthly WAPI (WAPI) for all blood groups was 4.7% in 2008/9 compared to 5% in 2007/8.

The percentage of all issues that were recorded as wasted was 2.1% in 2008/9 compared to 2.0% in 2007/8.

There is a difference between the average hospital WAPI and the percentage of all issues recorded as wasted for the following reasons. The average hospital WAPI is an unweighted average of all BSMS hospitals' WAPI in which every hospital has an equal influence on the figure. This means that the very biggest hospitals and the very smallest hospitals each have the same influence; even though they have very different wastage rates (typically small hospitals have much higher WAPI than large hospitals). Thus the percentage of all units issued that are recorded as wasted will be lower than the average hospital WAPI.

Average monthly O Neg WAPI was 6.7%; 2% higher than WAPI for all blood groups. The percentage of all O Neg units that were recorded as wasted was 4.0% in 2008/9; an increase from 3% in 2007/8.

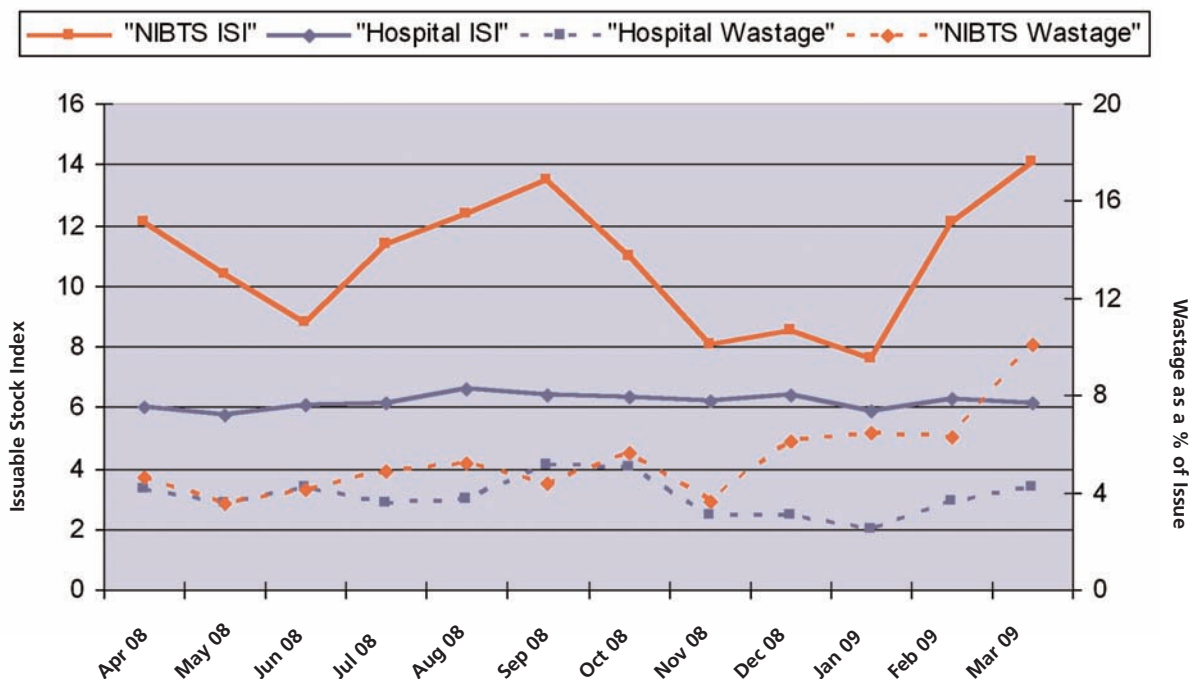
Table 3 England and North Wales BSMS hospitals wastage, by wastage category and average per participant since 2002/3

	TIMEX	OTCOL	MISC	Fridge Fail	Total
Total 2008/9	27,641	9,076	2,347	863	39,927
Ave. per BSMS participant 2008/9	107	35	9	3	155
Ave. per BSMS participant 2007/8	92	29	8	3	133
Ave. per BSMS participant 2006/7	97	28	10	2	138
Ave. per BSMS participant 2005/6	104	26	8	3	142
Ave. per BSMS participant 2004/5	139	25	8	3	175
Ave. per BSMS participant 2003/4	91	23	7	2	125
Ave. per BSMS participant 2002/3	103	21	7*	N/A	135

