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SNBTS: PUBLIC EXPENDITURE SURVEY (PES) 1988

PROGRAMME NARRATIVE

JDC/CSA.GM/6/88/1

A. DESCRIPTION OF PROGRAMME

The SNBTS is responsible for:

1. Ensuring that the maximum number of patients in Scotland have access to efficacious and safe blood and blood related products in the period under review, in the context of the funds made available and the cost of alternative (commercial) supplies.

2. Ensuring that the public (voluntary donor) programme is appropriately supported and maintained.

3. Ensuring that, where appropriate, laboratory support services are operational for (1) above and for monitoring and influencing the clinical use of the products supplied.

4. Ensuring that the SHS laboratories are supplied, when requested, with laboratory reagents.

5. Provision of contract plasma fractionation for the Northern Ireland Health Services.

6. Ensuring that effective research and development is undertaken to support, long-term, the work in (1-5) above.

7. Encouraging initiatives which will support the industrial exploitation of SNBTS intellectual property and generate income to the SNBTS.

8. Ensuring supply of blood and blood products to the private sector at no detriment to the NHS.

B. BASE-LINE FINANCIAL FIGURES

(See attached Appendix I).

C. PURPOSE OF EXPENDITURE

The purpose of the expenditure is to enable the SNBTS to fulfil its functions as described above (A).

D. OBJECTIVES FOR EXPENDITURE

As (C) above in the most cost-effective way.

E. MEASUREMENT OF SUCCESS

There are likely to be a number of ways the achievement (or otherwise) of the objectives can be measured. Attempts to generate databases and analytic resources to examine some of the options are in hand. The SNBTS' international reputation would suggest that in many areas its success has been significant. Recent preliminary 'broad brush' financial studies would indicate the SNBTS is 'highly profitable' (£6.8 m 'profit' on an expenditure of £15.75 m)

F. BASELINE "BUYING"

The current baseline is not sufficient to meet objectives.

G. JUSTIFICATION OF BIDS FOR DEVELOPMENT

(See Appendix II for specific details).

In the context of making future financial provision for revenue developments in the period 1988-1992 the detailed proposals contained in Appendix II should be examined in the light of the following background comments:-

1. There is now sufficient evidence to conclude that the SNBTS is no longer able to maintain self-sufficiency, in the context of the provision of plasma derived products for the SHS. Self-sufficiency was first achieved in 1983/84 and has been sustained

for only 4 years.

This deterioration arises primarily as a consequence of prolonged restrictions on the financial investment in the Service, but other factors, including the performance of management both at general and scientific operational levels, have made important contributions to this state of affairs. The first consequences of these difficulties will be felt, in financial terms, by Area Health Boards in the latter part of the current financial year. Unless checked there will be a further inevitable deterioration in 1989, and thereafter a growing "deficit" during the next decade. The proposals outlined in this PES have been designed to reverse this trend and provide a base from which a secure future can be planned.

2. The impact of AIDS on the Blood Transfusion Service has been substantial and the only specific and additional contribution made by central government to cope with this problem has been the provision of an extra resource to purchase kits for HIV blood donation screening. Significant resources have been diverted from within the Service's existing operational budgets to meet the staffing and consumable requirements of the massive screening exercise, donor self-exclusion publicity, donor counselling and the introduction and validation of high cost terminal virocidal in-process procedures for PFC products. These terminal virocidal processes have substantially reduced process yields at PFC, notably for factor VIII and IX concentrates.

AIDS has also focused the public and medical profession's attention on the safety of blood transfusion and the SNBTS is currently caught up, as all other similar services in the developed world, in attempting to respond to pressures related to the perceived and preventable hazards of blood transfusion.

3. There can be little doubt that the impact of the Consumer Protection Act (1987) on the attitudes of senior managers of

SNBTS has been considerable. Whilst it is recognised that the interpretation of this Act must await the outcome of subsequent legal actions the senior managers of the SNBTS are aware that throughout the whole Service satisfactory standards of good manufacturing practice (as defined in the Government's "Orange Guide") are not being applied. This arises primarily as a consequence of a lack of clear central policy instructions over the past 10 years which have been backed with appropriate and timely investment. Whilst there are considerable concerns in all Centres at the inadequacy of the SNBTS's investment and, therefore, commitment to quality assurance programmes it can rightly be argued that in overall national operational terms this particular problem has greatest impact in the context of PFC: PFC is currently operating at a volume (plasma) throughput of more than 50% above that which has been "authorised" by the Government's Medicines Inspectorate and with a staffing structure and management arrangements which the Director of PFC and the author consider are wholly inadequate to maintain good manufacturing practice.

4. Reference has been made, in Section A, to the requirement of the SNBTS to influence the clinical use and thus the demand of blood and blood products throughout the SHS. It is the view of the author that the demand for these products ought now to be regarded as 'out of control' in the SHS and that very serious attention, at the highest level needs to be given to establishing more effective systems of controlling demand. There are a number of possible options whereby this programme could be developed but it seems probable that the most effective, in the long-term, would be a specifically earmarked and accountable investment in the SNBTS. Success in this programme would bring considerable advantages: the prevention of morbidity and mortality, the saving of resources and a more cost-benefit orientated programme of self-sufficiency.

