

The Blood Stocks Management Scheme (BSMS) was implemented in April 2001 as a partnership venture between the National Blood Service (NBS) and participating hospitals. Its aims are to increase understanding of the blood supply chain and improve blood stock management. A data management system facilitates input of data and receipt of charts related to red cell stock, wastage and age at issue. The scheme is unique in that it has a 'real time' overview of the blood supply system.

Headline information

The Blood System

- There is a clear relationship between NBS stock levels, age at issue and time expiry wastage.
 - The average age of A, B & O blood at issue was five days older than during 2001-02.
 - The average age of O Neg blood at issue was the same as 2001-02.
 - Average NBS time expiry wastage as a percentage of issue increased from 0.07% in 2001-02 to 0.12% in 2002-03, a rise of 71%.
 - Average BSMS hospital time expiry wastage as a percentage of issue increased from 1.3% in 2001-02 to 2.3% in 2002-03, a rise of 77%.

Red cell demand

- No red cell shortages were declared by the NBS during the report period.
- Red cell demand was 0.9% lower than 2001-02.

Red cell wastage

- 5,689 A, B & O red cell units were wasted in NBS Centres.
- 25,132 A, B & O red cell units were wasted in participating hospitals.
- NBS average A, B & O wastage as a percentage of issue was 0.29%.
- Average BSMS hospital A, B & O wastage as a percentage of issue was 2.8%.
- 'Time expiry' accounted for 82% of A, B & O BSMS hospital wastage, 'out of temperature control' for 9% of A, B & O BSMS hospital wastage, and 'miscellaneous' and 'out of temperature control in the laboratory' combined, for 9% of A, B & O BSMS hospital wastage.

Challenges

Information from the first two years of the BSMS has led to the identification of a number of challenges both for stock management and to enable the BSMS to move forward. These are outlined below.

Stock Management Challenges

- Encourage blood transfusion laboratories and the NBS to take a pro-active approach to stock management.
- Increase understanding of the balance between supply and demand.
- Reduce NBS stock levels to an appropriate defined level.
- Encourage the development of policies and procedures for stock movement between hospitals.

BSMS Challenges

Participation

- Retain and improve on the current level of participation.
- Monitor activity and follow up inactive or lapsed participants.
- Ensure hospitals are familiar with the BSMS website and software and offer training as necessary.

Data Analysis

- Increase the scope of the data analysis to give a better understanding of the relationships between stock levels, age of blood at issue, and wastage; and also the balance between supply and demand.
- Examine algorithms for appropriate stock holding.

System supply and demand

- Promote further work to understand the blood supply system .
- With the NBS explore alternatives to the NBS issues policy of 'first in-last out'.
- Investigate and understand fluctuations in demand patterns.

