

# The Blood Stocks Management Scheme

## April 2001 - March 2002

- Background
- Participation
- Red cell Issues
- Issuable Stock Index
- Wastage
- Key findings
- Challenges
- The future

*“Alternatively, we could reduce the wastage by getting an army of clerks to phone around the hospitals checking on how much blood has been crossmatched and temporarily allocated, and precisely what the stock levels were at any one time; that would give us better control.....”*

Case Study: Blood N.D.C Slack, In: Operations Management in Service Industries and the Public Sector, Ed. C Voss, C Armistead, B Johnston, B Morris (1979)

# Why Implement a Blood Stocks Management Scheme?

- The gap between supply and demand
- To ensure proper monitoring of a freely given resource
- To improve the interface between supply and demand
- To drive partnership between hospitals and the NBS

# Scheme Objectives at Implementation

- Build partnership between hospitals and the NBS
- Understand blood stock management
- Optimise hospital and NBS centre stock utilisation
- Reduce wastage
- Suggest good practice
- Introduce benchmarks

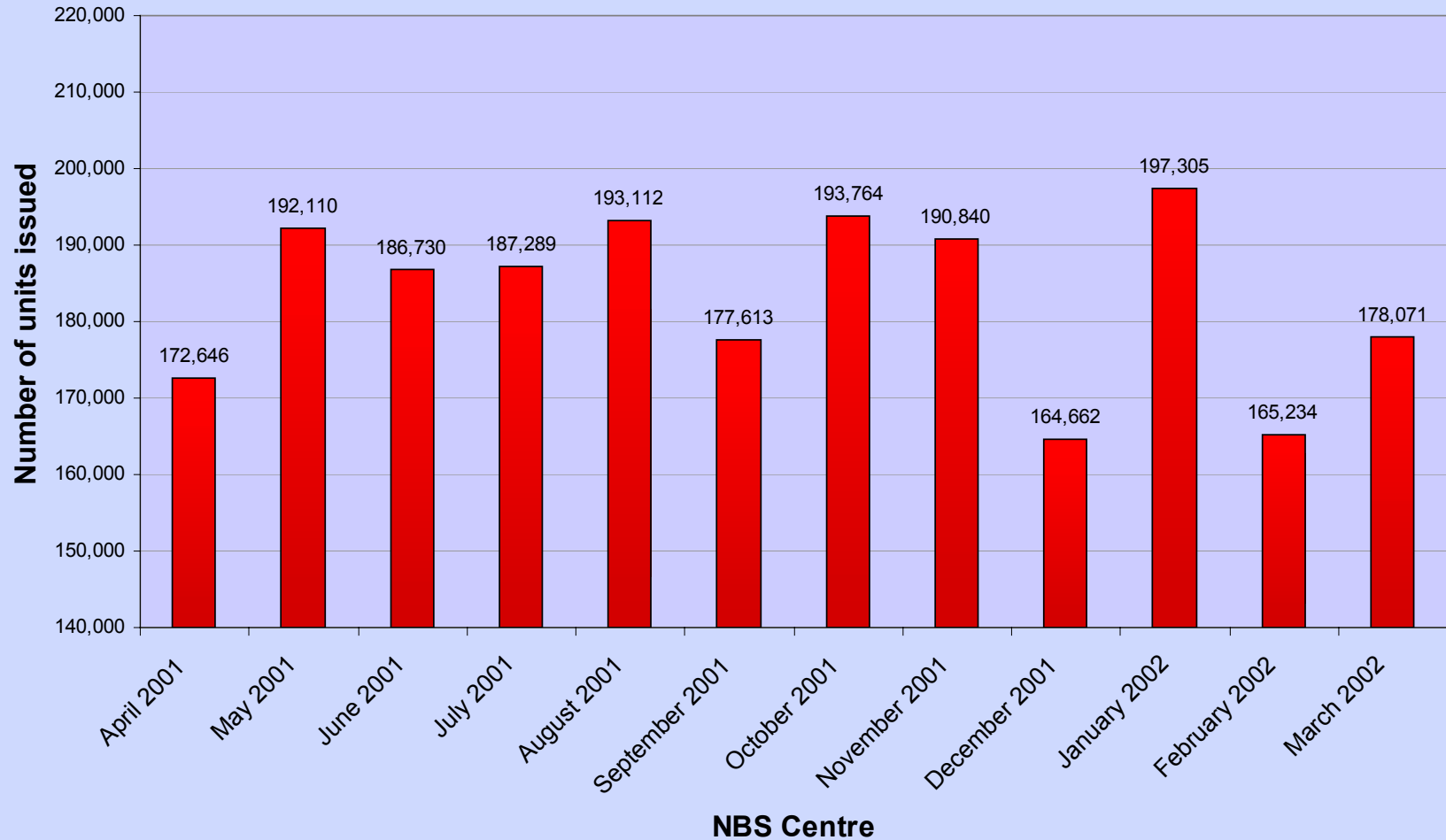
# Participation in Scheme during first year

<b>Date</b>	<b>2<sup>nd</sup> April 2001</b>	<b>31<sup>st</sup> March 2002</b>
No. of BSMS registered hospitals	145	179
% of hospitals (310 supplied by the NBS)	47	58
% of NBS issues	60	66

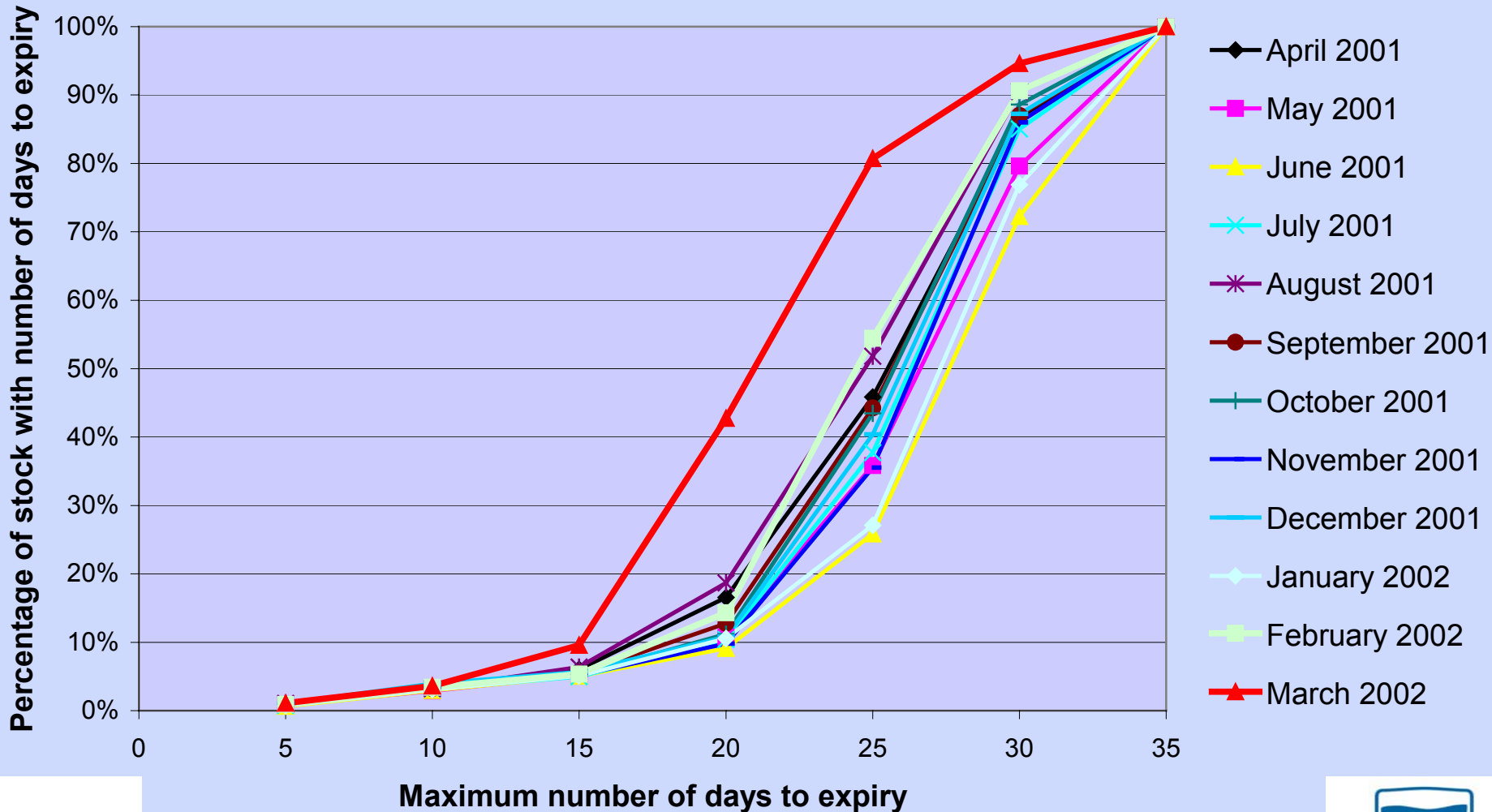
# Participation by Hospital Category

<b>Hospital Category</b>	<b>% of hospitals</b>	<b>% of NBS issues</b>
Teaching Hospitals	79	23
District General Hospitals	63	43
Private Hospitals	40	0.9