5. Reference has been made (Section G, item 1) to the author's concern at the lack of appropriate co-ordination and management of

the SNBTS research and development. It is also increasingly evident that there is now an urgent need to invest new NHS monies into those areas of the work of the SNBTS in which rapid scientific/market advances are taking place which, unless addressed, could threaten the viability/clinical acceptability of SNBTS products. There are a number of examples of this and all relate, inevitably, to the range and quality of PFC products. Perhaps the most obvious and pressing example is factor VIII concentrate. The current product is of poor quality and if effective steps are not taken to develop one which is more clinically acceptable, in the context of commercial alternatives, then PFC's contribution to the management of these patients will be eliminated and cost-benefit of the PFC's overall function substantially changed. Of no less concern is the need to invest in the development of new plasma derived products from the existing plasma intake to PFC. Current evidence, for example, would suggest that a product called alpha-1-protease inhibitor (manufactured from plasma by an American company and recently acquired an FDA product licence) will have an attached total demand and cost to the SHS which is likely to be well in excess of that required to manage haemophilia A patients on commercial factor VIII concentrates. This product (alpha-1-PI) could and should be prepared at PFC from the existing plasma intake and should, without doubt, be available at substantially reduced unit costs to the NHS.

6. In recent times there have been several exhortations that efficiency savings should make a substantial contribution to the development of the work of the SNBTS. Urgent consideration ought to be given to the likely realistic impact of these exhortations on the development of the SNBTS over the next half decade, in the light of its performance in the period 1982-88 and the size and nature of its current and projected difficulties. The Directors believe that this matter should be regarded as a high priority and would wish to see discussions take place on the basis of the relevant documents already submitted to the Agency and copies

lodged in the Department in 1985 and 1986.

These background comments, supplemented by the details contained in Appendix II, are intended to facilitate an understanding of the summary position of requests for revenue monies for the SNBTS in the period 1989-1992 (Table I). It is recognised that the request is for a long-term new and substantial investment, which is well above current overall NHS norms. The SNBTS Directors believe that in the interest of the Service's work for the SHS this proposed investment is justified on the basis that it will be a cost-effective solution to the sustained provision of appropriate supplies of "safe" blood and blood products to health institutions throughout Scotland.

TABLE 1

	1989/90 £'000	1990/91 £'000	1991/92 £'000
1. Revenue baseline	16419	18994	20897
2. Inflation provision *	575	570	522
3. Sub total (1+2)	16994	19564	21419
4. General developments (1% of 3.)	168	190	209
5. Specific developments			
a) Blood collection programme [1]	221		
b) Escalation in clinical demand [3]	73		
c) Supply/self sufficiency [6]	650	59	56
d) SNBTS management [12]	176		
e) Research & development [12]	250	150	100
f) Consumer Protection Act [13]	69		
g) Reagent Manufacture [15]	105		
h) Clinical trials facilities [15]	20	10	20
i) Safety of blood donations [16]	118	623	310
j) Computing Developments [17]	25	'25	25
k) Major capital projects [18]		110	80
l) Animal testing facilities [18]	15	21	5
m) Tissue-typed donor panel (BMT/Platelets) [19]	65		
n) 50th anniversary celebrations [19]	20	80	(100)
o) Haemoglobin solutions [20]	10	50	50
p) Northern Ireland fractionation [21]	5	5	5
q) Supply of products to the private sector [21]	5	5	100
r) Commercial Interface Steering Group [21]	5	5	5
6. Sub total of 5.	1832	1143	656
7. Grand total (3+4+5)	18994	20897	22284

* Inflation factors - 1989/90 3½%
- 1990/91 3%
- 1991/92 2½%

FOR USE/FORM 2 (REVISED)

SHEET NO: 4

xx D MacNiven

PUBLIC EXPENDITURE SURVEY 1988

VOTE: PRISONS, HOSPITALS AND COMMUNITY HEALTH SERVICES ETC SCOTLAND

PESC FIELD: 151003

SUBHEAD K1 - C.S.A - (3) Blood Transfusion Service - (a) Salaries + Wages (b) Other Costs (c) Direct Receipts.

£'000

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Subjective Analysis Classification (SAC)	1986-87 Outturn	1987-88 Provis Outturn	1988-89			1989-90			1990-91			1991-92			
			CSD 288 Base Estimate	Rev Plans	Variation + - *	CSD 288 Base	Rev Plans	Variation + - *	CSD 288 Base	Rev Plans	Variation + - *	Base	Rev Plans	Variation + - *	
2 - 11001/2															
3 - 12001/7	8,194	8743	9,197	9,917	+ 720	9,519	10916	+ 1397	9,805	11534	+ 1729	10,050	12096	+ 2046	
4 - 13001															
5 - 14003															
6 - 15003 Costs & Services	6,233	5424	7,022	6,510	- 522	7278	8086	+ 808	7,495	9371	+ 1876	7,683	10196	+ 2513	
7 - 19001 Charges	- 8		- 8	- 8	-	-8	- 8	-	- 8	- 8	-	- 8	- 8	-	
8 - 31001/2 Grants															
TOTAL	14,419	14167	16,221	16,419 (Note 1)	+ 198	16,789	18994	+ 2205	17,292	20827	+ 3605	17,725	22284	+ 4559	

Note 1 Updated in terms of SHHD letter of 20:6.88.