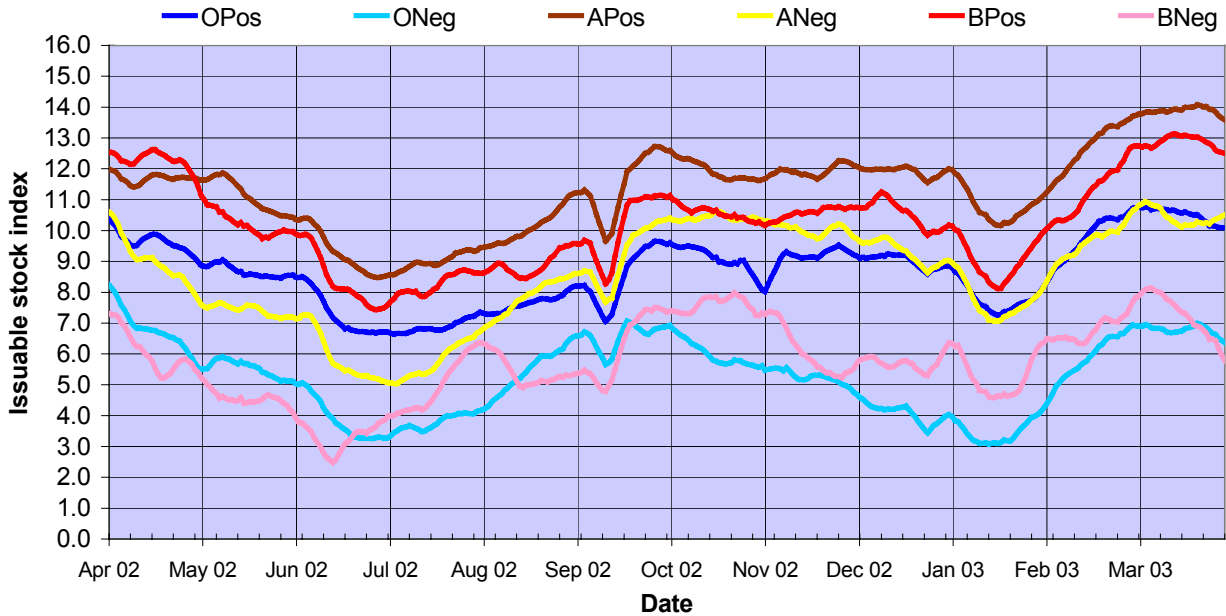
BSMS Participation

Hospital participation increased by 28% from 179 on April 1 2002 to 230 on 31st March 2003. The 230 hospitals account for 74% of hospitals supplied by the NBS and 84% of red cells issued. 73% of Teaching hospitals, 82% of District General and 53% of Private hospitals are registered.

Red Cell Stock

NBS Red Cell Issuable Stock Index

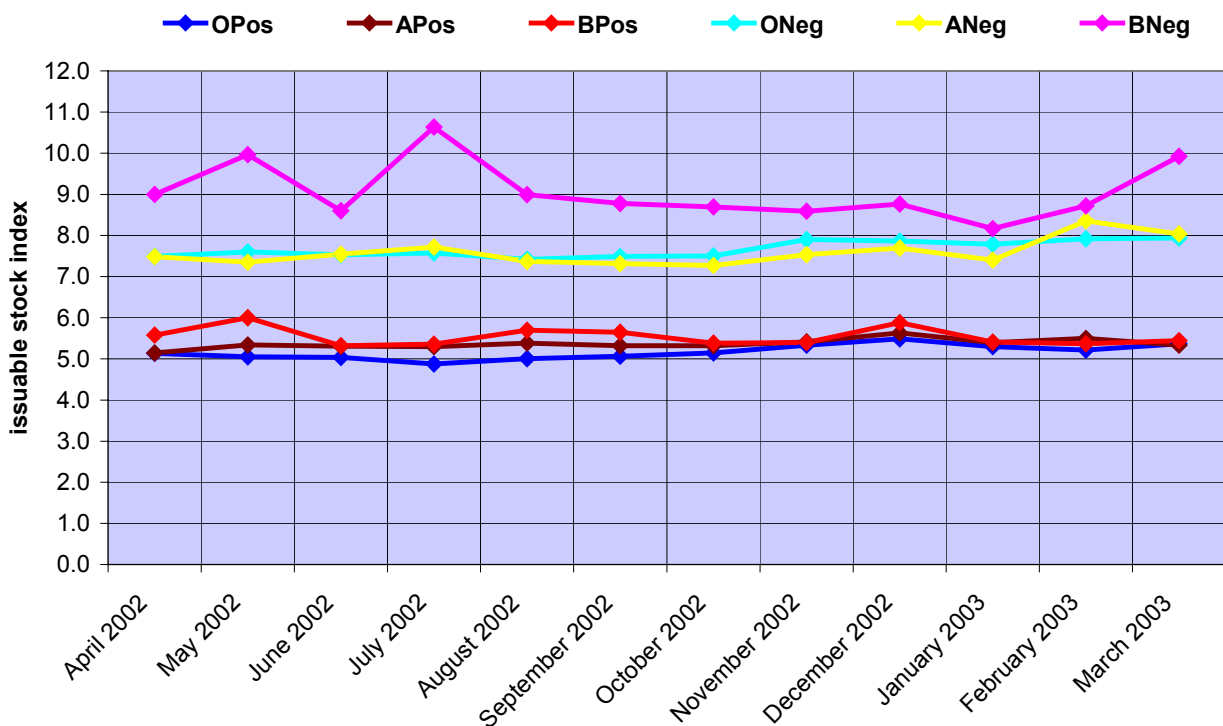
Variation in the average Blood Centre Issuable Stock Index (ISI) of blood groups A, B & O