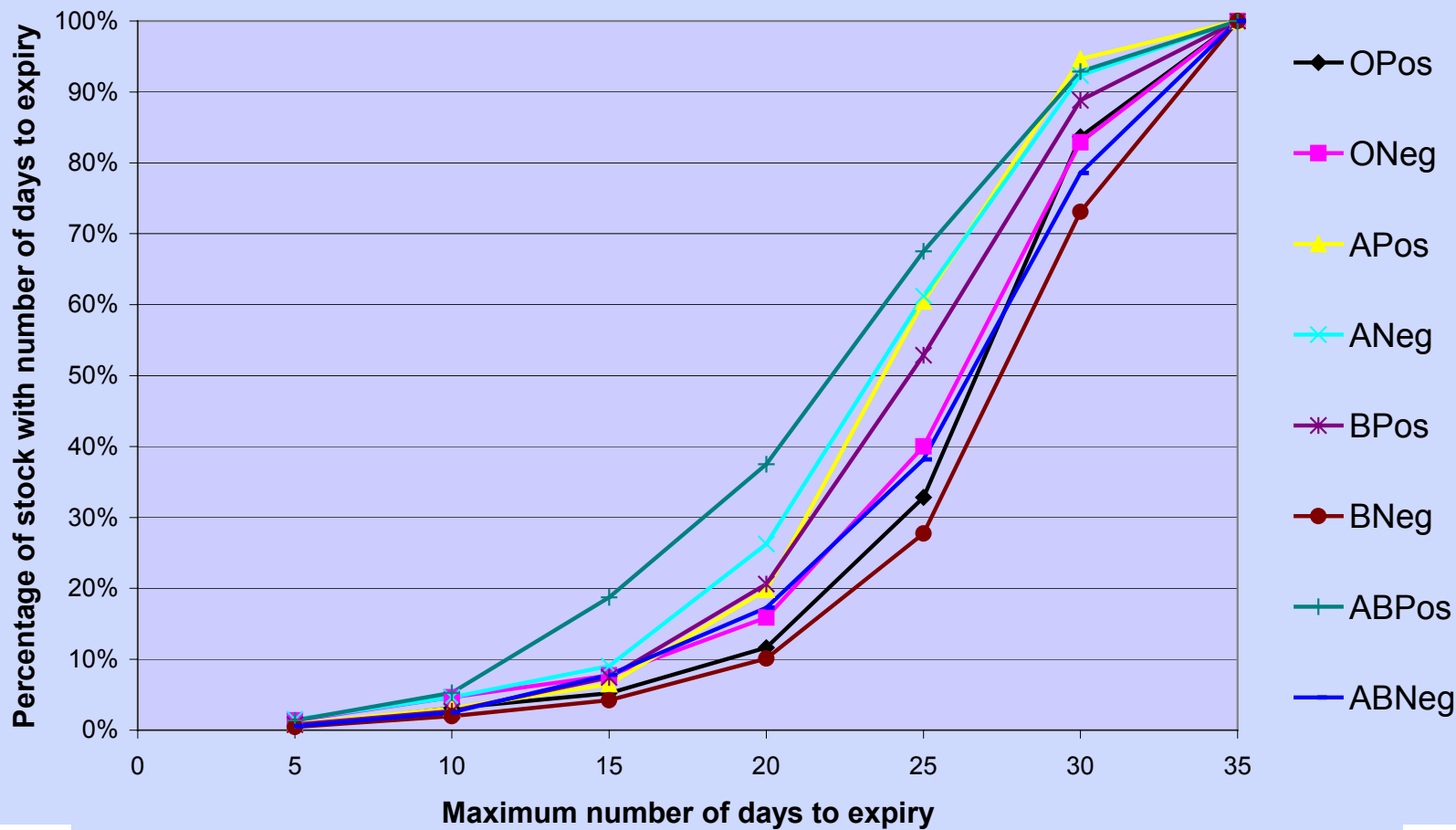
# Issues from NBS Centres



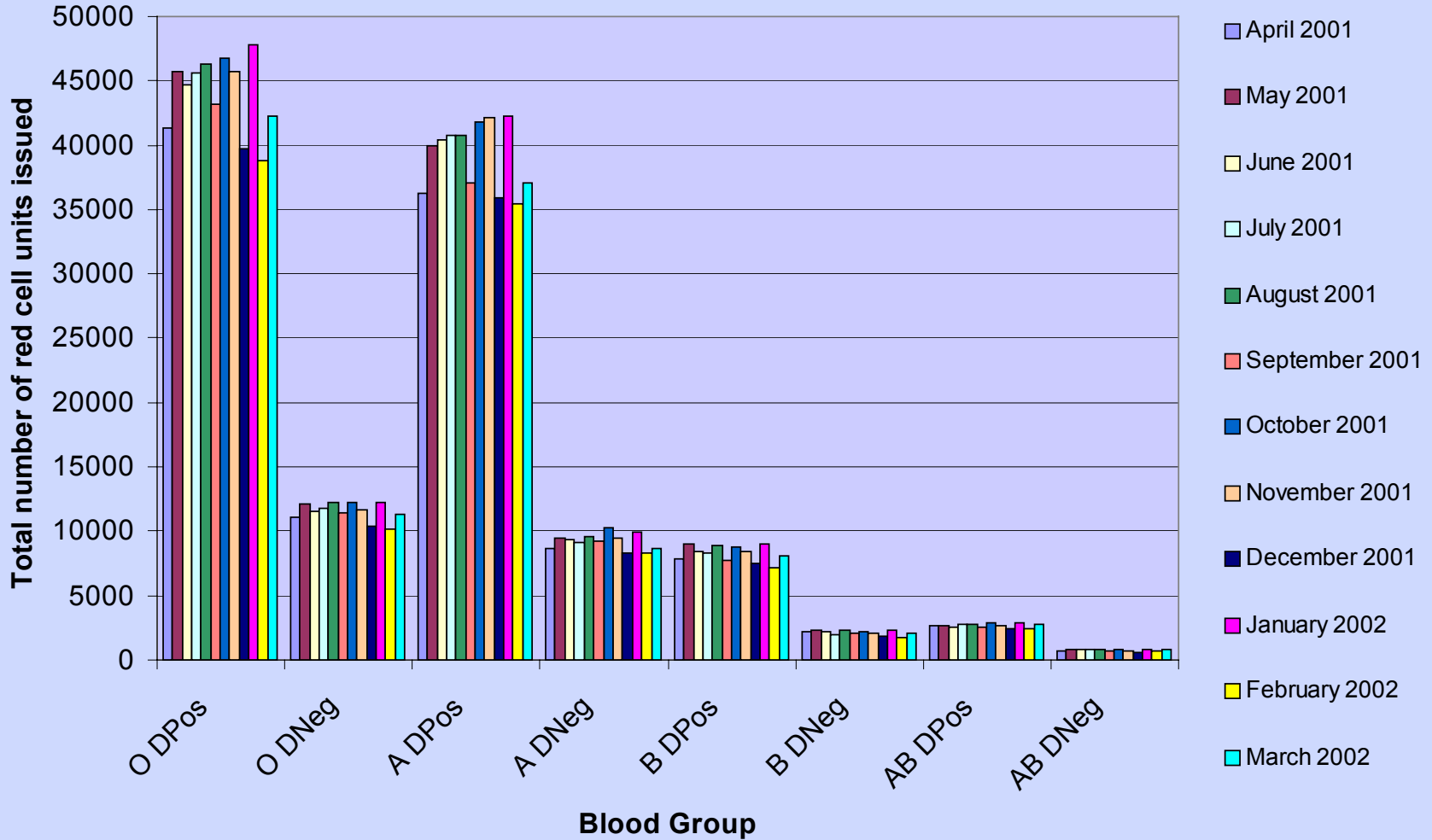
# Cumulative % age distribution of all red cell units by month