* Detail on the reverse of this form the variations from the CSD 288 base levels, and explain the variations.

Signed

SNB.003.3086

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APPENDIX II
PES (1988)

JUSTIFICATION FOR DEVELOPMENT BIDS:
DETAILED NARRATIVE

INTRODUCTION

1987/88 has been the year when, perhaps for the first time since its foundation in the early 1940s, serious doubts have arisen with regard to the ability of the SNBTS to sustain the quality and volume of its service to the SHS and meet the needs of the future. This concern has been developing since 1984/85 but the problem is now perceived to be acute and serious in the light of a 1988/89 actual development allocation (new monies) of £39,000 against a request for a minimum of 2% of 1987/88 base (£300,000). Taking into account the expected increase in expenditure for NI fractionation, the commercial interface group and the private sector this allocation could be further reduced to £19,000. The operational areas which have emerged to be of particular concern and the associated proposals are summarised below. However, provision of a 1% growth on baseline is also incorporated to cope with the general development of services at RTC level.

BLOOD COLLECTION PROGRAMME

There has been a sustained decline in support of the SNBTS by the public since 1985. This has become more evident in the last 18 months (see below).

Fig. 1. SNBTS:TOTAL BLOOD DONOR ATTENDENCES

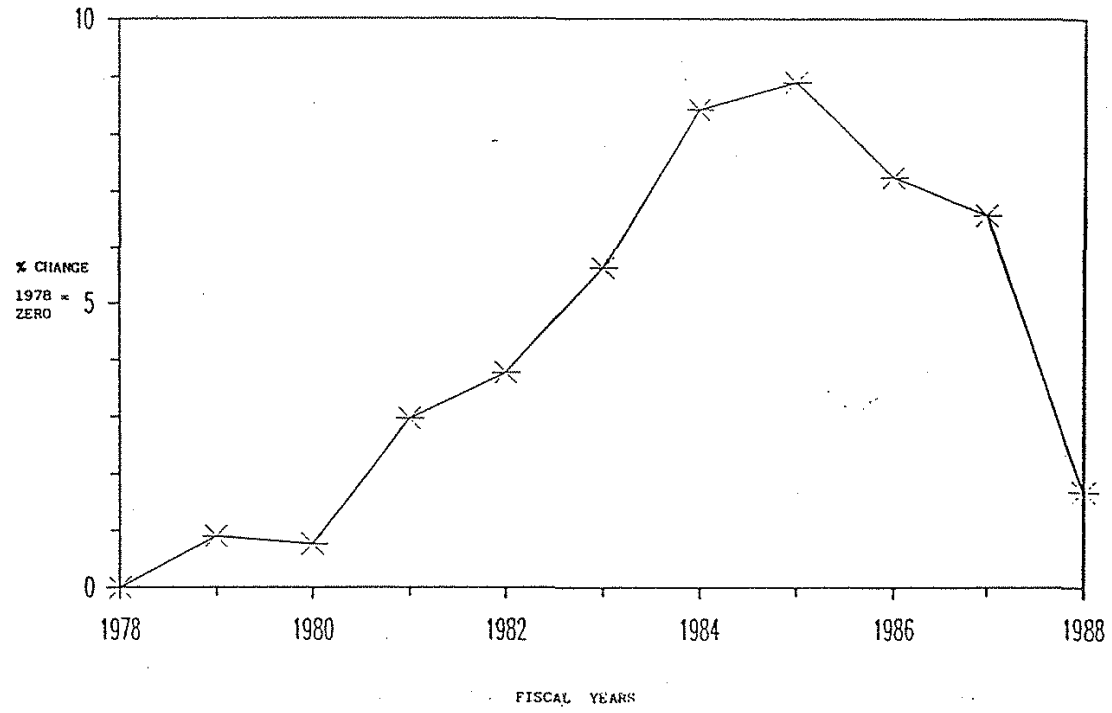

Fig.1: SNBTS: Total Blood Donor Attendances (years ending 31 March)

1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
310,611	313,428	312,989	319,835	322,304	328,086	336,802	338,278	333,112	331,089	315,845
	(+ 1%)	(+0.9%)	(+2.9%)	(+3.8%)	(+5.6%)	(+8.4%)	(+8.9%)	(+7.2%)	(+6.5%)	(+1.6%)

The reasons for this decline are not known but evidence (provided by the Marketing Department of the University of Strathclyde) would suggest that the overall performance of the Service's donor management programme needs to be reviewed. In the short term the publicity profile of the SNBTS requires enhancement and there is a need to increase the personal attention given to donors at sessions. Proposals are made which are designed to respond to these deficiencies

and thus, it is hoped, secure a substantial improvement in the management of this part of the Service's work. The long-term cost-benefit of this development derives from the need to sustain a basic and routine blood collection programme of at least $50/10^3$ total pop/yr for the basic hospital requirements of the SHS and further increments to support an expanding private sector serving non UK resident patients. (Self-sufficiency in plasma products cannot be met with this level of routine blood collection).