TIMEX - Time expiry, OTCOL - out of temperature control outside the laboratory, MISC - miscellaneous, Fridge Fail - fridge failure, * includes fridge failure

8.2. Northern Ireland (NIBTS)

Fig 2 Total red cell stock (ISI) held in all BSMS NIBTS hospitals and in the NIBTS and the total WAPI for all BSMS NIBTS hospitals and the NIBTS



Approximately 2,200 red cell units are held in the blood supply system at any one time, about 900 in the hospitals and 1,300 in the blood service. 4,699 red cell units were wasted in hospitals and the NIBTS combined.

8.2.1. NIBTS ISI

The NIBTS ISI has fluctuated between a low point of 8 during November, December 2008 and January 2009 and a high point of 14 during August 2008 and March 2009. (Fig 2).

8.2.2. Northern Ireland hospitals ISI

Hospital inventory levels were stable at 6.0 days (Fig 2). The lowest ISI for 'all' blood groups and group O Neg was found in the 'Very High' category (Table 4).

Table 4 Average ISI by hospital category Northern Ireland BSMS hospitals

	Very High	Moderate	Low	Very Low
All Groups	5.8	6.2	8.4	14.7
O Neg	6.9	8.5	11.4	18.5

Very High - >10,001 red cell units per annum, Moderate - 4,001 - 6,501 units per annum, Low - 801 - 4,000 units per annum, Very Low - 0 - 800 units per annum

8.2.3. NIBTS red cell issues

The NIBTS issued 51,707 adult red cell units between April 2008 and March 2009 a reduction of 3.2% from 2007/8.

The median number of days to expiry at issue was 24 days. The percentage of units with over 20 days to expiry fluctuated from a low point of 48% in April 2008 to 87% in December 2008. By March 2009 the figure had fallen to 52%.

Total monthly issues of group O Neg showed a 2.5% reduction from 2007/8 compared with a 3.2% reduction for 'all' groups. O Neg issues as a percentage of total issues was 13.7%.

8.2.4. NIBTS wastage

Wastage is separated into two categories; TIMEX and MISC. MISC wastage is composed of any unit that is available for issue and has been discarded for a reason other than 'time expired'. Unlike NHSBT MISC, which only includes post validation wastage NIBTS MISC includes pre and post validation wastage. Total NIBTS wastage with a four year comparison is shown in Table 5. NIBTS total wastage increased by 222 units in 2008/9. TIMEX wastage decreased by 13 units in 2008/9.

Table 5 Total NIBTS wastage by wastage category since 2004/5

	TIMEX	MISC	Grand Total
2008/9	1,157	1,666	2,823
2007/8	1,170	1,431	2,601
2006/7	944	1,253	2,197
2005/6	1,214	1,108	2,322
2004/5	1,098	1,354	2,452

TIMEX - Time expiry, **MISC** - miscellaneous,

NIBTS average monthly WAPI was 5.4%. Average TIMEX monthly WAPI remained at 2.2% for 2008/9, same figure as for 2007/8. Group O Neg average monthly WAPI was 3.9%.

Average TIMEX monthly WAPI for O Negative was 0.7% compared to 0.9% in 2007/8.

8.2.5. Northern Ireland BSMS hospitals wastage

Average TIMEX wastage per participant hospital for all blood groups showed a decrease from 2007/8 (Table 6). Overall wastage decreased by 14 units per participant from 2007/8, TIMEX decreased by 11 units per participant and OTCOL by 3 units per participant.