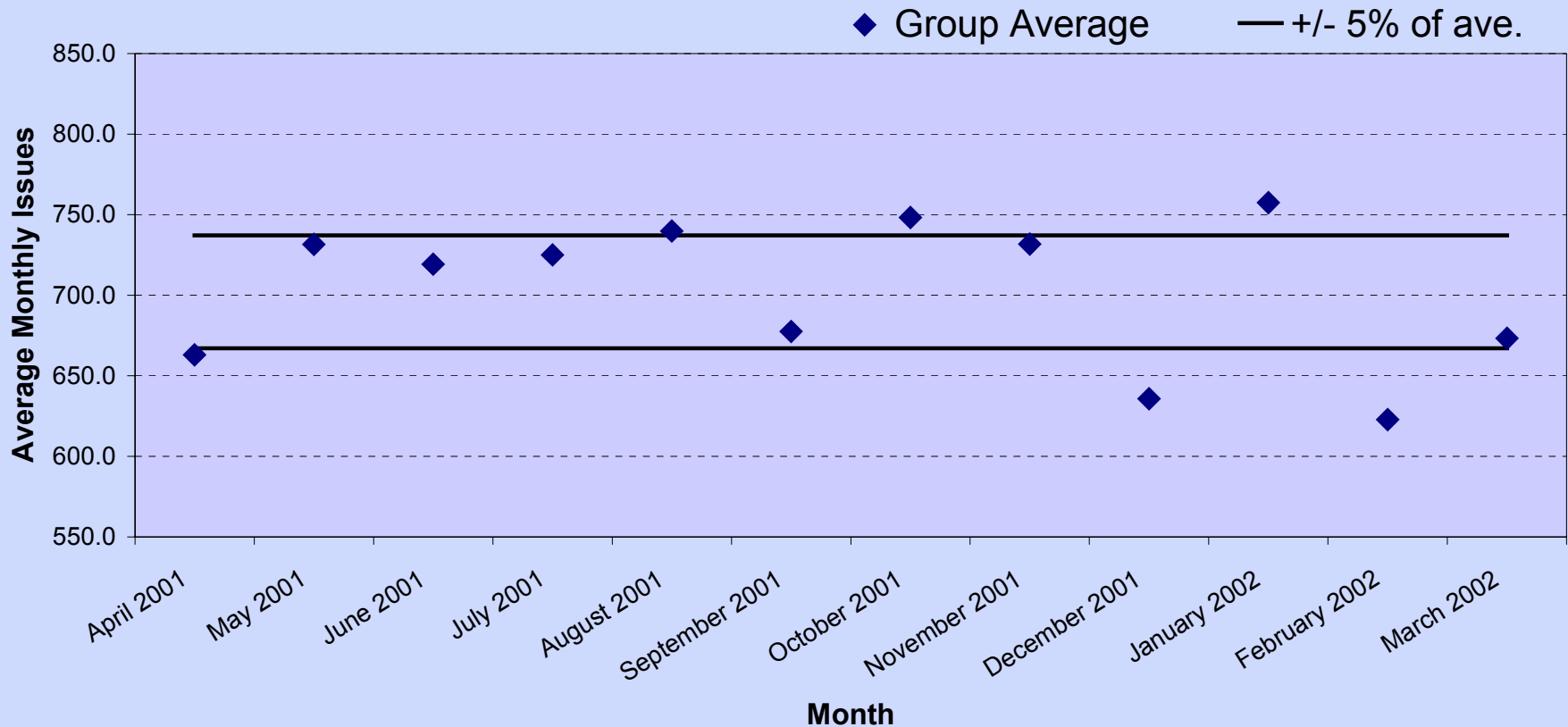
# Cumulative % Age Distribution of all Red Cell Units by Blood Group



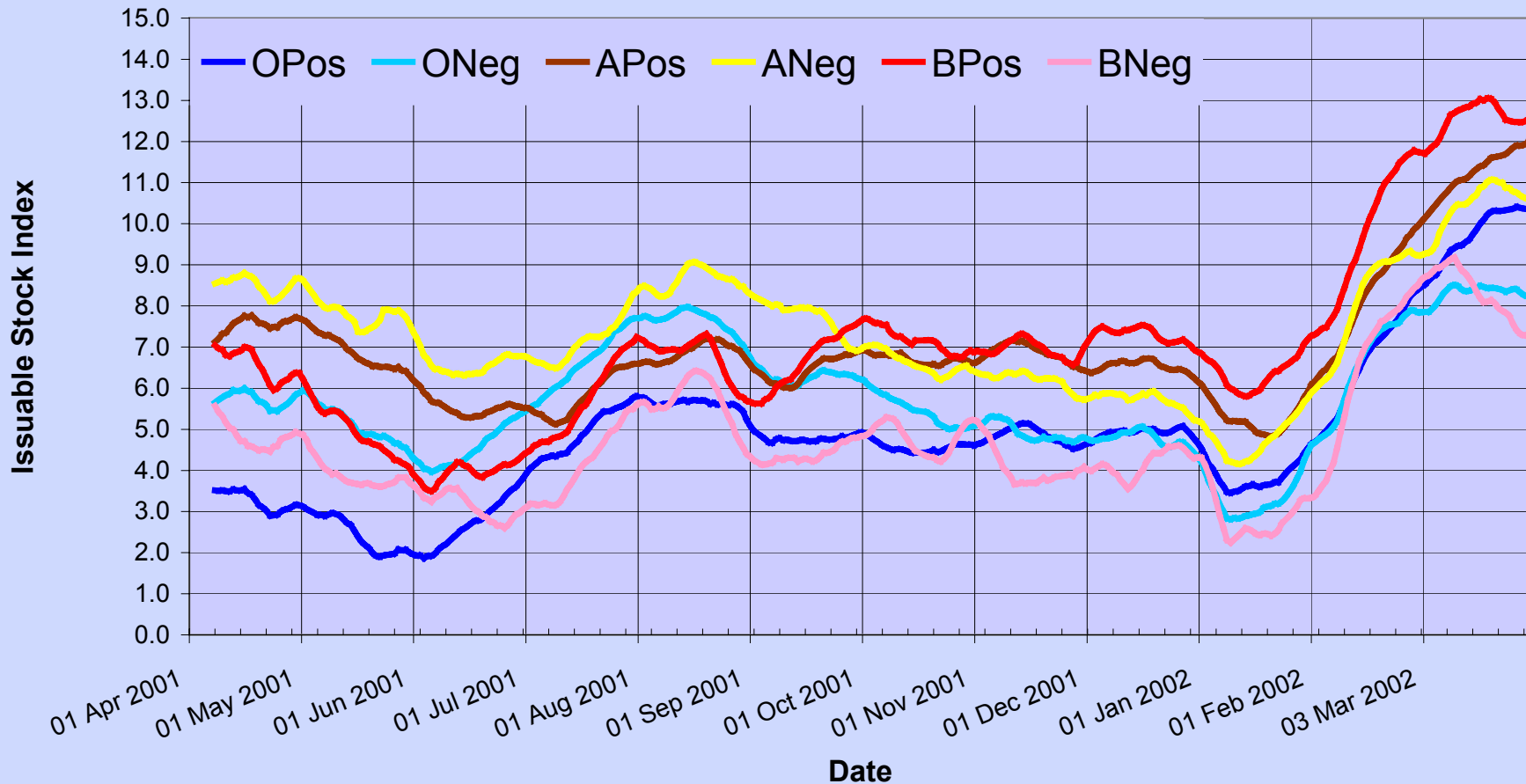
# Hospital Red Cell Receipts



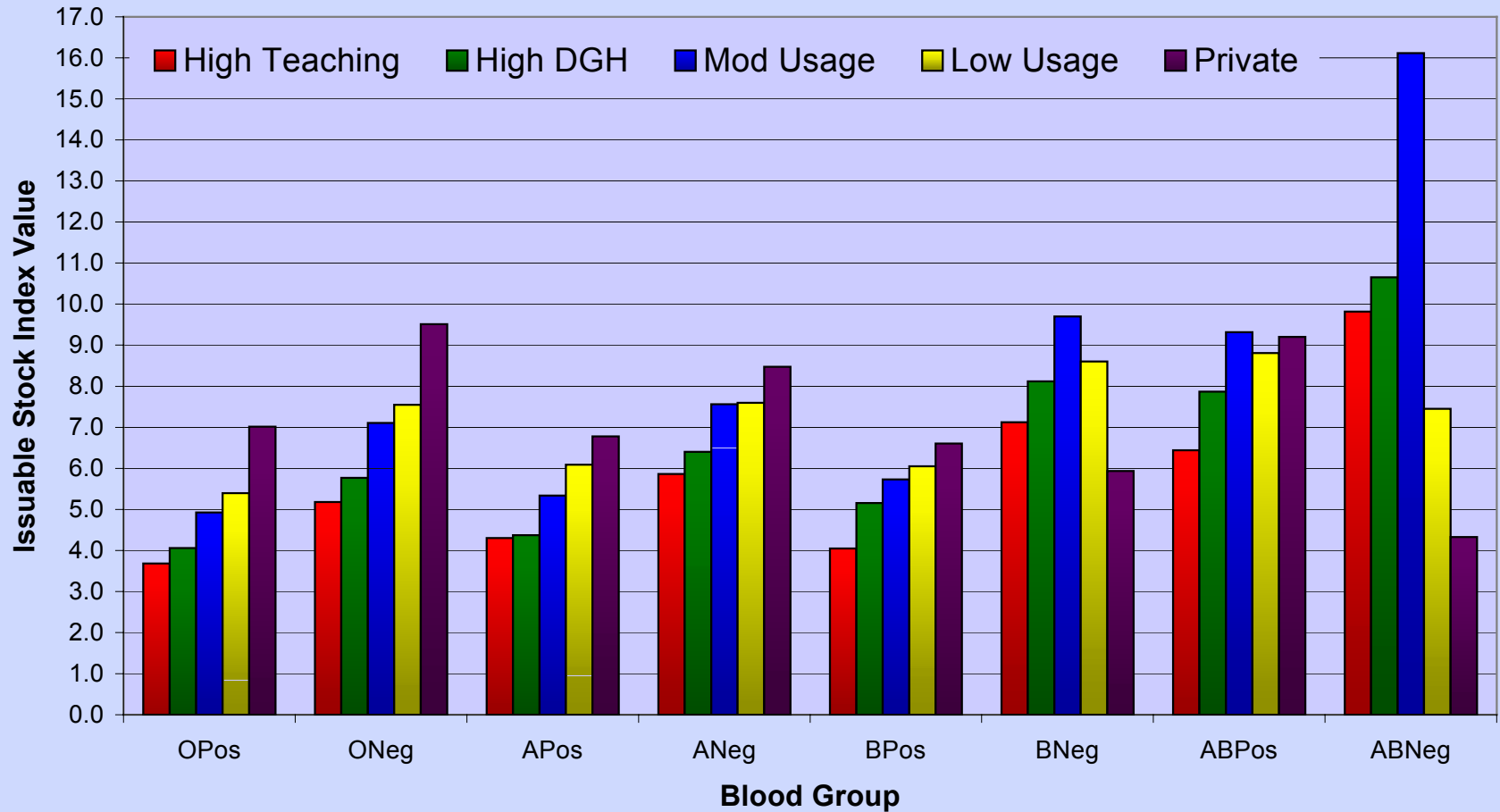
# Average Monthly Issues - All Blood Groups