Proposals:

The proposals call for an investment in the following:-

1. The appointment of a national blood donor recruitment and blood collection programme manager.
2. Establishment of a permanent TV/radio campaign.
3. Establishment of a programme designed to improve the image of the service by modifying the conduct and attitude of staff at blood donor sessions and providing an overall ambience at the sessions which is more "client orientated".
4. Instigate an independent review of the management, training and performance of the donor recruitment/blood collection programmes throughout the SNBTS which will be self-financed on a N/R basis.

Item	1989/90	1990/91	1991/92
Create National Donor Recruitment and Blood Collection Manager	£ 21,000		
Permanent TV/Radio Publicity Programme	£100,000		
Programme to improve conduct of blood donor sessions	£100,000		
TOTAL	£221,000		

ESCALATION IN CLINICAL DEMAND FOR BLOOD PRODUCTS

There has been a significant and substantial increase in the

clinical demand/use of SNBTS blood and blood products over the last decade. This escalation in demand is now considered to be out of control (see below).

Fig.2. TRENDS IN PFC ISSUES TO RTC's/SOME PRODUCTS

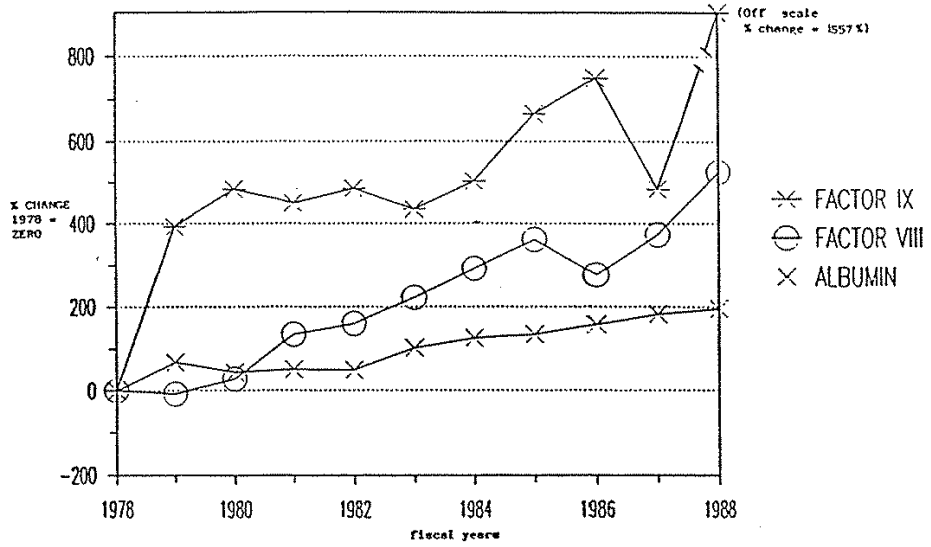

Fig. 2: Trends in PFC issues to RTCs of some plasma products (years ending 31 March)

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Albumin (Kg)	495	831	714	747	740	999	1118	1160	1277	1398	1467
			(44)		(49)		(126)		(158)		(196)
Factor VIII	1546	1431	1990	3631	4022	4978	6069	7146	5834	7329	9126
(10^3 iu)			(29)		(160)		(290)		(277)		(490)
Factor IX	168	828	982	924	984	899	1014	1288	1428	982	2784
(10^3 iu)			(484)		(484)		(503)		(750)		(1557)
Normal IgG (IM)	3041	4145	3779	3183	5683	5653	5048	7235	4661	5557	5730
(vials)			(24)		(87)		(80)		(53)		(88)
Normal IgG (IV)	Nil	Nil	Nil	Nil	Nil	Nil	Nil	4286	5306	6295	6961
(Vials)											
Anti-Rh(D) IgG	8680	10435	10430	11410	11049	12011	10110	14209	12191	12971	12325
(vials)			(20)		(27)		(19)		(40)		(41)
Anti-Tetanus IgG	300	1451	1883	3268	4040	3709	6270	3451	3438	4942	4295
(vials)			(380)		(1246)		(2156)		(1046)		(1331)
Anti-Zoster IgG											
(vials)	102	165	230	322	261	409	240	440	721	412	310
Anti-Rabies IgG											
(Vials)	Nil	Nil	Nil	Nil	14	69	42	159	34	69	184

Note: 1988 figures for albumin, factor VIII and factor IX in terms of vials/bottles are 83,161, 45,632 and 9,281 respectively.
Figures in brackets are % changes since 1978.