Table 6 NIBTS BSMS hospitals wastage by wastage category and average per participant since 2004/5

	TIMEX	OTCOL	MISC	FF	Total
2008/9	1,403	342	83	48	1,876
Ave. per BSMS participant 2008/9	128	31	8	4	171
Ave. per BSMS participant 2007/8	139	34	11	1	185
Ave. per BSMS participant 2006/7	180	37	10	1	228
Ave. per BSMS participant 2005/6	210	33	9	3	255
Ave. per BSMS participant 2004/5	197	25	7	1	230

TIMEX - Time expiry, **OTCOL** - out of temperature control outside the laboratory,
MISC - miscellaneous, **FF**- fridge failure

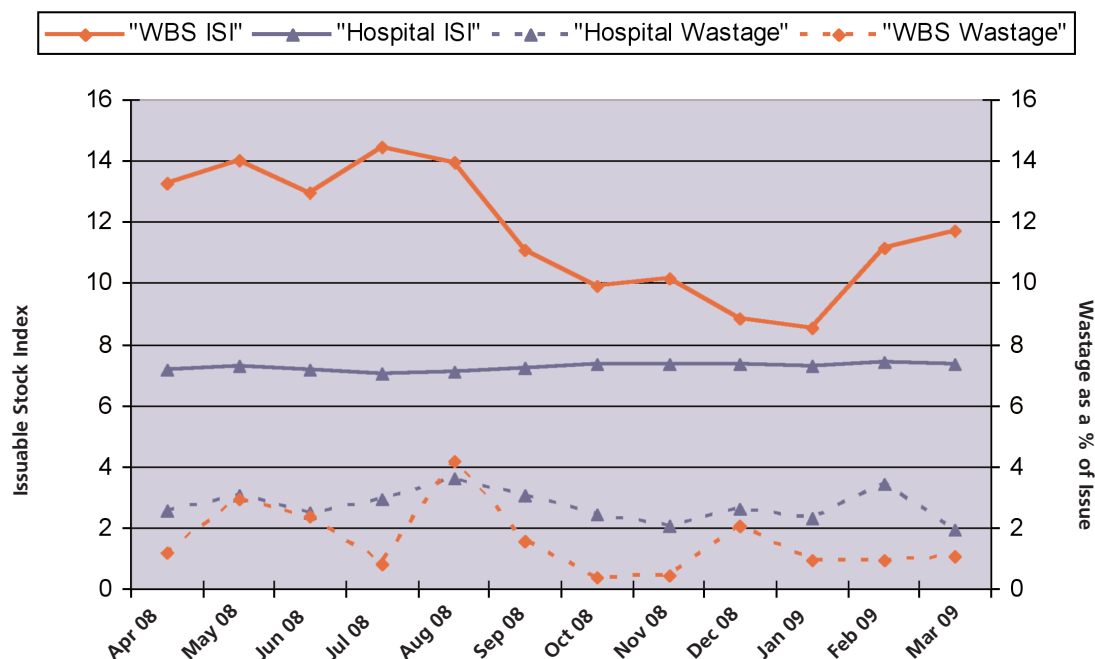
Hospital average monthly WAPI was 4.9%, 0.5 percentage points lower than 2007/8.

The percentage of all issues that were recorded as wasted was 3.6% in 2008/9 compared to 3.0% in 2007/8. For an explanation of the difference between hospital average WAPI and percentage of issues wasted, see section 8.1.4.

O Neg average monthly WAPI was 7.3%, 1.6 percentage points lower than 2007/8. The percentage of all O Neg units that were recorded as wasted was 3.9% in 2008/9; a reduction from 5% in 2007/8.

8.3. South Wales (WBS)

Fig 3 Total red cell stock (ISI) held in all BSMS WBS hospitals and in the WBS and the total WAPI for all BSMS WBS hospitals and the WBS.



Approximately 4,600 red cell units are held in the blood supply system at any one time, about 1,700 in the hospitals and 2,900 in the blood service.

8.3.1. WBS ISI

The WBS ISI fell from a high of 14.4 in May 2008 to a low of 8.5 in January 2009 before rising to 11.7 in March 2009 (Fig 3).

8.3.2. WBS hospital ISI

Hospital inventory levels were stable at 7 days. The lowest ISI for 'all' blood groups and group O Neg were found in the 'Very High' category (Table 7).

Table 7 Average ISI by hospital category WBS BSMS hospitals

	Very High	Moderate	Low	Very Low
All Groups	5.3	7.7	10.7	13.7
O Neg	9.4	10.7	15.2	20.3

Very High - >10,001 red cell units per annum, Moderate - 4,001 - 6,501 units per annum, Low - 801 - 4,000 units per annum, Very Low - 0 - 800 units per annum

8.3.3. WBS red cell issues

The WBS issued 91,609 adult red cell units between April 2008 and March 2009 a reduction of 3.8% from 2007/8

The median number of days to expiry at issue was 22 days. The percentage of units with at least 20 days to expiry ranged from 48% in August 2008 rising to 88% in January 2009. There was a fluctuating decrease to 75% in March 2009.