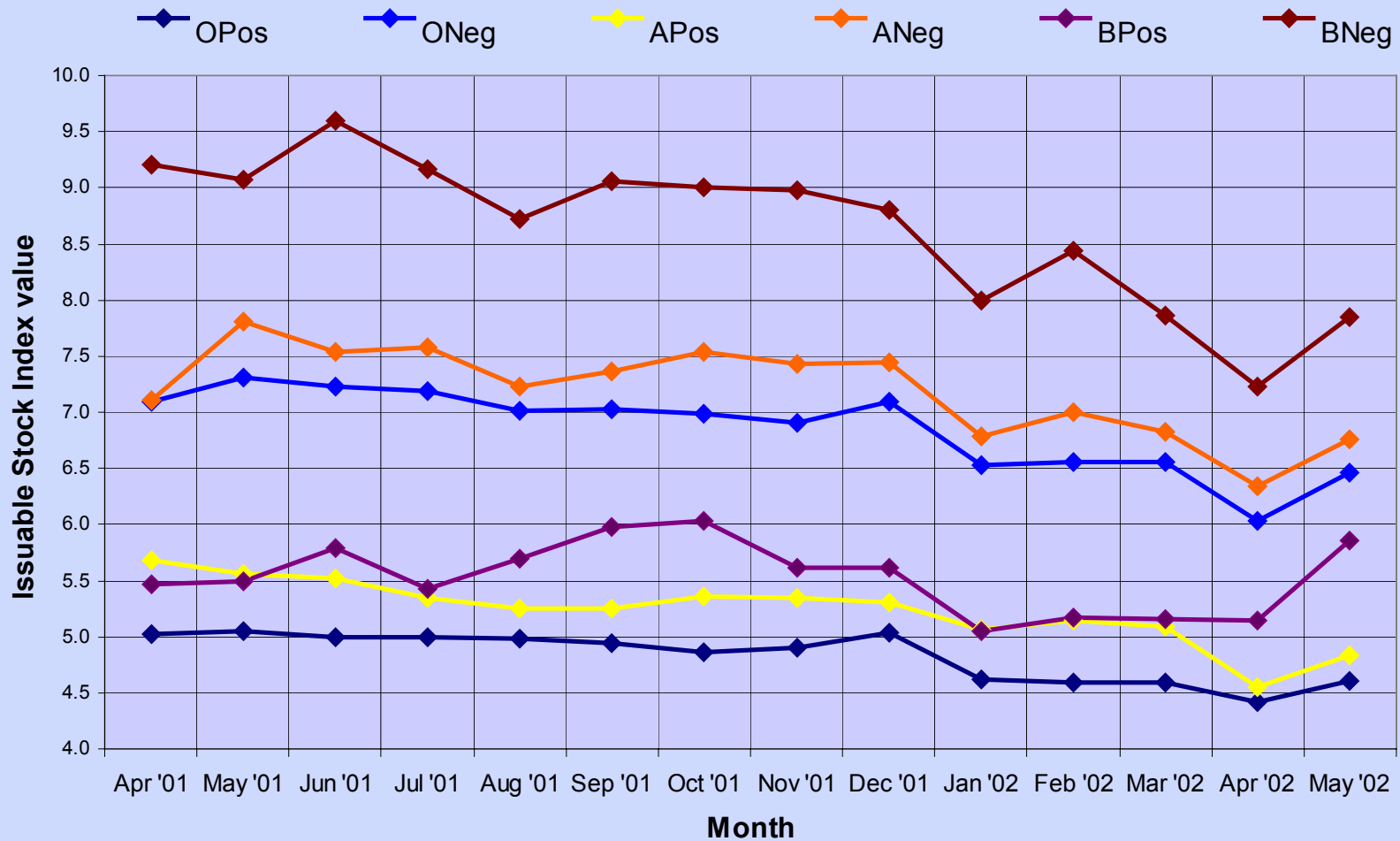
# Variation in NBS Issuable Stock Index

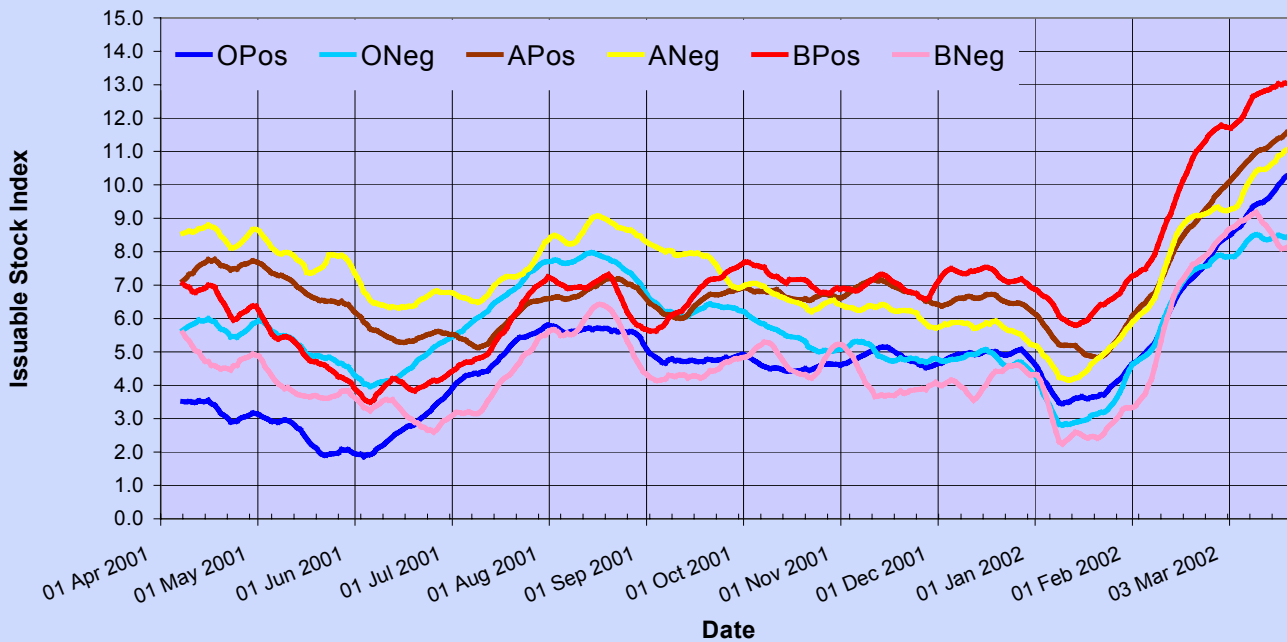
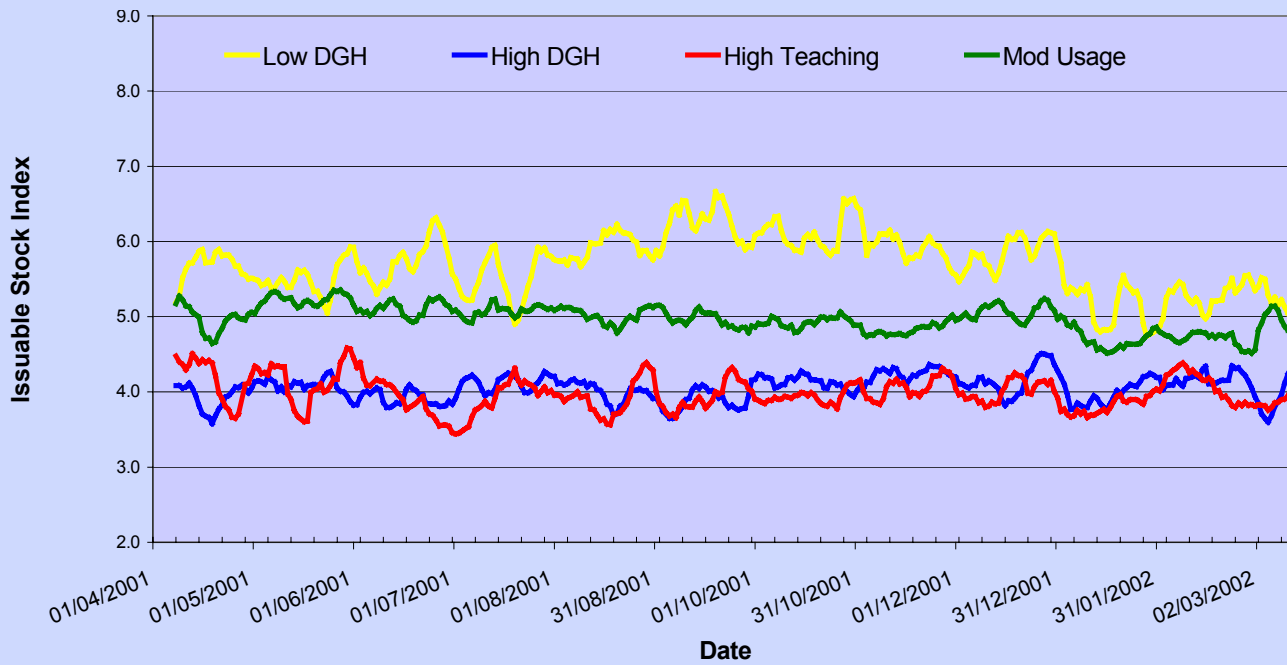


