

NOTES FOR SCOTTISH HEALTH SERVICE
HAEMOPHILIA CENTRE/TRANSFUSION SERVICE
DIRECTORS' MEETING
JULY 1989

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These notes are produced to provide a background to discussion of the SNBTS planning for the future production of blood products for the management of patients with haemostatic or thrombotic disorders within the Scottish Health Service. All annual figures contained in the notes refer to years ending 31 March and do not include Northern Ireland. Wherever available, figures for 1989 have been included.

I am indebted to the SNBTS Directors who have provided much of the information included in these notes, and to the Scottish Haemophilia Directors whose regular returns of coagulation factor usage have allowed the inclusion of more up-to-date data than previously has been possible.

FACTOR VIII CONCENTRATES

FRESH PLASMA PROCUREMENT FOR FACTOR VIII

The total SNBTS fresh plasma procurement figures for the period 1984-1989 are as follows (in kg):

	1984	1985	1986	1987	1988	1989
Total	47,651	46,846	46,973	49,597	48,231	54,480
To PFC	45,131	44,084	43,338	46,920	45,315	52,139

NB: The figures for 1984-88 above differ slightly from previous reports. This is accounted for by improved data capture.

A regional breakdown of plasma procurement is shown in Appendix I.

ISSUES OF FACTOR VIII CONCENTRATES

The following figures provide a summary of the total issues of Factor VIII concentrates by the SNBTS for the period 1984-1989. The figures are derived from Factor VIII issues from PFC to RTC, and cryoprecipitate issues from RTCs to wards or blood banks.

	1984	1985	1986	1987	1988	1989
Cryoprecipitate (donations)	11,646	12,693	16,801	12,851	13,893	11,595
FVIII concentrate:						
Intermediate VIII	9.26	7.40	5.52			
HT NY				7.35		
Z8				0.09	9.51	8.16
(IU x 10 ⁶)						

NB: 1. A regional breakdown of these figures is shown in Appendices II and III.

2. Recently acquired data from Haemophilia Centres indicates that the bulk of this cryoprecipitate is NOT used for haemophilia care: an example is shown in Appendix III where SE RTC issues for 1988 were compared with the usage reported by the Haemophilia Director.
3. The 1989 figure for Z8 includes 1 million IU which were reallocated from Northern Ireland supplies to the Scottish Health Service (see note 2 page 7).

COMMERCIAL FACTOR VIII CONCENTRATES

A summary of the information obtained by the SNBTS is shown below. A regional breakdown is shown in Appendix V.

	1984	1985	1986	1987	1988	1989
Commercial FVIII (IU x 10 ⁶)	0.11	0.03	0.13	0.19	0.15	1.72

- NB: i. Commercial purchases in year 1986 and 1987 were of material of porcine origin.
- ii. The 1989 figure was derived from information supplied by Chief Administrative Pharmaceutical Officers.

TOTAL FACTOR VIII USAGE (IU x 10⁶):

	1984	1985	1986	1987	1988	1989
Cryoppt	1.16	1.27	1.68	1.28	1.39	1.39
PFC FVIII	9.26	7.40	5.52	7.44	9.51	8.16
Commercial FVIII	0.11	0.03	0.13	0.19	0.15	1.72
TOTAL	10.53	8.70	7.34	8.91	11.05	11.27

Note: 1. A regional breakdown of these total figures is shown in Appendix VI.

2. Comments above concerning use of cryoprecipitate.

3. The figures for 1989 over estimate usage as they include Z8 supplied to the SHS as part of an exchange deal (see page 7) and the commercial Factor VIII bought by Scottish Health Boards, but sent to Northern Ireland. The corresponding figures for usage reported by the Haemophilia Directors were:

Cryoppt	163,480	(IU)
PFC FVIII	7,823,764	
Comm FVIII	1,197,400	
TOTAL	<u>9,184,644</u>	

COMMENTS:

1. The decline in usage of Factor VIII concentrates which occurred in 1986 has been reversed, and usage is back to the level seen in 1984. Since the yield of Factor VIII has been reduced by the introduction of heat treatment, and no increase in plasma procurement has occurred, the maintenance of supply in the years 1986-1988 was at the expense of the National Stock. This is shown clearly in the graph of PFC issues and National stock level in Appendix VII.
2. Future production targets

Since the usage of Factor VIII concentrates had returned to the levels of 1984 and the National Stock needed to be replenished, in the year to 1989, issues of Z8 to the Scottish Health Service were cut back to about 7 million units (see note 2, page 6), with the objective of building up the National Stock to 2 million units by the end of that year.