Total monthly issues of group O neg showed a 0.2% reduction from 2007/8 compared with a 0.1% increase for 'all groups'. O Neg issues as a percentage of total issues was 9.2%

8.3.4. WBS wastage

Wastage is separated into two categories; TIMEX and MISC. MISC wastage is composed of any unit that is available for issue and has been discarded for a reason other than 'time expired'. WBS wastage is shown in Table 8.

Table 8 Total WBS wastage by wastage category since 2006/7

	TIMEX	MISC	Total
2008/9	1237	172	1409
2007/8	694	167	861
2006/7	546	136	682

TIMEX - Time expiry, **MISC** - miscellaneous,

WBS average monthly WAPI was 0.9%. Average TIMEX monthly WAPI was 0.8%, compared to 0.6% in 2006/7. Group O Neg average monthly WAPI was 0.2%.

8.3.5. WBS hospital wastage

There were incomplete data sets for several hospitals in 2007/8 and therefore 2008/9 is the first year that data for hospital wastage has been reported.

Table 9 WBS BSMS hospitals wastage by wastage category and average per participant for 2008/9

Year	TIMEX	OTCOL	MISC	FF	TOTAL
2008/9	1109	276	95	4	1484
Ave. per BSMS participant 2008/9	79	20	7	<1	106

TIMEX – time expired, OTCOL – out of temperature control outside the laboratory
MISC – miscellaneous, FF – fridge failure

Hospital average monthly WAPI was 6.7%

The percentage of all issues that were recorded as wasted was 1.6%

For an explanation of the difference between hospital average WAPI and percentage of issues wasted, see section 8.1.4.