The NBS stock level showed seasonal fluctuations and variations between blood groups. The stock level was maintained at a higher level than 2001-02 because of the uncertain international situation and the requirement to respond to local and national critical incidents. No red cell stock shortages were declared.

BSMS Hospitals Red Cell Issuable Stock Index

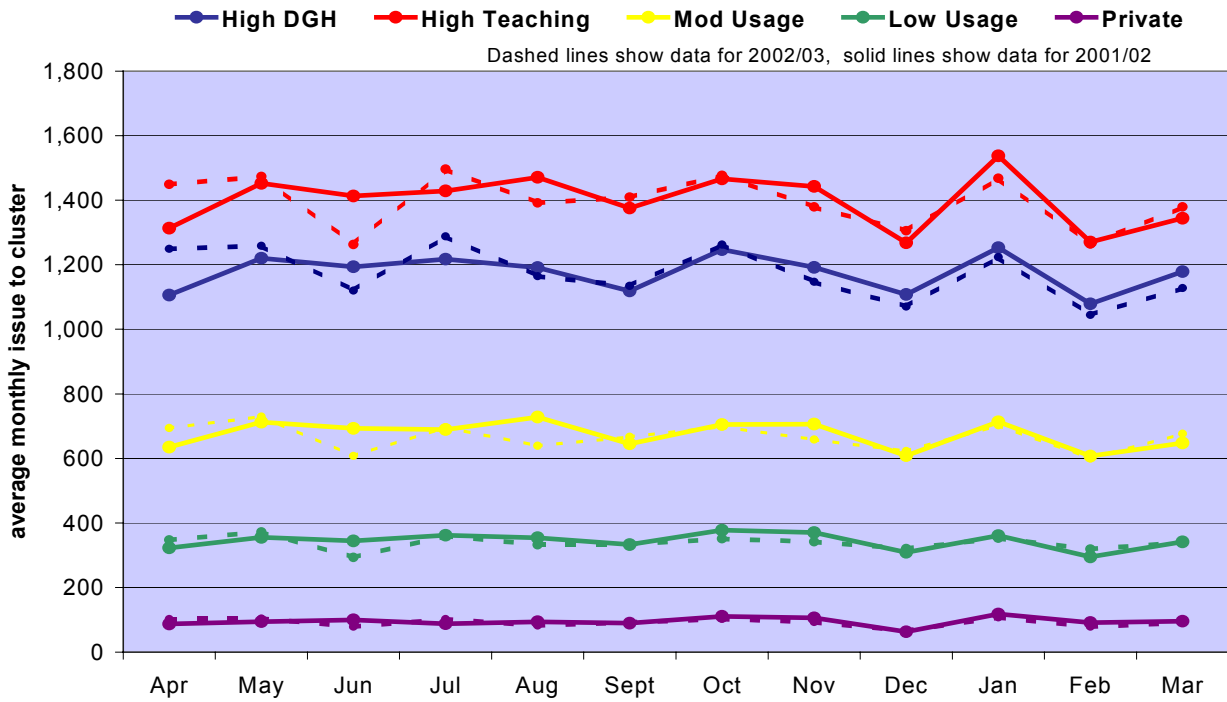
Average hospital monthly Issuable Stock Index of blood groups A, B, & O.



Hospital stock levels remained stable and showed little year on year change. There was some variation between the average ISI for each hospital cluster.