Additionally, it is intended to increase production of Factor VIII concentrate at PFC in the years 1990-94 with the twin objectives of increasing issues and consolidating a stock of 6 months usage. The current plan is the following:

	Production Target for SHS ⁶ (IU x 10 ⁶)	Issues to SHS	Stock (SHS)
1989	-	-	2.0
1990	9.50	8.00	3.5
1991	12.50	11.50	4.0
1992	13.00	12.25	4.75
1993	13.75	13.00	5.50
1994	14.00	13.50	6.00

It should be emphasised that the above plan is dependant upon:

1. Increased plasma from the introduction of Optimal Additive Solution in year 1990 to increase supply to PFC.
2. Investment in the development of a plasmapheresis programme which will grow over the period 1990-6, resulting in a further increase in plasma to PFC.
3. Product yields remaining stable and clinical demand increases along the lines forecasted.
3. Product developments
 - a. Heat treatment - PFC now is providing routine coagulation factor concentrates (VIII and IX) which are dry heated at 80°C for 72 hours.
 - b. A small scale batch of a higher purity Factor VIII concentrate (approximately 2 IU per mg of protein) was produced in late 1988. Unfortunately, attempts to scale up to production of a pilot batch identified significant unforeseen problems, which delayed the development programme. It now is anticipated that this product will begin clinical trials in September 1989.

FACTOR IX CONCENTRATES

SUPPLY TRENDS

PFC issues to RTCs are summarised below - (a regional breakdown is shown in Appendix VIII).

	1984	1985	1986	1987	1988	1989
DEFIX (IU x 10 ⁶)	1.31	1.59	1.17	2.09	2.74	2.86
PPSB (IU x 10 ³)	46	18	22	14	0	0
Commercial 'Activated' IX (IU x 10 ³)	NIL	181	263	792	810	402

NB: 1. The purchase of commercial activated products in 1989 is based on information supplied by Chief Administrative Pharmaceutical Officers.

2. The figure for DEFIX usage in 1989 also based upon Haemophilia Directors returns, while the data in Appendix VIII are based on PFC issues.

COMMENTS:

1. It has been suggested that the issues of DEFIX far exceed the reported usage by Haemophilia Directors, suggesting the product is used for patients other than with Haemophilia B. In a preliminary examination of this proposal PFC issues to SE RTC were compared with Edinburgh Haemophilia Centre usage, and PFC issues to the West of Scotland RTC were compared with the combined usage of the Royal Infirmary and the Royal Hospital for Sick Children, for the first three quarters of the year to 1989. These are shown below.

	DEFIX IU $\times 10^3$ PFC issues to West RTC	RHSC + GRI usage	Ratio
1Q	394.5	389.1	1.01
2Q	285.0	331.6	0.86
3Q	320.1	273.8	1.16

	PFC issues to SE RTC	RIE usage	Ratio
1Q	129	123	1.05
2Q	132	180.5	0.73
3Q	105	98.3	1.06

RHSC is the Royal Hospital for Sick Children, Glasgow
 GRI is Glasgow Royal Infirmary and
 RIE is Royal Infirmary of Edinburgh

Conclusion:

There is no evidence of significant usage of DEFIX by specialities other than Haemophilia Directors and thus we must assume the products is almost wholly being used for haemophilia B patients.

Note:

1. The fears of continued escalation in demand for DEFIX appear to have been misplaced. However, any advice that the Haemophilia Directors can give on anticipated trends in demand would be much appreciated.
2. DEFIX is routinely heat treated (80C for 72 hours) and this appears to be well tolerated by the product.