This feature is not unique to Scotland but we believe there is now an urgent need to establish mechanisms whereby some measure of control is established, because there is widespread circumstantial evidence of prescribing excesses and thus waste of resources and unnecessary exposure of patients to the hazards of haemotherapy. It should be noted that new demands are anticipated with the expansion of cardiac surgery and the building of the Clydebank Hospital. The problem of positively influencing blood/product usage is professionally sensitive because it impinges on medical practitoners' prescribing habits. Nevertheless, we believe efforts must now be made to influence these prescribing habits and that this is possible in Scotland.

Proposals are made to invest in clinical research and teaching which are primarily designed to address this problem. These proposals are viewed as an integral and essential component of any blood transfusion programme which seeks to establish and sustain national self-sufficiency and, as such, would find support in recent WHO recommendations in which it is recognised that one of the major difficulties in this area has been the development of the clinical practice of blood transfusion prior to the era of product licensing so that appropriate studies on efficacy and safety have never been done.

Proposal:

The proposal is identical to the way the problem is being tackled in the USA and some European countries: the establishment of an academic department of Transfusion Medicine whose primary raison d'etre is to develop research directed towards defining the appropriate treatment of disease using blood and blood products, the teaching at undergraduate and post-graduate levels and the establishment of hospital surveillance systems on blood/product use.

Discussions have taken place with the Dean of the Medical School (Edinburgh University) and he has indicated Faculty support for the establishment of an academic department of Transfusion Medicine (with the remit described above) within the academic division of

internal medicine and that the department should be located within the existing accommodation of the SE BTS. SE BTS is an ideal location for this development. It operates strong clinical and scientifically orientated services and is closely associated with several major academic and NHS clinical groups that are keen to collaborate in the type of work needed. The University is unable to fund this development and it is therefore proposed the Agency provides the "seed corn" and that efforts are made thereafter to secure additional resources from industry and/or trusts etc. The details of the "seed corn" proposals are as follows:-

	1989/90
Senior Lecturer Post	£25,500
Lecturer Post	£14,000
Secretary	£ 7,300
Audio-visual technician post	£ 6,500
Operational Supplies	£20,000
TOTAL	£73,300

Note: This proposal should be viewed as one which will have a profound long-term impact on the SHS as a whole. There is evidence (NIH Consensus Meetings) that in the USA the over prescribing of red cells is 40%, platelet concentrate 50%, fresh frozen plasma 80% and albumin 70%. There is no reason to believe that these figures will not find some support in the SHS. If substantiated and appropriate prescribing practices subsequently developed the savings for the SHS would be substantial - estimated to be in excess of £3 m p.a. by the year 1995.

SUPPLY/SELF SUFFICIENCY

R T C: The major difficulties which have now emerged for Regional Transfusion Centres in meeting supply centre primarily on the provision of platelet concentrates and supporting the fresh plasma needs of PFC. Since the early 1980s the staff within the RTCs have made remarkable and successful efforts (not achieved in many other countries) to meet the escalation in demand for these products from existing blood donation collection programmes (i.e. the SNBTS has not resorted to routine plasmapheresis or plateletpheresis). The consequences of their efforts

has been a large increase in low cost fresh plasma and platelet concentrates (see below). The savings, when compared to options taken in other countries, have been very substantial (in excess of £750,000 p.a.).