# Average ISI for Each Blood Group for Each Hospital Cluster

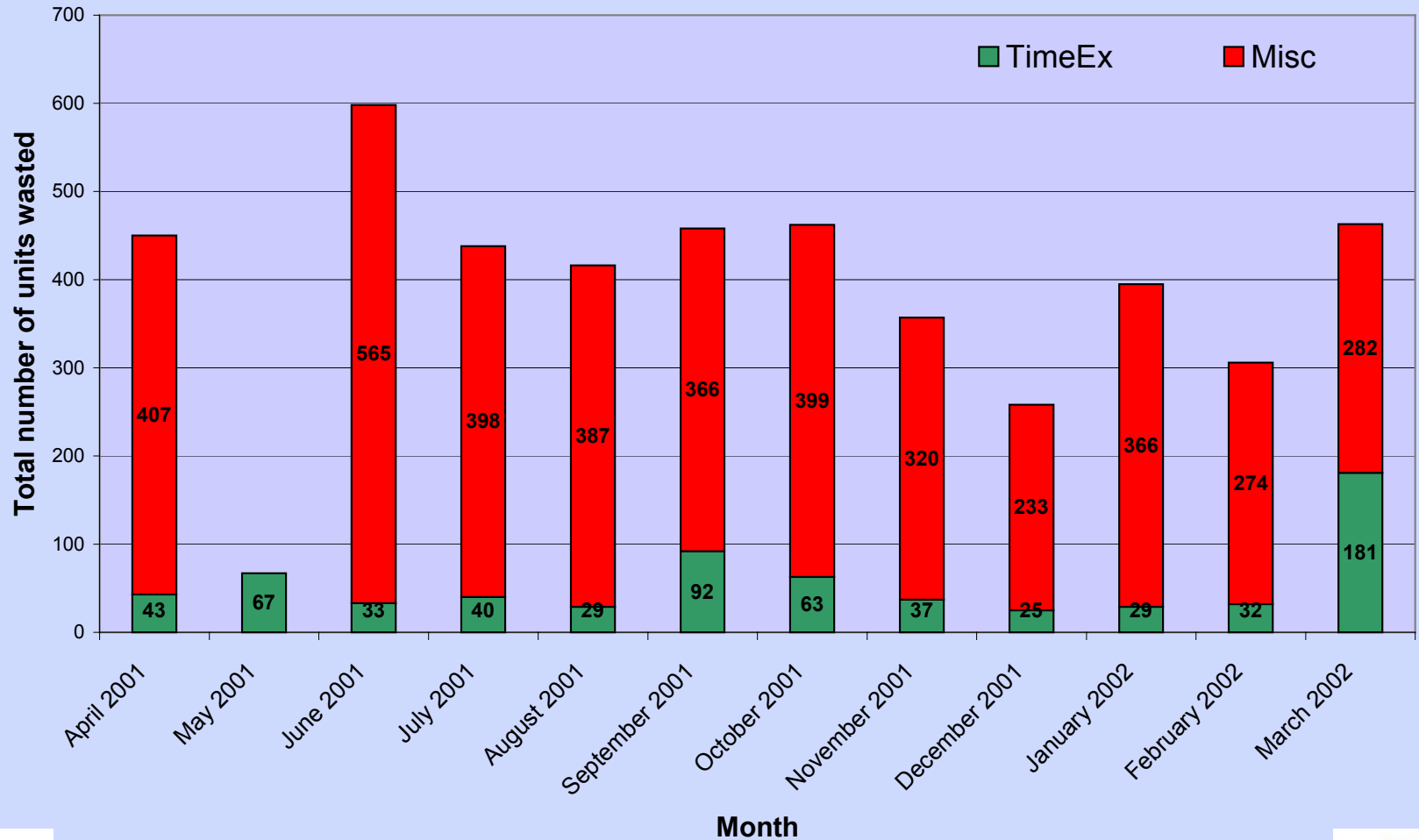


# Variation in Hospital Issuable Stock Index

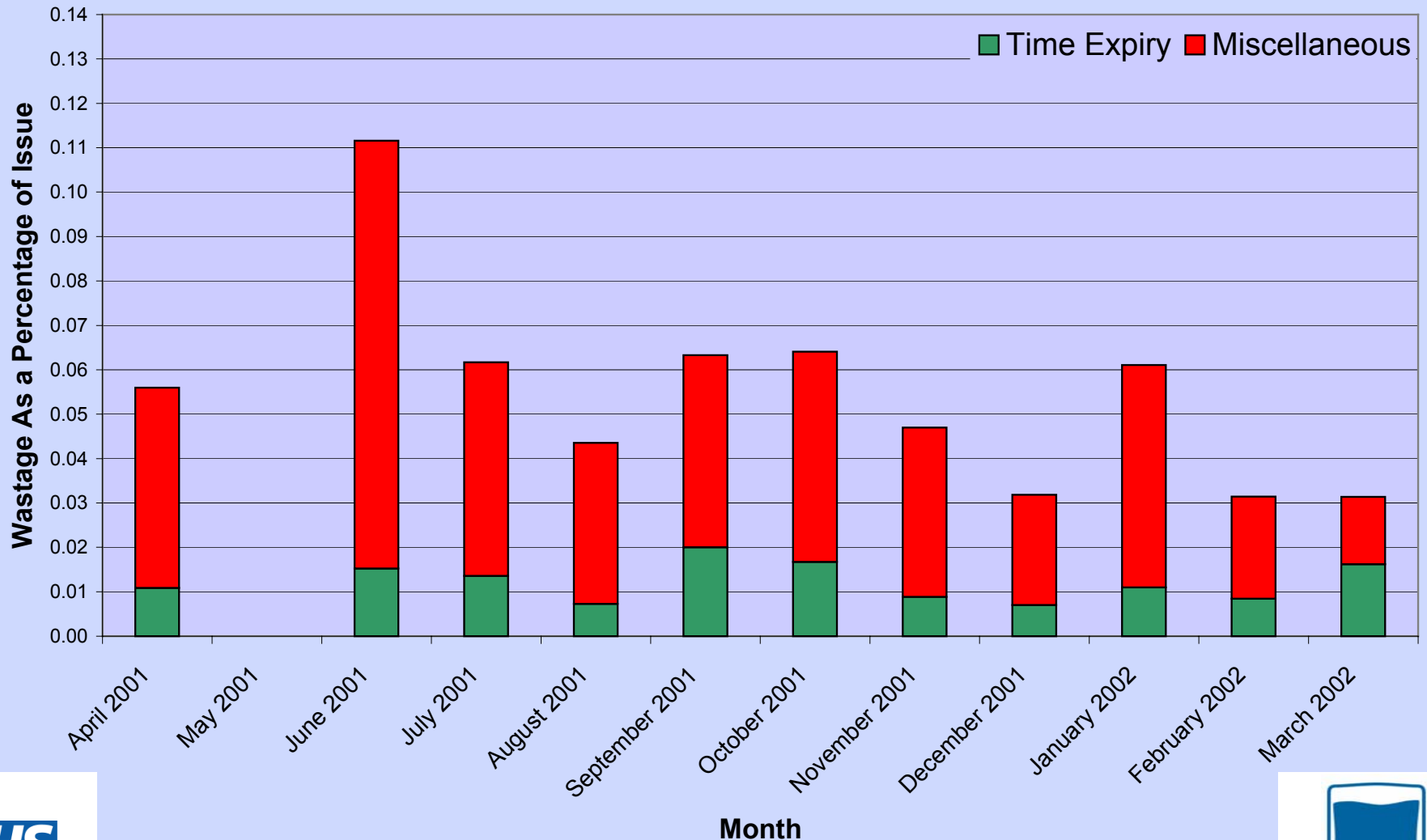




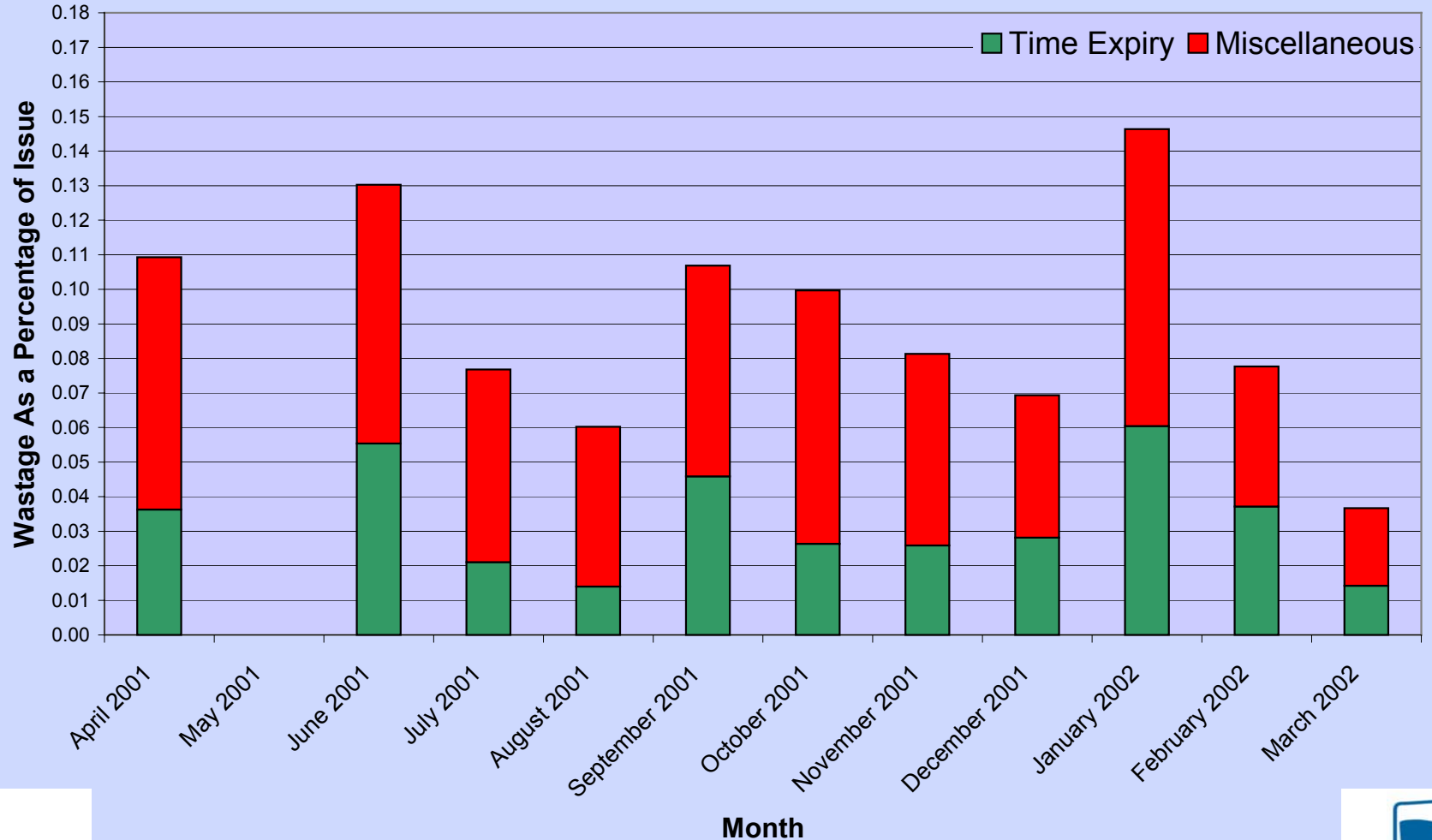
# Total Numbers of A,B and O Units Wasted by All NBS Centres by Month



# NBS Average Wastage As a Percentage of Issue - A, B & O Red Cell Units



# NBS Average Wastage As a Percentage of Issue - O DNeg Red Cell Units



# Total NBS Wastage as a % of Issues

Month	O DNeg	A. B & O units	AB units
April 2001	0.09	0.04	0.35
May 2001	0.44	0.41	0.84
June 2001	0.08	0.08	0.55
July 2001	0.05	0.04	0.23
August 2001	0.05	0.03	0.16
September 2001	0.08	0.04	0.33
October 2001	0.08	0.04	0.18
November 2001	0.07	0.04	0.16
December 2001	0.06	0.02	0.12
January 2002	0.11	0.05	0.26
February 2002	0.04	0.02	0.29
March 2002	0.03	0.02	0.50
Average (excluding May)	0.07	0.04	0.28