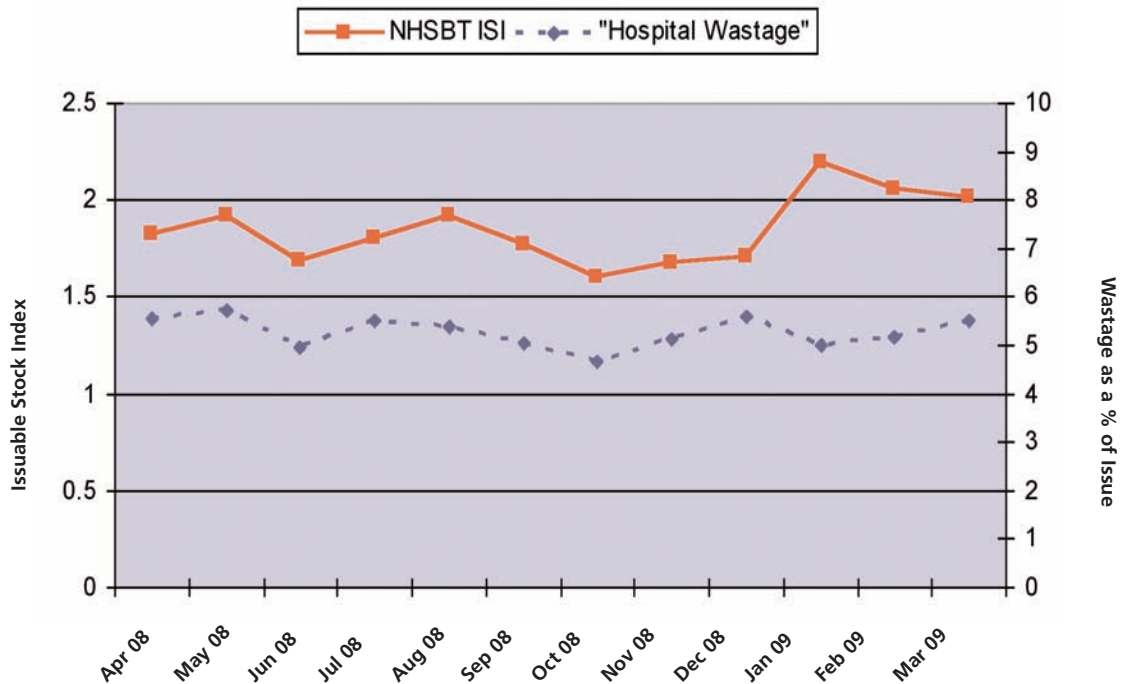
O Neg average monthly WAPI was 9.2%

The percentage of all O Neg units that were recorded as wasted was 3.5%

9. Platelet Supply System

9.1. England and North Wales (NHSBT)

Fig 4 Total platelet stock (ISI) held in the NHSBT and the total wastage as a WAPI for all NHSBT BSMS hospitals.



9.1.1. NHSBT

The NHSBT platelet ISI remained relatively stable at 1.6-1.8 apart from bank holiday periods when it increased to ensure an adequate supply during periods of reduced collection activity (Fig 4).

9.1.2. NHSBT issues

The NHSBT issued 226,652 adult platelet units between April 2008 and March 2009, an increase of 3.8% from 2007/8.

9.1.3. England and North Wales BSMS hospitals wastage

Hospital platelet average monthly WAPI was 6% for 2008/9.

The average hospital platelet wastage per participant was 6 units higher than 2007/8. The highest wastage was found in 'medically ordered not used' (Table 10).

Table 10 Total NHSBT BSMS hospital platelet wastage by wastage category and average platelet wastage per NHSBT BSMS participant since 2003/4

Total	STEX	MISC	MONU	SONU	WOL	WI	Total
2008/9	2,346	371	6,034	2,120	219	79	11,169
Ave. per BSMS participant 2008/9	9	1.4	23	8	<1	<1	43
Ave. per BSMS participant 2007/8	7	1.4	21	7	<1	<1	37
Ave. per BSMS participant 2006/7	9	1.3	20	8	<1	<1	39
Ave. per BSMS participant 2005/6	7	1.8	19	11	<1	<1	34
Ave. per BSMS participant 2004/5	6	1.6	19	7	<1	<1	34
Ave. per BSMS participant 2003/4	4	1.6	6	1	<1	<1	0

STEX – time expired, MONU – medically ordered, not used, SONU – surgically ordered not used, MISC – miscellaneous, WOL – wasted out of the laboratory, WI – wasted import

9.2. Northern Ireland (NIBTS)

9.2.1. NIBTS issues

The NIBTS issued 6,867 platelet units between April 2008 and March 2009, a decrease of 6.8% from 2007/8.

9.2.2. NIBTS wastage

1,408 platelet units were wasted by the NIBTS a decrease of 8 units (0.56%) from 2007/8.

9.2.3. Northern Ireland hospitals wastage

Hospital platelet average monthly WAPI was 14.4% compared to 14.6% in 2007/8

Average hospital platelet wastage per participant was 44 units; a decrease of 8 units when compared to 2007/8 (Table 11). The main wastage reason was for 'Medically Ordered Not Used' (MONU).

Table 11 Total NI BSMS hospital platelet wastage by wastage category and average platelet wastage per NIBTS hospital participant since 2004/5 for all blood groups

Total	STEX	MISC	MONU	SONU	WOL	WI	Total
2007/8	154	4	225	100	2	0	485
Ave. per BSMS participant 2008/9a	11	<1	20	9	<1	0	44
Ave. per BSMS participant 2007/8	21	1	24	5	<1	<1	52
Ave. per BSMS participant 2006/7	19	1.5	23	7	<1	<1	52
Ave. per BSMS participant 2005/6	22	1	21	7	<1	<1	53
Ave. per BSMS participant 2004/5	16	1	21	11	<1	<1	50

STEX – time expired, **MONU** – medically ordered, not used, **SONU** – surgically ordered not used, **MISC** – miscellaneous, **WOL** – wasted out of the laboratory, **WI** – wasted import

9.3. South Wales (WBS)

Platelet data is not collected from hospitals supplied by the WBS.

10. Inventory Practice Survey 2008

The BSMS Inventory Practice Survey 2008 focussed on 3 specific areas “Making the most of the BSMS” enquiring how users make use of the BSMS; “Changing Inventory Practise” which sought to discover if, and how, blood transfusion inventory policy had changed since 2001; and “Rating the service provided by the BSMS team” which requested information on users’ experience of BSMS service.