PFC SUPPLIES TO NORTHERN IRELAND

	1984	1985	1986	1987	1988	1989
Factor VIII (IU x 10 ⁶)	1.03	1.70	1.89	1.64	1.31	0.92
DEFIX (IU x 10 ⁶)	0.14	0.58	0.32	0.16	0.999	0.19
PPSB (IU x 10 ⁶)	0.008	0.018	0.024	0.011	0	0

Under the terms of an agreement between the Haemophilia Directors, 1 million IU of Z8 which was made for Northern Ireland were supplied to the Scottish Health Service in January to March 1989. In compensation for this supply, Scottish Health Boards purchased an equivalent amount of commercial Factor VIII for use in Northern Ireland. Thus the final planned issues of Factor VIII to the Scottish regions is 1 million units higher than the previously set allocation. This is shown below:

	Aber	Dun	Edin	Glas	Inv	Total
Original allocation	0.35	0.30	1.96	4.08	0.27	6.98
Allocation of NI FVIII	0.15	0.16	0.31	0.30	0.07	0.99
Total planned issue	0.50	0.46	2.27	4.38	0.34	7.97

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		1984		1985		1986		1987		1988		1989	
		Kg.	Kg/ 10 ⁶ pop.	Kg.	Kg/ 10 ⁶ pop.	Kg.	Kg/ 10 ⁶ pop.	Kg.	Kg/ 10 ⁶ pop.	Kg.	Kg/ 10 ⁶ pop.	Kg.	Kg/ 10 ⁶ pop.
ABERDEEN	Cryoppt.	126		83		88		71		164		117	
	To PFC	2,960		3,622		4,155		5,050		5,165		6,612	
	Total	3,086	5,796	3,705	7,004	4,243	8,021	5,121	9,681	5,329	10,074	6,729	12,644
DUNDEE	Cryoppt.	12		13		18		25		17		28	
	To PFC	2,669		2,512		2,707		3,230		3,677		4,103	
	Total	2,681	5,819	2,525	13,977	2,725	5,914	3,255	7,064	3,694	8,017	4,131	8,966
EDINBURGH	Cryoppt.	728		584		611		410		250		653	
	To PFC	11,662		11,900		11,542		11,697		12,174		14,095	
	Total	12,390	10,998	12,484	11,117	12,153	10,822	12,107	10,781	12,424	11,064	14,748	13,692
GLASGOW	Cryoppt.	1,641		2,079		2,909		2,165		2,480		1,514	
	To PFC	25,148		23,593		22,334		24,153		21,715		24,123	
	Total	26,789	9,560	25,672	9,162	25,243	9,009	26,318	9,392	24,195	8,635	25,637	9,149
INVERNESS	Cryoppt.	13		3		7		6		4		9	
	To PFC	2,752		2,457		2,602		2,790		2,585		3,206	
	Total	2,765	11,725	2,460	10,431	2,609	11,063	2,796	11,856	2,589	10,979	3,215	13,660
GRAND TOTAL		47,651	9,251	46,846	9,095	46,973	9,120	49,597	9,629	48,231	9,364	54,480	10,572

Note: Volume of plasma calculated for cryoppt. by multiplying by 0.2 total donations
 Figures for 1989 for cryoprecipitate and plasma sent to PFC are for the whole year

APPENDIX 1

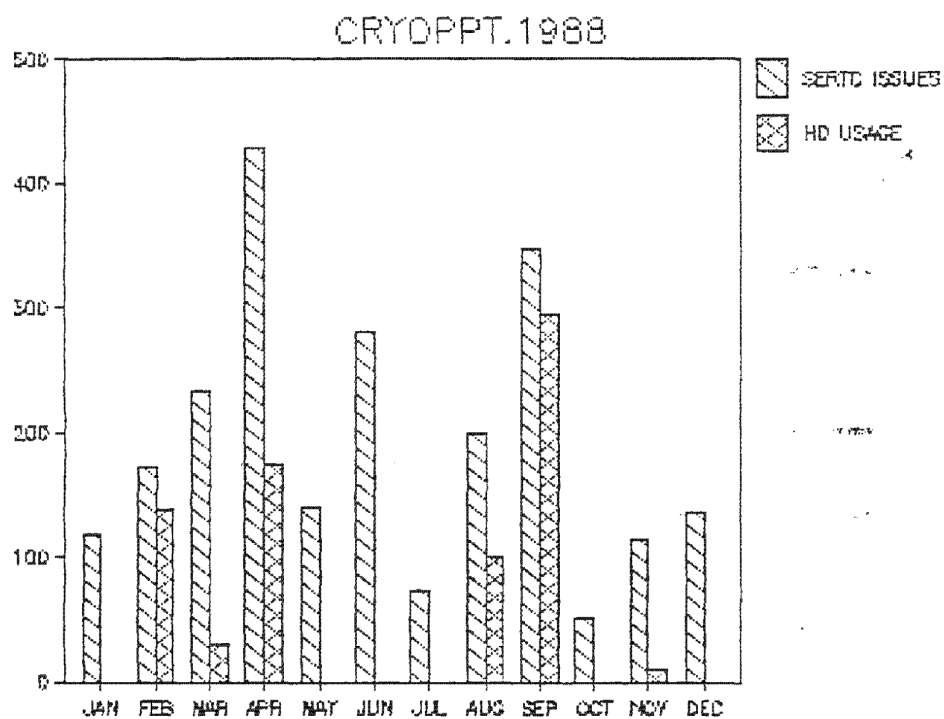
APPENDIX IISNBTS: RTC ISSUES OF CRYOPPT. (DONATIONS)