Fig.3. RTC TRENDS : PLASMA COLLECTED/PLATELETS PRODUCED

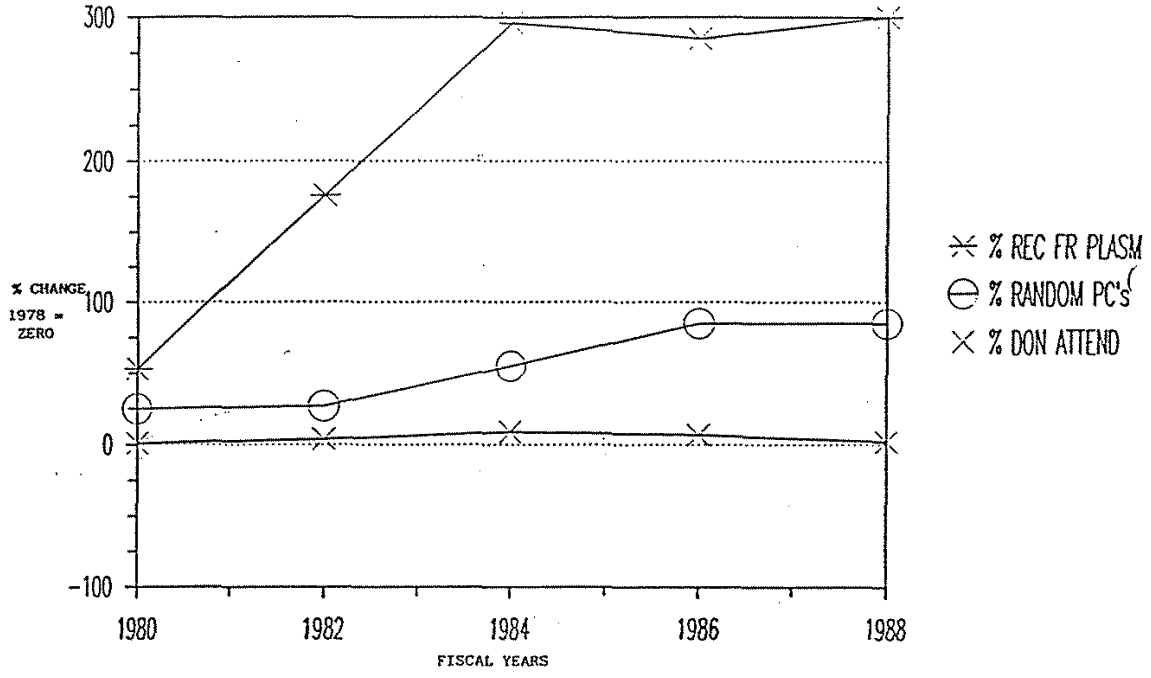

Fig.3: Trends in total recovered fresh plasma collected at RTCs and random platelet concentrates produced at RTCs (years ending 31 March) - % change - 1978 is zero.

	1980	1982	1984	1986	1988
Donor Attendances	1	4	9	7	2
Recovered Fresh Plasma	53	176	296	285	300
Random Platelet Concentrates	25	27	55	85	85

Actual figures:

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Total Recovered Fresh Plasma (litres)	11881	14330	18219	21857	32733	38297	47128	46672	45706	49353	47715
Random Platelet Concentrates Produced	29575	35540	37014	32392	37517	42471	46692	54310	56460	55135	58252

The concern at the present time is that further significant increases in fresh plasma for PFC cannot be obtained from the existing blood donation input (which is falling in any event) because this option was fully explored in the period 1982-87. It seems certain then that the major contribution to any planned increases in plasma will be by a mixture of plasmapheresis and optimal additive solution. The relevant proposals contained in this PES submission are complex because they hinge on management's approach to proposals which relate to PFC's processing capacity (see below).

P F C: There are current major problems at PFC, in the context of supply. They can be summarised:-

(a) PFC is currently running approximately 50% over its optimum operating capacity, with respect to accommodation. This accommodation deficiency makes good manufacturing practice difficult and at times impossible.

(b) The staffing arrangements within PFC are not conducive to good manufacturing practice. Of particular concern are the production and quality assurance functions.

(c) The research and development functions of PFC are insufficient to meet its immediate and long-term needs. In terms of product range and quality there is now serious concern that PFC will not compete, medium and long-term, with its commercial counterparts (see below).

PRODUCT	COMMERCIAL STATUS	PFC STATUS	ESTIMATED ANNUAL MARKET VALUE FOR SHS DEMAND
Very high purity Factor VIII concentrate	FDA and UK Licence 1988	In pilot plant development.Security of technology uncertain.Clinical trials commence ?1992. Product licensed ?1995.	£ 3,500,000
High Purity Factor IX concentrate	FDA Licence 1988	Not in development	£ 350,000
Fibrin Glue	FDA Licence 1988	In pilot plant development/animal studies. Clinical trials commence ?1990. Product licensed ?1993.	£ 1,000,000

Alpha-1-protease inhibitor	FDA Licence 1988	Not in development	£ 5,000,000
Anti-thrombin III	FDA Licence 1988	In pilot plant development. Clinical trials commence ?1990. Product licensed ?1993.	£ 500,000
Heat treated IgG	Licensed in some European countries	In research laboratories: not yet in pilot plant. Clinical trials commence ? 1990. Product licensed ?1993.	£ 500,000
High purity albumin	Licensed worldwide	In pilot plant. Clinical trials commence ?1989. Product licensed ?1990.	£ 3,000,000
Anti-bacterial IgG	FDA Licence ? 1989	Development just commenced. Clinical trials commence ? 1990. Product licensed ?1993.	)£ 1,000,000
Fibronectin concentrate	FDA Licence applied for	Not in development	£ 500,000
Activated Factor IX Concentrate	UK and FDA Licences	Not in development	£ 400,000
Haemoglobin solutions	US Clinical Trial Certificates Released	Development in HQ Laboratories only. Not yet reached PFC.	)£ 4,000,000

TOTAL)£19.75 m.p.a.

The consequences of the lack of adquate investment and appropriate management in R and D at PFC will be exacerbated as prescribing clinicians respond to the impact of the Consumer Protection Act (1987). Associated with these difficulties is the hitherto paucity of an SNBTS commitment to clinical trials.

(d) PFC has not kept up with the market in terms of the quality of its two major bulk products: factor VIII and albumin. Hitherto it has concentrated on producing high yielding and low purity (lower cost) products, and has seen this as its primary contribution towards national self-sufficiency. Within the last 3 years it has become apparent that the quality of PFC's albuminoid products may

be detrimental to some patients. Moreover, the world factor VIII market has shifted significantly in terms of increased purity (seen by BPL and they now have a product which is likely to be acceptable to clinicians for 2-3 years). PFC's current product (Z8) is wholly unsatisfactory (cannot reliably be dry heated at 80°C for 72 hours and as a consequence a number of batches are lost; which drops the yield from 250 iu/litre of plasma processed to nearer 200 iu/l). These difficulties with Z8 have only emerged in 1987/88 and the precipitous fall in yields has almost obliterated national stocks. Whilst PFC plans to produce an improved Z8 which will be similar in quality to the BPL product (and with a yield around 230 iu/l) this is not likely to be available for routine use until late 1989/early 1990. We can therefore anticipate that in 1988/89 and 1989/90 Area Health Boards will probably require to purchase approximately 3-3.5 million i.u. of factor VIII from commercial sources (at a cost of approximately £500,000 p.a.). PFC expects to have available in 1989/90 a more highly purified albumin product. This product would appear to be associated with a 20% fall in yield. Thus beginning in 1989/90 Area Health Boards can expect to have to purchase albumin (at a total annual cost of at least £500,000 p.a.).