Red Cell Issues

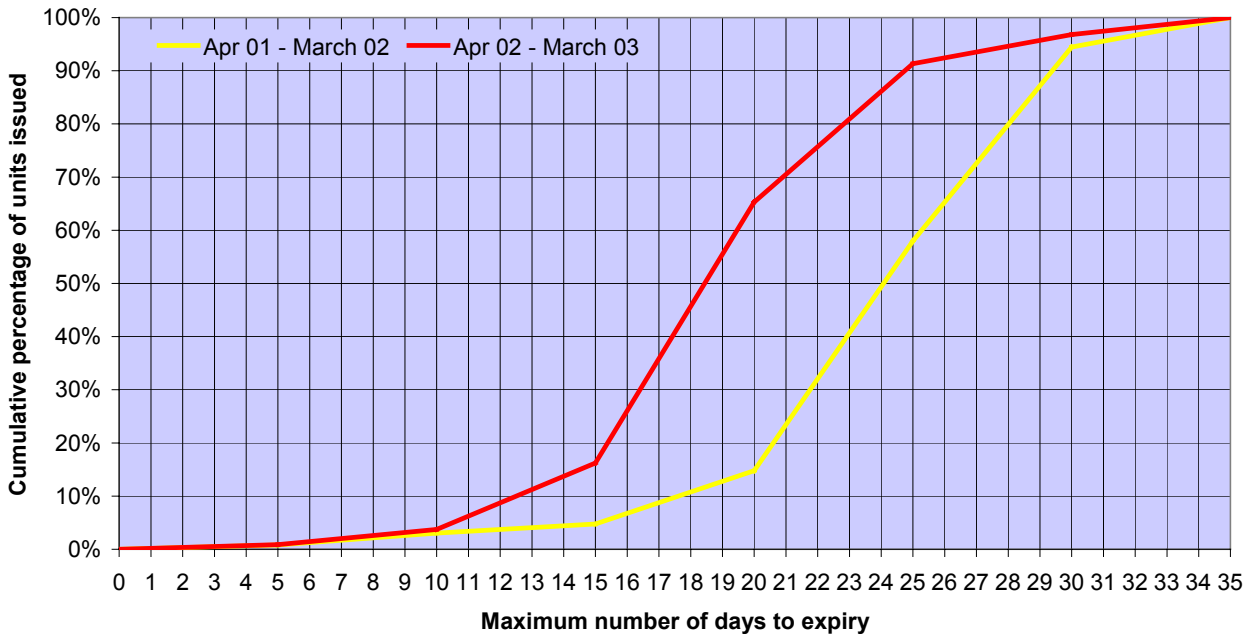
Average monthly NBS Issues to each BSMS hospital cluster



The NBS issued 2,177,568 adult red cells between April 2002 and March 2003. Adult red cell issues were 0.9% below 2001-02. There was month to month variation in red cell issues and the variation was similar to 2001-02. The greatest month to month variation occurred between May and July 2002.

Age at Issue

Average age distribution of group A Pos red cell units April 2002 – March 2003 with comparison to April 2001 – March 2002



The high NBS stock level and the lower than expected red cell issues contributed to an increase in the age of blood at issue. This was demonstrated most clearly in group A Pos where red cells issued were six days older than in 2001-02. Conversely for group O Neg the age of blood at issue during 2002-03 was the same as 2001-02, reflecting the similar stock levels and fluctuations in O Neg ISI during 2001-02 and 2002-03.