	1984	1985	1986	1987	1988	1989
eraeen	218	316	435	383	770	554
ndee	59	46	71	42	48	51
inburgh	3,423	2,245	2,980	1,581	1,452	3,095
asgow	7,930	10,086	13,304	10,836	11,603	7,879
verness	16	Nil	11	9	20	16
TALS	11,646	12,693	16,801	12,851	13,893	11,595

:

issues of cryoprecipitate include issues to other than Haemophilia Centres.

APPENDIX III



A comparison of the number of packs of cryoprecipitate issued by the South East Regional Transfusion Centre and the usage reported by the Haemophilia Director

APPENDIX IVPFC ISSUES OF FACTOR VIII TO RTCs (i.u. x 10⁶)

*

	1984	1985	1986	1987	1988	1989
Aberdeen	0.50 (0.94)	0.39 (0.70)	0.54 (1.02)	0.23 (0.43)	0.51 (0.96)	0.53 (1.00)
Dundee	0.45 (0.99)	0.50 (1.08)	0.48 (1.04)	0.49 (1.06)	0.41 (0.89)	0.49 (1.06)
Edinburgh	2.23 (1.98)	2.17 (1.94)	1.31 (1.17)	2.61 (2.32)	2.68 (2.27)	2.28 (1.93)
Glasgow	5.56 (2.02)	3.89 (1.39)	2.75 (0.98)	3.84 (1.37)	5.55 (1.98)	4.51 (1.61)
Inverness	0.43 (1.82)	0.45 (1.93)	0.44 (1.87)	0.27 (1.14)	0.36 (1.50)	0.36 (1.49)
TOTALS	9.26 (1.79)	7.4 (1.4)	5.52 (1.07)	7.44 (1.44)	9.51 (1.82)	8.16 (1.56)

figures in brackets per 10⁶ population

= Includes the 1 million units reallocated from Northern Ireland supplies (see note 2 page 6).

APPENDIX VSHS PURCHASE OF COMMERCIAL FACTOR VIII CONCENTRATES (i.u. x 10³)*

	*	*	*	*	*	≠
	1984	1985	1986	1987	1988	1989
erdeen	Nil	Nil	Nil	Nil	Nil	153
ndee	Nil	Nil	Nil	Nil	Nil	92
inburgh	110	30	Nil	25	Nil	573
asgow	Nil	Nil	130	166	152	858
verness	Nil	Nil	Nil	Nil	Nil	48
TALS	101	30	130	191	152	1,719