There can be no doubt that these supply problems are likely to be further compounded in the face of an escalation in demand for factor VIII and albumin. There is equally no doubt that resolution of these problems is now particularly difficult. Nonetheless efforts should be made to return to self-sufficiency if the least cost option is preferred. Of no less concern is the commercial market drive to secure a place for very high purity factor VIII concentrates. These, it is now claimed, will be 6-8 times the price of currently available products.

Proposals:

Current continued escalation in absolute (volume) demands and increases in purity of existing products with inevitable yield

penalties, necessitate an increase in plasma input in order to remain self-sufficient. PFC is not well placed to take on an increase in plasma input and indeed consideration may have to be given to reducing existing throughput in the light of the recent activities of the Medicines Inspectorate. The proposed increased RTC plasma procurement programme (which will be a combined optimal additive solution (OAS) and plasmapheresis programme) will take several years to implement fully. Unlike the 1980 recovered plasma programme this new programme will require significant revenue investment and although primarily directed towards factor VIII (see separate Report) will enable the SNBTS to return to self-sufficiency in albumin.

The broad proposals are as follows:-

1. The CPO (SHHD) authorises PFC to use its best efforts, pending the commissioning of phases III and IV, to increase its fractionation throughput to accommodate the needs of the SHS.
2. The Northern Ireland PFC contract is terminated.
3. The new PFC staffing structure with associated improvements in working practices are approved and implemented.
3. Funding is initiated at RTCs to commence OAS and plasmapheresis programmes (see Factor VIII Report).

The PES aspect of these proposals can be summarised as follows:-

	1989/90	1990/91	1991/92
PFC new staffing structure	£ 250,000		
RTC plasma procurement	£ 400,000	£ 50,000	£ 50,000
PFC increased disposables	Nil*	£ 9,000	£ 6,000
TOTAL	£ 650,000	£ 59,000	£ 56,000

(* Assumes NI fractionation will cease and funds redeployed)

Note: This investment should be compared to the annual cost to AHBs of purchasing factor VIII and albumin in excess of £1 million p.a. Moreover, the investment in the staffing structure will permit an

will permit an improvement in the overall efficiency of PFC's functions.

SNBTS MANAGEMENT

Current management arrangements for the SNBTS are less than satisfactory and it seems certain that many of the present difficulties arise because of these deficiencies. Proposals have been submitted by the NMD to the GM which it is certain will improve the Service's management performance. There may be a need to consider other aspects of management which relate to the development of broad national policies but these will not have a bearing on PES.

	1989/90
SNBTS Headquarters Management Team (New Posts)	£ 50,000
RTC Business Managers (New Posts)	£126,000
TOTAL	£176,000

RESEARCH AND DEVELOPMENT

The SNBTS currently funds research, from NHS sources, in the order of 3% of its total revenue expenditure (2% of turnover). This figure has recently been increased to 6% (4% of turnover) as a consequence of commercial research contracts. This contrasts with approximately 15% of total turnover for its industrial manufacturing counterparts. There is no doubt that the current level of research expenditure has proved to be the primary factor in the anticipated decline in the contribution PFC will make in the next decade to the SHS. The major problem is a lack of sufficient high quality innovative research closely followed by deficiencies in reducing to practice (development) within PFC. There is also a requirement for the SNBTS's research investment to be better targeted and managed.

The deficiencies in research investment and management are now so serious that detailed proposals will be submitted to the GM in the near future for urgent implementation. The primary target for this

programme will be to retain PFC's profitability and its long-term viability. Proposals are contained in this PES submission which are designed to address this problem over a period of 3 years and which will bring the overall NHS investment in research to 10% of revenue expenditure.

Proposal:

The primary intention of this development will be to replace the Headquarters Unit Research Laboratories with a SNBTS Basic Science Research Group (located in the University of Edinburgh Forrest Road Buildings) which has a specific remit to service the basic science needs of product maintenance and development at PFC. In addition, and separately, investment will be made in PFC's pilot plant facility (the bridge between basic research and the production environment). The Basic Science Group will be headed by a Director (of equal status to Director of PFC) who will report not only to the SNBTS Divisional General Manager but also a Scientific Advisory Board. All currently tenured staff within the HQ Laboratories will automatically be incorporated into the Group. In addition Dr McClelland has agreed to transfer several of his senior scientists to this programme, notably Drs Prowse and Moore. Steps will also be taken to rationalise and manage NHS funded research and development within RTCs.