Total NBS Wastage - 8285 units

# Total Number of Units of each Blood Group Wasted by each Hospital Cluster

Hospital Cluster	O DPos	O DNeg	A DPos	A DNeg	B DPos	B DNeg	AB DPos	AB DNeg
High Teaching	1,101	757	1,079	461	412	262	706	260
High DGH	582	600	701	466	429	156	701	247
Mod Usage	1,210	999	1,231	817	786	602	1,563	608
Low Usage	177	220	200	108	188	107	189	94
Private	145	190	197	155	84	35	42	8
<b>Total</b>	<b>3,215</b>	<b>2,766</b>	<b>3,408</b>	<b>2,007</b>	<b>1,899</b>	<b>1,162</b>	<b>3,201</b>	<b>1,217</b>

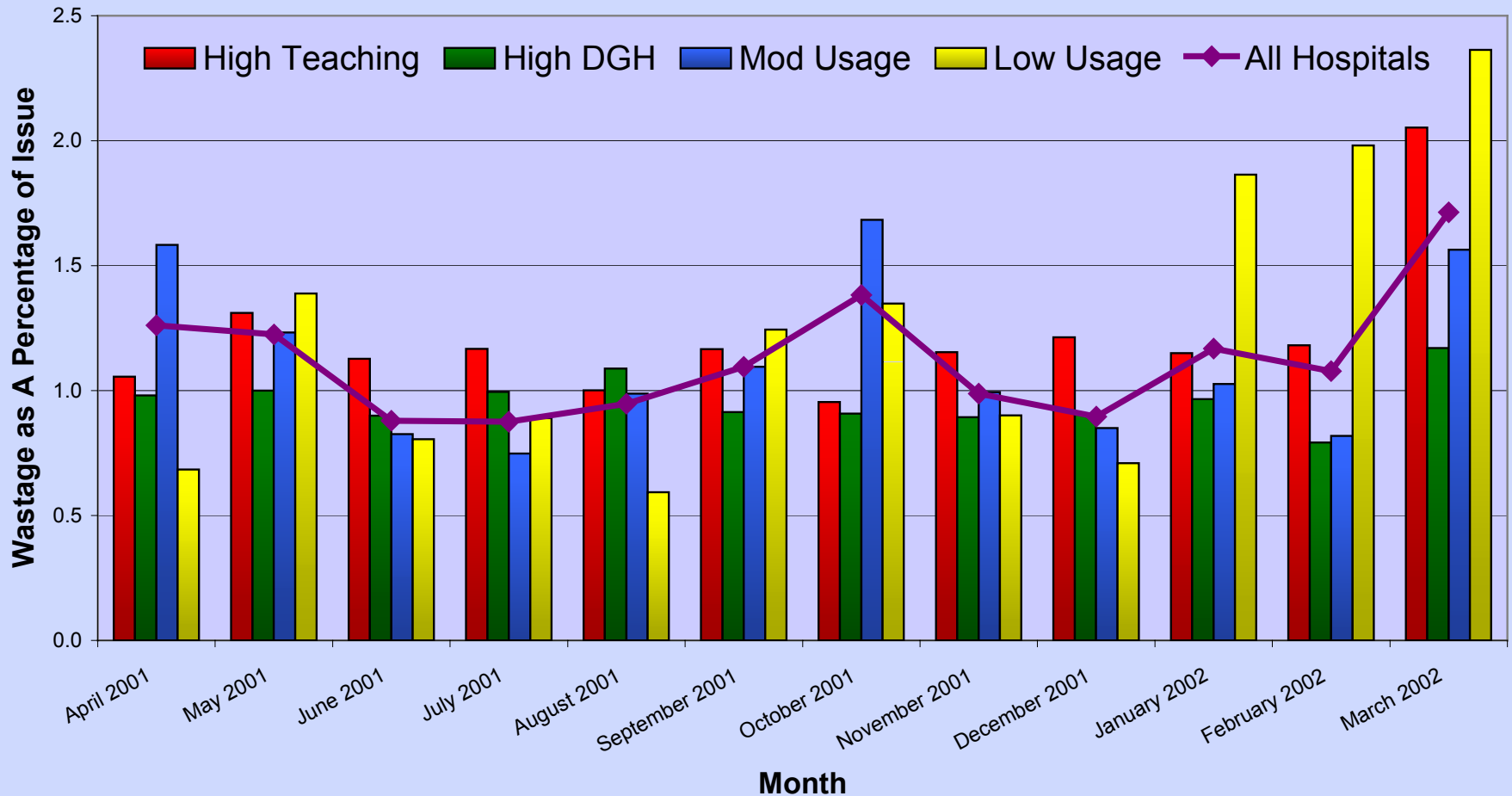
*“Of course if we computerised the whole system, then that could be a very satisfactory alternative. In the USA computerisation happened very quickly. Because blood is paid for over there, there is a legal duty to account for it, computerisation makes that easy....here it is cheaper to pour it down the drain.”*