203 completed questionnaires were received, representing the views of 212 private and NHS hospital blood transfusion laboratories; around 70% of Scheme participating hospitals.

The results of the survey are encouraging, identifying improvements that have been made in hospital inventory management since 2001.

Key findings included :

- A reduction in stock levels, particularly O Negative red cells
- An increase in laboratory staff awareness of inventory management
- Introduction of an inventory of AB positive red cells

The survey also identified a change in the way the BSMS data is used by hospitals; in 2008 the majority of respondents were using the data for reviewing wastage (65%) whereas in 2002 only 1% of respondents used the data for wastage review.

The full report is available on <http://www.bloodstocks.co.uk/reports/inventorypracticesurveys>

11. Regional Roadshows 2008

In 2008 the BSMS national Open Meeting was replaced by a series of Regional Road Shows. The Road Shows were attended by over 145 delegates and exhibitors. The programme gave the opportunity for delegates to discuss the key issues that challenged hospitals and the blood services in 2008 and beyond in respect of blood inventory management. There were two interactive workshop sessions and a presentation by guest speaker Ian Henderson. Ian works as the PULSE Project Director for Savant Ltd. PULSE is the core IT system for the NHSBT and Savant are responsible for the support and development of the system. Ian discussed the use and potential of RFID (radio frequency identification) in the blood transfusion setting. Current labelling standards mean that NHSBT cannot introduce automatic handling to any extent. RFID technology appears to offer major advantages for blood pack handling and has the potential to reduce some of the time consuming reconciliation procedures. Judith Chapman, Scheme Manager reported on data from hospitals and the three participating blood services and outlined achievements during 2007/8 and objectives for 2008/9.

The topics for the workshops were the Clinical/Laboratory Interface, Ordering Systems and Replenishment Models. At the England and North Wales Road Shows the workshops identified some key common points:

Clinical/Laboratory Interface

- Blood transfusion laboratories need a lead transfusion haematologist to act as a champion for blood transfusion.
- A devolved blood budget is invaluable in helping to achieve appropriate ordering.
- Holding a platelet stock was acceptable to some hospitals but not all.

Ordering and Replenishment

- Hospitals would like the introduction of 'on line' ordering for routine requests via a link on VANESA
- Hospitals did not want a national call centre - "personal contact with the local centre is invaluable."
- Ad hoc orders are made for platelets and non routine red cells e.g. phenotyped, irradiated etc.
- Concern that the introduction of replenishment will lead to higher stock levels and increased wastage.

At the Cardiff Road Show there was group discussion on current inventory management practice and how the BSMS could be used to monitor wastage and the use of O RhD Negative blood.

- Comparison with peer groups using VANESA.
- Using BSMS charts at HTC meetings.
- Having a SOP in place for stock management
- Assessing the need for O RhD Neg in satellite fridges.

12. Research

During 2008/9 two pieces of research were undertaken:

- ***Investigation into the distribution of ABO and RhD blood groups within hospital populations of England, Wales and Northern Ireland.***

Hospitals in England, Wales and Northern Ireland were asked to provide the numbers, by means of a paper survey, of ABO and RhD types performed in a single year from 1st October 2007 to 30th September 2008. Of the 284 surveys sent, 112 were returned, detailing type data for 117 hospitals; providing a total sample in excess of 1.4 million blood types across England, Wales and Northern Ireland.

Table 12 provides a summary of the mean distributions of ABO and RhD types across England and Wales.

Table 12 Blood group distributions within national regions

	O+	O-	A+	A-	B+	B-	AB+	AB-	Sample Size	Responses
England	37.66	7.81	32.90	6.94	9.32	1.68	3.04	0.64	1339911	101
England (Excl. London)	37.48	8.09	33.26	7.21	8.71	1.69	2.92	0.65	1171045	90
Wales	38.19	8.20	33.05	6.76	7.94	1.54	2.81	0.51	60308	9

The research identified that ABO and RhD distribution varies greatly between hospitals and regions. In considering appropriate use of blood and appropriate stock levels in hospitals and blood services then recipient populations should be considered. This applies especially so in London where distributions of O RhD Negative and B RhD Positive vary greatly.