Wastage

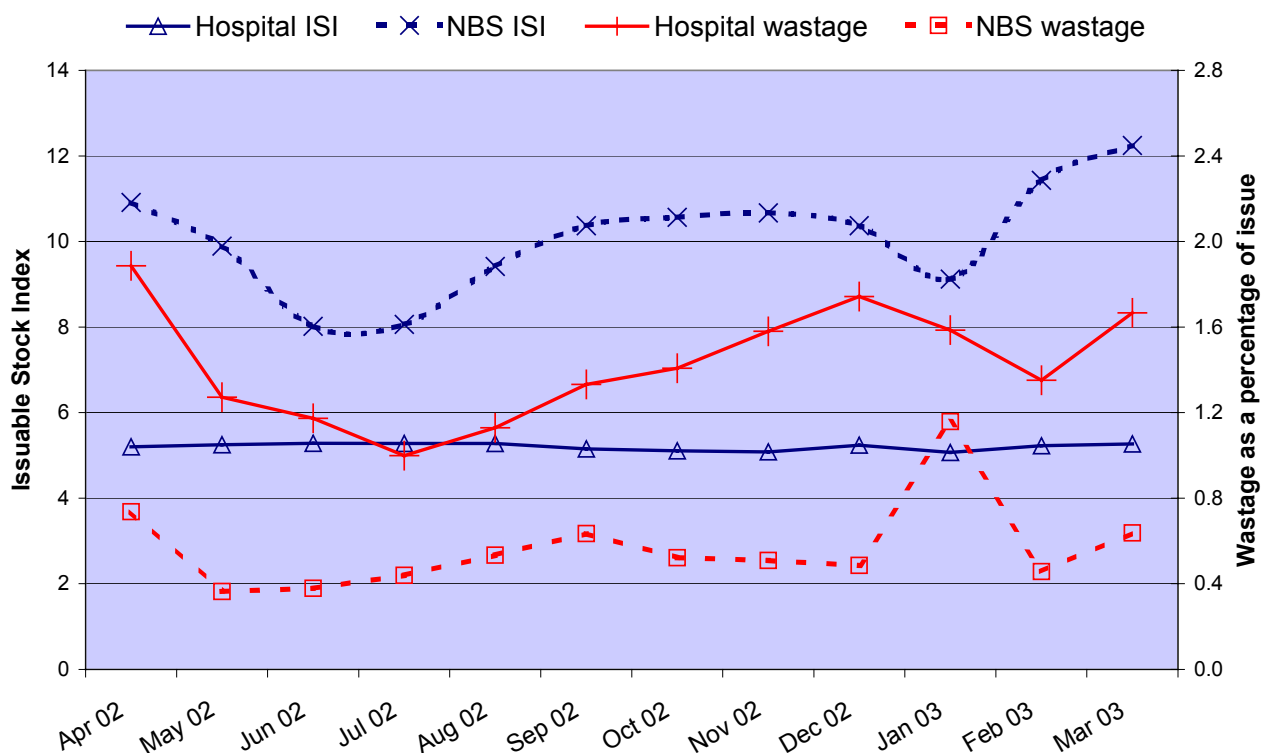
Table 1. Total NBS and BSMS hospital wastage

	A, B & O units	Group AB	Total
BSMS Hospitals	25,132	5,799	30,931
NBS	5,689	6,771	12,460
Grand total	30,931	12,545	43,391

Average NBS A, B & O wastage as a percentage of issue fell from 0.30% in 2001-02 to 0.29% in 2002-03. The NBS wastage as a percentage of issue for all groups of 0.6% is at a comparable level with a short shelf life product such as milk where in one supermarket group the wastage as a percentage of sales is 0.5%. Participant hospital A, B & O wastage rose by 1.1% to 2.8%. There was wide variation in total hospital wastage between hospitals. Time expiry wastage within the NBS and hospitals increased during 2002-03 over 2001-02 by 71% and 77% respectively.

The Blood Supply System Stock Management

Total stock (ISI) held in the NBS and all BSMS hospitals and the total wastage as a percentage of issue for the NBS and all BSMS hospitals



There is a relationship between the NBS stock level and hospital and NBS wastage. Higher NBS stock levels lead to hospitals receiving older blood with a reduced shelf life. When hospitals receive older blood they do not have sufficient days to circulate the units through the reserved/unreserved stock loop enough times for them to be used and the units are more likely to time expire. Lowest wastage occurred in July 2002 and corresponded to the lowest NBS stock level in June 2002. Initial investigations indicate an exponential relationship between stock level and time expiry wastage thus higher NBS stock levels are linked to proportionately more blood supply system time expiry wastage

The full report is available on www.bloodstocks.co.uk.

Further information on the Scheme can be obtained from www.bloodstocks.co.uk or from the BSMS office; PO Box 33910, London NW9 5YH