ND Slack, Case Study: Blood

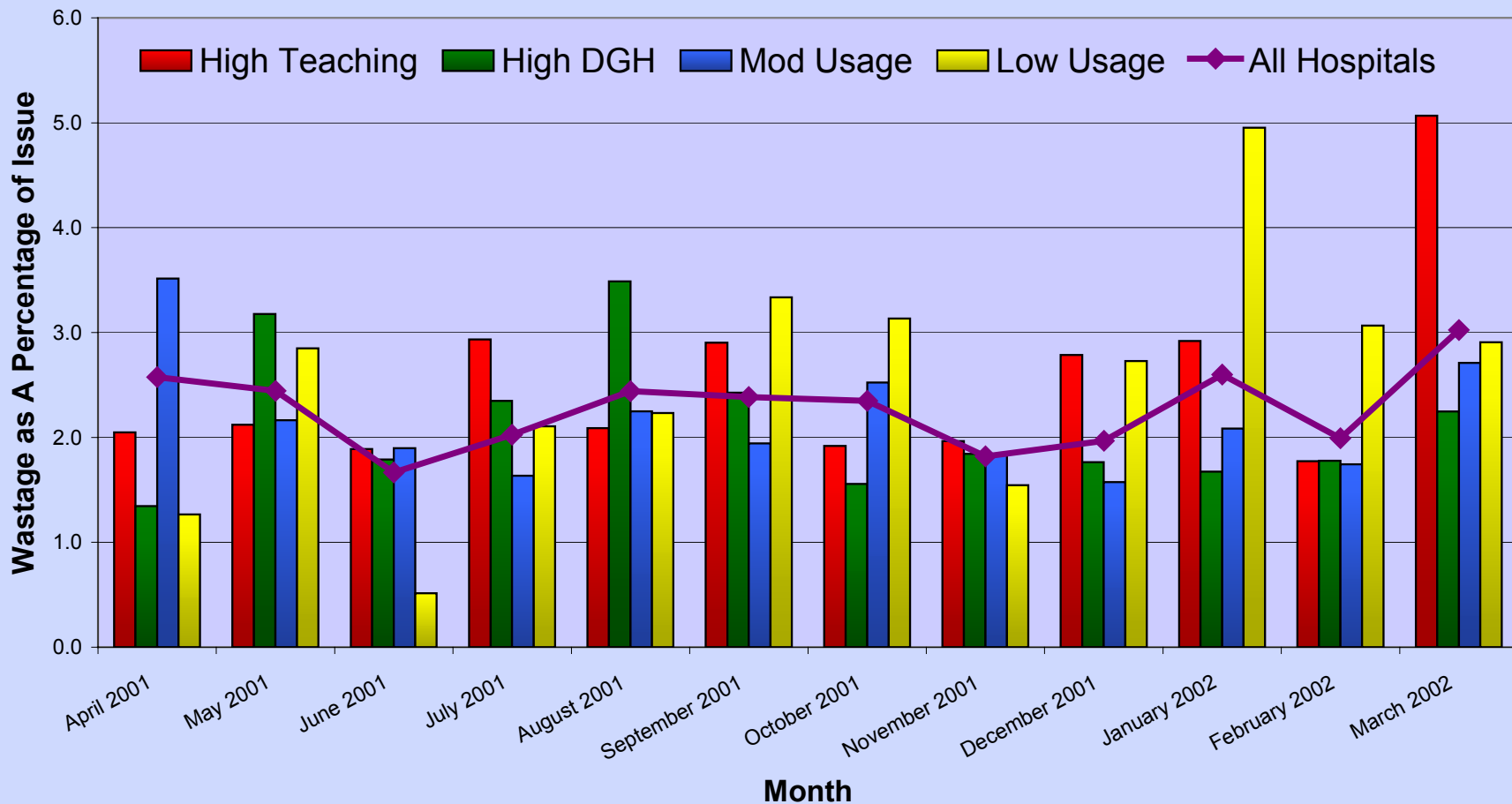
# Total Hospital A,B &O Wastage and Cost

Hospital Cluster	Blood Groups A, B & O	Cost (£84.56 per unit)
High Teaching	4,072	£344,328.32
High DGH	2,934	£248,099.04
Mod Usage	5,645	£477,341.20
Low Usage	1,000	£84,560.00
Private	806	£68,155.36
<b>Total</b>	<b>14,457</b>	<b>£1,222,483.92</b>

# Average A,B & O Wastage As a % of Issue for Each Hospital Cluster



# Average O D Neg Wastage As a % of Issue for Each Hospital Cluster



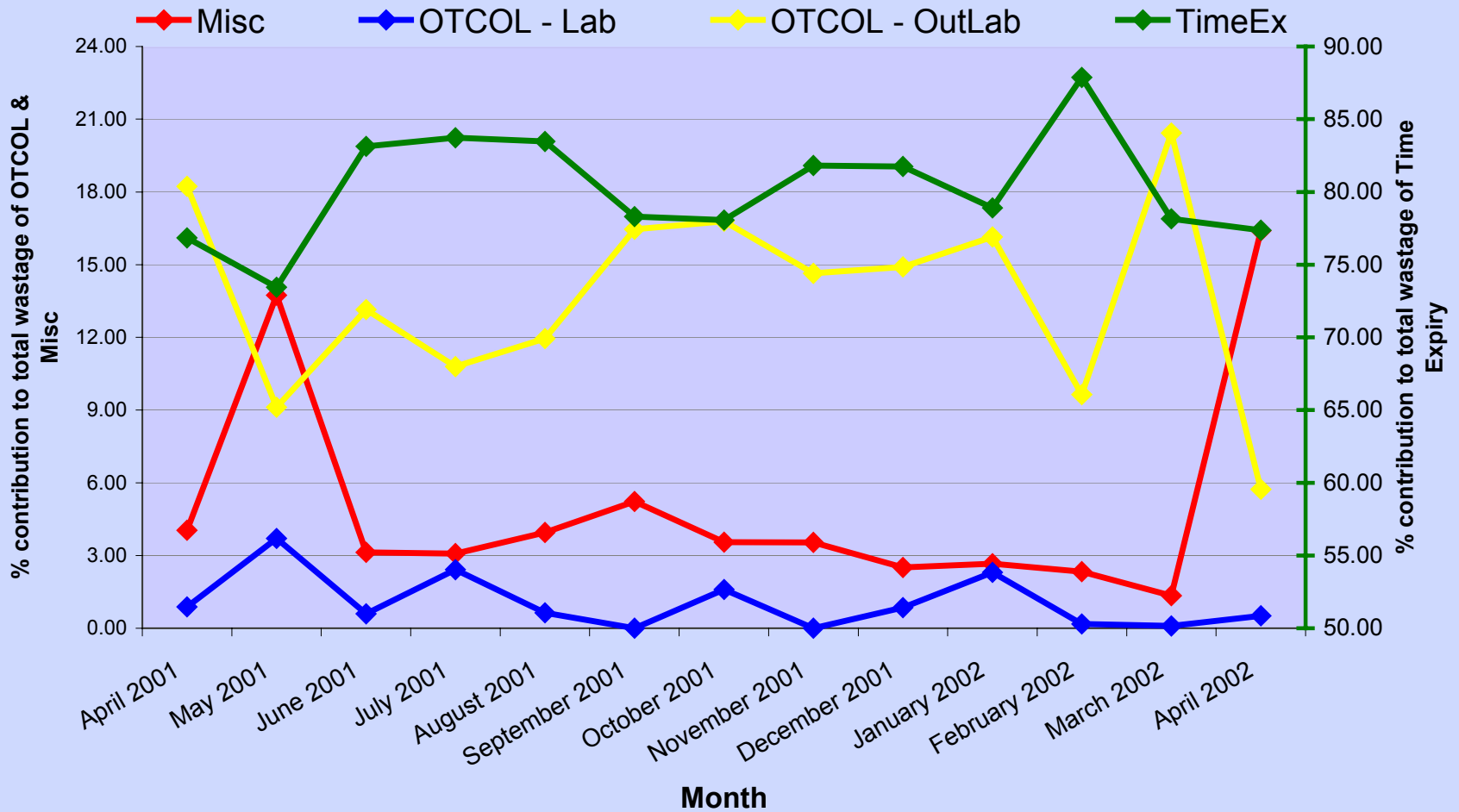
# Average Wastage as a % of Issue of O DNeg and A, B & O for the Private Hospital Cluster



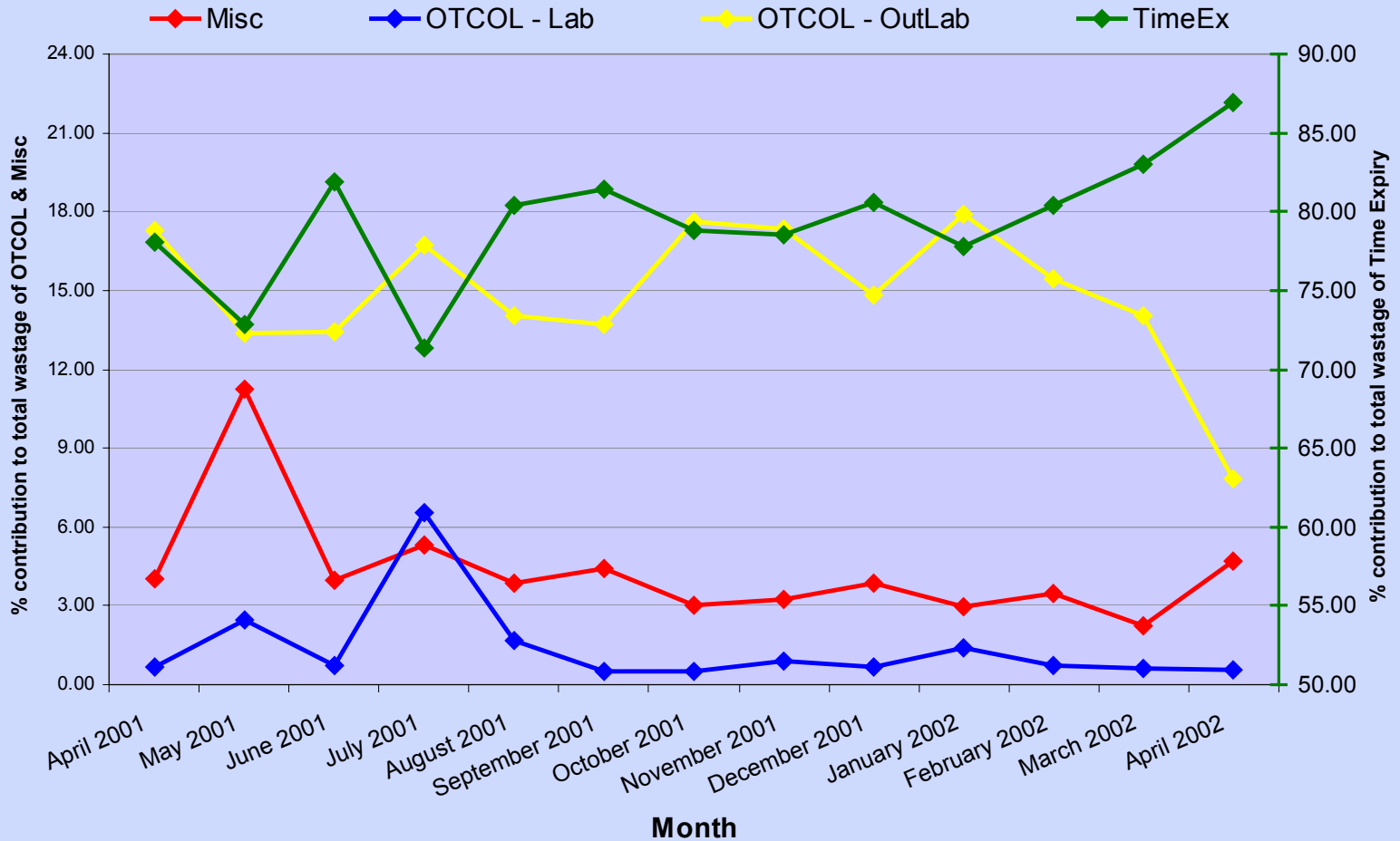
# Average Wastage As a % of Issue for Each Blood Group and Hospital Cluster