- ***Demand Management in the Blood Supply Chain***

Knowledge Transfer Partnership Associate, Joanna Dobbin, has been working with top academics at Cranfield School of Management and the Blood Stocks Management Scheme looking into demand management within the blood supply chain. Joanna has focused on creating statistical forecasts for blood and components, which includes establishing what factors drive blood use. With the recent rise in blood use, understanding the observed patterns is of paramount importance. She has been investigating this by speaking to various hospital personnel who work within transfusion, to establish what they feel has most influence on blood use within their hospital. Joanna has also performed some time based analysis and mapping of the supply chain. The research will be completed during December 2009 and papers will be submitted to peer reviewed journals. More information on Joanna's work can be found at <http://www.bloodstocks.co.uk/openmeetings/2009>

- ***During 2008/9 one paper was published in Transfusion Medicine***

Perera, G., Hyam, C., Taylor, C., Chapman, J., (2009)

Hospital Blood Inventory Practice: the factors affecting stock level and wastage.

Transfusion Medicine, **19**, 99-104.

The study showed that different stock management practices in hospitals are associated with significant differences in stock levels and wastage of blood. The article identifies examples of best practice.

Best practice guidelines in the area of inventory practice do not currently exist and we hope that this work will form the basis for guidelines in blood inventory management.

13. Further information

Information including inventory practice survey reports and presentations and reports from the open meeting can be found on the BSMS website www.bloodstocks.co.uk

14. Steering Group members

Craig Taylor, Dudley Group of Hospitals, Chairman

Teresa Allen, NHS Blood and Transplant

Peter Baker, Royal Liverpool University Hospital

Ann Benton, Morriston Hospital, Swansea

Audrey Savage, Royal Victoria Hospital, Belfast

Susan Holdsworth, NHS Blood and Transplant

Rachel Moss, Imperial College Healthcare NHS Trust

Paul Milne, Scottish National Blood Transfusion Service

Sue Cotton, Blood Stocks Management Scheme

15. Glossary of terms

Activity Status

- Indicates regularity of hospital data entry onto VANESA; status is one of 'regular', 'partial' or 'none'.

BSMS – Blood Stocks Management Scheme

Hospital Red Cell Usage Categories

- Very High – > 10,001 red cell units per annum.
- High – 6,501 -10,000 red cell units per annum.
- Moderate – 4,001 – 6,500 red cell units per annum.
- Low – 801 – 4,000 red cell units per annum.
- Very Low – 0 – 800 red cell units per annum.

IPS – Inventory Practice Survey

- Annual survey distributed to BSMS hospitals; designed to collect information on current inventory practice in hospitals.

ISI – Issuable Stock Index

- (*Hospital or Blood Service*) ratio of current issuable stock to nominal stock. Used to assess relative stock levels in hospitals and/or blood centres.

Issues (Gross)

- (*Hospital*) Number of Red Cell or Platelet units issued from a blood service to a hospital.

Issues (Net) –

- (*Hospital*) Gross Issues plus or minus Red Cell or Platelet stock movements to or from other hospitals/ trusts.

MISC – Miscellaneous

- (*Hospital wastage reason*) Red Cell units that are wasted for reasons other than **TIMEX, OTCOL** or **FRIDGE FAIL**. Additionally for Platelets, wasted for reasons other than **MONU, SONU, WOL, WI**.
- (*Blood service wastage reason*) Red Cell or Platelet units that are wasted for reasons other than **TIMEX**.

MONU – Medically ordered not used

- (Platelet wastage reason) Platelet unit ordered for a medical patient, but subsequently not used and wasted.

NHSBT – NHS Blood and Transplant

- Blood service supplying the hospitals of England and North Wales.

NIBTS – Northern Irish Blood Transfusion Service

- Blood service supplying the hospitals of Northern Ireland.

Nominal Stock – Approximation of a single days stock

- (*Hospital*) Mean daily number of Red cell or Platelet unit issues from a blood service, during a six month period.
- (*Centre*) Mean daily number of Red cell or Platelet units issued, during a six month period.

OTCOL – Out of temperature control outside the laboratory

- Hospital wastage reason for Red cells.