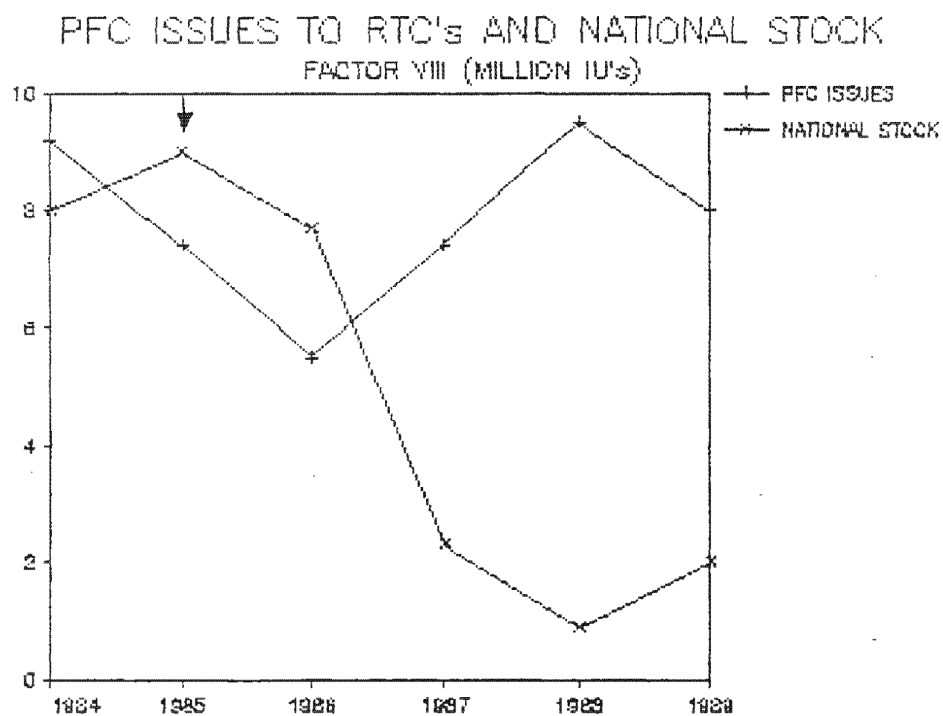
nformation obtained from SHHD

nformation obtained from Chief Administrative Pharmaceutical Officers

APPENDIX VISHS: TOTAL "USE" OF FACTOR VIII CONCENTRATES(i.u. x 10^6 / 10^6 population)*

	1984	1985	1986	1987	1988	1989
Aberdeen	0.98	0.79	1.10	0.49	1.08	1.39
Dundee	0.98	1.09	1.04	1.06	0.90	1.27
Edinburgh	2.32	2.12	1.38	2.46	2.52	2.94
Glasgow	2.21	1.68	1.41	1.74	2.37	2.20
Inverness	1.82	1.91	1.87	0.93	1.53	1.68
TOTALS	2.00	1.64	1.35	1.68	2.09	2.14

7 word "use" is not strictly accurate. The figures are derived from RTC issues of cryoppt., PFC issues of factor VIII (intermediate/revised formulation, HT-NY and Z8), commercial purchases of factor VIII concentrate in each year.

APPENDIX VII

PFC issues to RTC's and the National stock of Factor VIII in million IU's. The arrow indicates the introduction of heat treatment.

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COMMERCIAL PURCHASES OF ACTIVATED FACTOR IX CONCENTRATES

		1984	1985	1986	1987	1988	1989
ABERDEEN	DEFIX (m.iu)	0.003	0.02	0.04	0.04	0.19	0.26
	PPSB (10 ³ iu)	10	2	2	2	Nil	Nil
	Activ. IX (10 ³ iu)	Nil	181	74	52	Nil	120
DUNDEE	DEFIX (m.iu)	0.08	0.09	0.12	0.17	0.22	0.20
	PPSB (10 ³ iu)	4	4	0.4	0.4	Nil	Nil
	Activ. IX (10 ³ iu)	Nil	Nil	Nil	Nil	Nil	Nil
EDINBURGH	DEFIX (m.iu)	0.49	0.59	0.51	0.48	0.62	0.69
	PPSB (10 ³ iu)	10	8	4	2	Nil	Nil
	Activ. IX (10 ³ iu)	Nil	Nil	75	197	110	266
GLASGOW	DEFIX (m.iu)	0.73	0.89	0.49	1.40	1.71	1.71
	PPSB (10 ³ iu)	16	Nil	14	4	Nil	Nil
	Activ. IX (10 ³ iu)	Nil	Nil	114	543	700	76
INVERNESS	DEFIX (m.iu)	0.006	0.003	0.01	0.002	0.002	0.004
	PPSB (10 ³ iu)	6	4	2	6	Nil	Nil
	Activ. IX (10 ³ iu)	Nil	Nil	Nil	Nil	Nil	Nil
TOTALS	DEFIX (m.iu)	1.31	1.59	1.17	2.09	2.74	2.86
	PPSB (10 ³ iu)	46	18	22.4	14	Nil	Nil
	Activ. IX (10 ³ iu)	Nil	181	263	792	810	462

Activated Factor IX purchases: information for 1989 supplied by Chief Administrative Pharmaceutical Officers

APPENDIX VIII