Hospital Cluster	O DPos	O DNeg	A DPos	A DNeg	B DPos	B DNeg	AB DPos	AB DNeg	A,B &O
High Teaching	0.8	2.6	1.0	2.0	2.0	6.1	8.9	10.6	1.2
High DGH	0.5	2.1	0.7	2.1	2.0	4.2	11.5	12.0	1.0
Mod Usage	0.6	2.1	0.7	2.2	3.1	8.5	13.8	15.5	1.1
Low Usage	0.6	2.6	0.8	2.2	4.8	7.8	11.3	9.8	1.3
Private	4.1	10.2	6.6	8.0	8.9	3.4	5.0	0.8	6.9
Average	1.0	3.1	1.4	2.8	3.6	6.9	11.5	11.9	1.7

# % Contribution to Wastage - O DNeg



# % Contribution to Wastage - A, B & O



# Key Findings

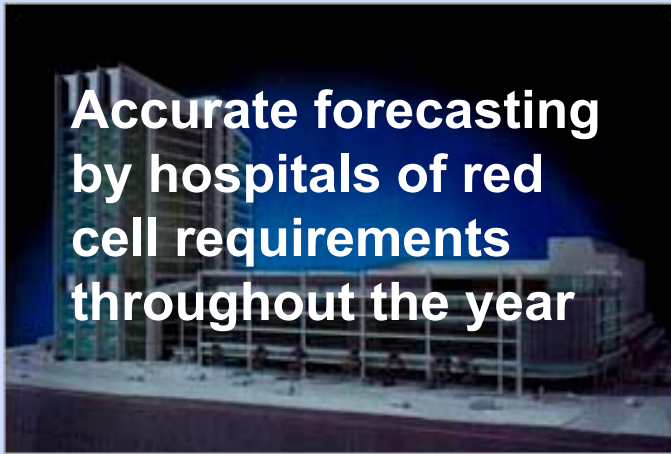
- Hospital red cell stock levels are relatively stable
- NBS red cell stock levels fluctuate reflecting a lack of integration between donation collection and hospital demand
- Average NBS wastage as a percentage of issue is 0.1%
- Average hospital wastage as a percentage of issue is 2.06%
- Higher NBS stock levels led to an increase in the issue of red cells with a shelf life of 20 days or less leading to increased wastage in hospitals and the NBS
- Relatively high levels of “out of temperature control outside the laboratory” wastage

**Red cell  
availability to  
satisfy the  
transfusion needs  
of patients**


**Optimum shelf  
life of red cells at  
transfusion**

**Effective stock  
management is  
essential to  
ensure:**

**Minimal wastage**



**Pro-active  
management  
of stock to  
reduce stock  
holding and  
wastage**



**Appropriate stock  
holding levels in  
hospitals and the NBS**

## Hospitals

- **Stock movement within hospital clusters e.g. large trusts of two or more hospitals and between private and NBS hospitals**
- **Effective monitoring and control of red cells in areas outside the laboratory**
- **Regular monitoring of blood bank fridge alarm systems**

## NBS

- **Consistent methodology and more sophisticated categorisation of wastage monitoring across all NBS Blood Centres**
- **Effective stock movement around the NBS centres**
- **Innovative practices for dealing with higher stock levels**

*“There are certain things you can’t control. e.g. we have no say in the attitude of the hospital doctors when they request blood to be cross-matched and reserved for a particular patient. Obviously it is very convenient for them to have blood on hand in case it is needed, and often it has helped to save lives, but the more blood is cross-matched the higher the wastage rates. Who is to say if the reserving of blood is always necessary? ....”*

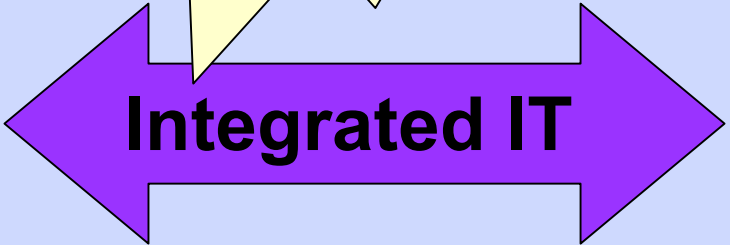


Appropriate use

Accurate demand forecasting

CHALLENGES

Hospital



Integrated IT

NBS

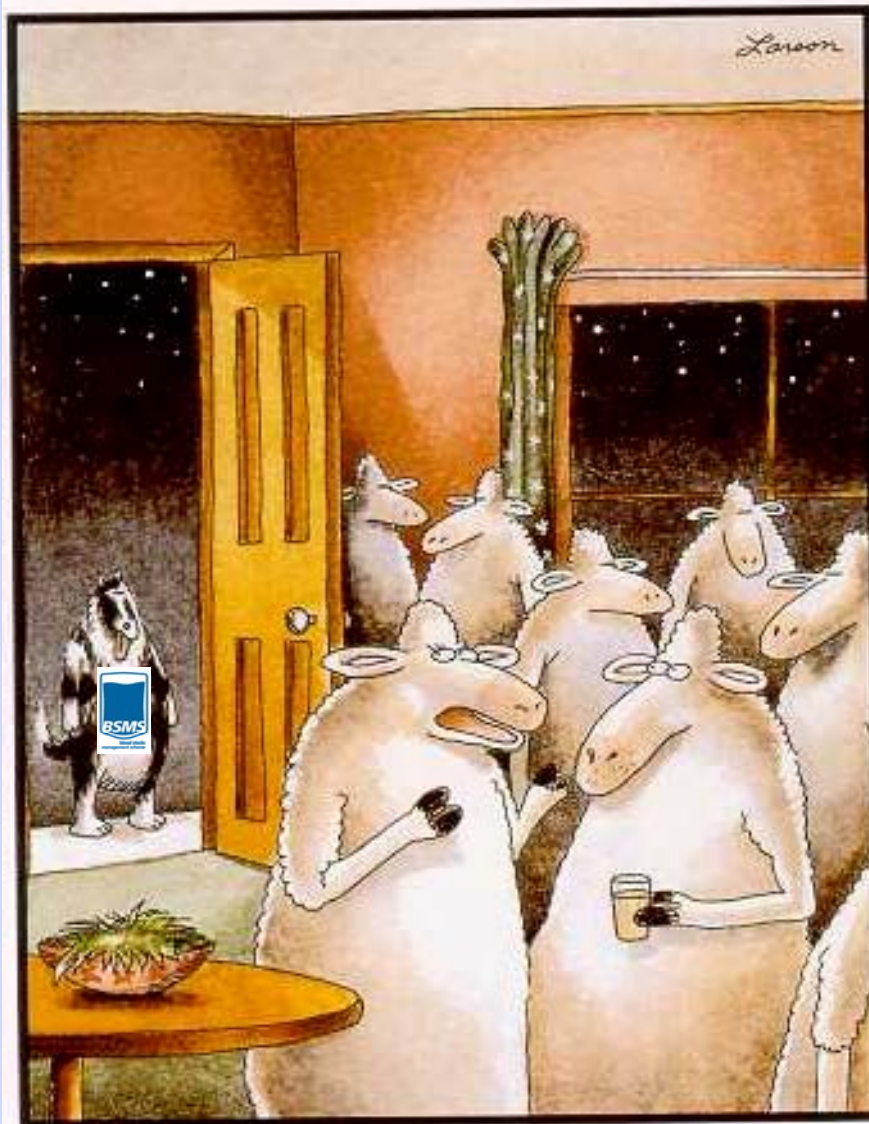


# The Future

- Increasing participation in the scheme
- Expansion to include data collection for platelets and other blood components
- Expansion to include data collection on blood usage (related to the appropriate use of blood initiative)
- Integration between Hospital and NBS IT systems to ease data exchange in the Scheme

# Scheme Objectives

- Build partnership between hospitals and the NBS ✓ ✓
- Understand blood stock management ✓
- Optimise hospital and NBS centre stock utilisation ✗
- Reduce wastage ✗
- Suggest good practice ✓
- Introduce benchmarks ✗



"Henry! Our party's total chaos! No one knows when to eat, where to stand, what to . . .  
Oh, thank God! Here comes a border collie!"