Pre-validation wastage

- Blood centre wastage that occurs prior to a unit of red cells and platelets being validated.

Post-validation wastage

- Blood centre wastage that occurs after a unit of red cells and platelets has been validated. Post validation may include pre-validation wastage that was discovered post-validation e.g. pack label fault.

SONU – Surgically ordered not used

- (*Platelet wastage reason*) Platelet unit ordered for a surgical patient, but subsequently not used and wasted.

STEX – Stock platelet time expiry

- (*Platelet wastage reason*) Platelet unit that exceeds its natural shelf life; only applicable to hospitals that hold stock platelets.

TIMEX – Time Expiry

- (*Hospital or Blood service wastage reason*) Red cell or Platelet units that exceed their natural shelf life.

VANESA

- Blood Stocks Management Scheme data management system.

VANESA 4 DUMMIES

- Basic training course provided for the BSMS data management system.

VANESA 4 VIPS

- Advanced training course provided for the BSMS data management system.

WAPI – Wastage As a Percentage of Issue

- (*Hospital*) Total number of wasted units (Red cell or Platelet) divided by the total number of units issued to the hospital.
- (Blood Centre) Total number of wasted units (Red cell or Platelet) divided by the total number of units of donations the Blood Centre receives.

WBS – Welsh Blood Service

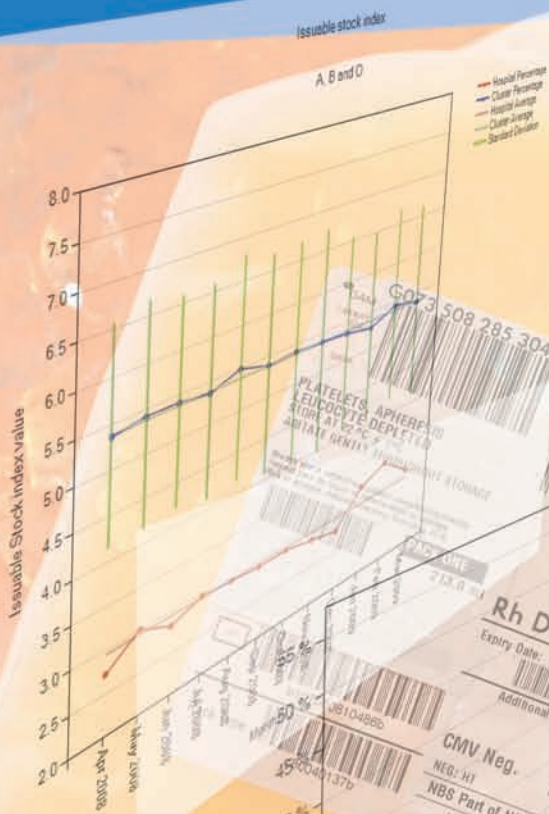
- Blood service supplying the hospitals of South Wales.

WI – Wasted import

- (*Platelet wastage reason*) Platelet unit imported from another hospital, with a patient, but then not used and wasted.

WOL – Wasted out of the laboratory

- (*Platelet wastage reason*) Platelet unit taken from the laboratory, left on the ward and wasted.



PLATELETS, APHERESIS STORE AT 22°C

DATE BLED: 13 Nov 2008

Rh D POSITIVE

Expiry Date: 18 Nov 2008

Additional Information

CMV Neg.

NEG: HT

NBS Part of NHSBT

Date Bled: 13 Nov 2008

Barcode: G073 508 285 304



RED CELLS IN ADDITIVE SOLUTION

DATE BLED: 27 Oct 2008

Rh D POSITIVE

Expiry Date: 01 Dec 2008

Additional Information

EG: HT

NBS Part of NHSBT

Date Bled: 27 Oct 2008

Barcode: G073 508 233 690

Volume: 288.0ml

Wastage as a percentage of use

Legend: Hospital Percentage, Clinic Percentage, Home Percentage, Storage Facility

Category	Hospital Percentage	Clinic Percentage	Home Percentage	Storage Facility
Hospital Percentage	15%	15%	15%	15%
Clinic Percentage	15%	15%	15%	15%
Home Percentage	15%	15%	15%	15%
Storage Facility	15%	15%	15%	15%