The PES summary position is as follows:-

1989/90	1990/91	1991/92
£250,000	£150,000	£100,000

CONSUMER PROTECTION ACT (1987)/MEDICINES ACT (1968 and 1971): EEC DIRECTIVE (1991/92)

The Consumer Protection Act (1987) legislation has proved to be a watershed in the attitudes of all senior SNBTS managers to those aspects of the Medicines Acts which relate to good manufacturing practice. Current EEC proposals for a Directive which will lead to

legislation soon after 1991/92 will ensure that the manufacture of the type of products produced at PFC will be subject to the fullest rigours of good manufacturing practice and that standards must be identical in private and public sectors. Although the forthcoming Directive will not apply to RTC cellular products, RTCs produce the raw material for PFC and thus will also become heavily involved in the implementation of this forthcoming legislation. Moreover, in response to the Consumer Protection Act (1987) steps are being taken to introduce, in early 1989, detailed agreed national (UK) specifications for RTC derived cellular products with appropriate parallel systems for validation (quality assurance).

Hitherto, outside PFC, the SNBTS has not invested in manpower to establish good manufacturing practice. Thus current RTC quality assurance programmes and other features contained in the DHSS Medicines Division's "orange" guide to good manufacturing practice are not in place. Professor Ganderton (London University) has recently examined the quality assurance programme within PFC and has expressed concern at the absence of a direct presence of QA personnel within the production department. Recent investigations, following serious untoward reactions in patients receiving a PFC product, have confirmed the wisdom of Professor Ganderton's comments - there is no adequate surveillance of PFC's production department to ensure day-to-day compliance with good manufacturing practice.

Proposal:

The proposals to remedy the deficiencies in PFC are contained in PFC's staffing structure proposals. Separate proposals are included in this PES document to remedy deficiencies in RTCs: the appointment of full time Quality Assurance Managers in all Centres (with the exception of Inverness where a special responsibility payment may be appropriate).

	1989/90
4 Quality Assurance Managers	£69,000

REAGENT MANUFACTURE

The availability and quality of immunohaematology reagents within the SNBTS and AHB laboratories is less than satisfactory. Current legislation (Consumer Protection Act) necessitate change. As part of a programme designed to meet this need for the whole of the SHS, and to make very substantial savings for the SNBTS and Area Health Boards, an SNBTS Reagents Manager was appointed in May 1988. The potential savings which will accrue in this programme (in excess of £1 million p.a.) will not be fully realised without some modest start-up expenditure over a period of 3 years.

Proposal:

The proposals contained in this PES submission are designed to realise this substantial long-term saving.

ITEM	1989/90	1990/91	1991/92
Staffing appointments	£ 35,000		
Supplies and Services	£ 70,000		
TOTAL	£105,000		

Note: Significant self-financing estimated by 1992/93

CLINICAL TRIALS FACILITIES

Data on safety and efficacy are an essential prerequisite to the acquisition and maintenance of product licences. Hitherto there has been no facility for this and current and impending legislation make this essential. A Clinical Trials/Product Surveillance Manager has recently been appointed to develop this feature of the SNBTS's work.

Proposal:

Proposals are included to fund the envisaged field work (patient studies) that will be required to support this programme (see

predicted new clinical trials workload on pages 8 and 9.

1989/90	1990/91	1991/92
£20,000	£10,000	£20,000

SAFETY OF BLOOD DONATIONS: MICROBIAL DONATION TESTING

It seems certain that the concern to secure confidence in the safety of blood transfusion, with regard to the transmission of microbial infections, will continue to escalate over the next two decades. The SNBTS is currently engaged in syphilis, HBV and HIV-1 screening. Furture candidates include NANB (surrogate testing is currently widely practised and Chiron Corp have recently announced they are close to introducing a specific NANB test system to detect antibodies which will be marketed by Ortho Diagnostics), HIV-2 (second causative agent of AIDS - limited screening of donations has already been introduced in UK - by PHLS); HTLV-1 (causes adult T-cell leukaemia: a recent study in the US indicates approximately 3,000 infected donations transfused annually with a 60% chance of the receipient developing leukaemia). The American Red Cross intend to commence total HTLV-I screening programme as soon as possible - has been found in New York and Italian intravenous drug users.

There are a number of difficulties in this area that are of concern to the SNBTS:-

(i) The SNBTS has no access to appropriate blood transfusion slanted advice on technical and policy matters.

(ii) The current reference services (provided by the Universities of Glasgow and Edinburgh) for HBV and HIV-1 are less than satisfactory. This has raised serious ethical and operational problems.

(iii) There are currently no equivalent UK regulations, with regard to the performance of donation screening tests, to those in the USA. Thus there is no central control over the overall quality of test systems or batch to batch variation in performance.

These serious difficulties have led the SNBTS to set up a team to validate new (HBV and HIV) kits before they are accepted for use in our Centres. This group has already performed well, not only in validating kits but in monitoring subsequent performance and providing standards and controls. However its Chairman (Dr Cuthbertson, PFC) has indicated he can no longer cope with this workload: the SNBTS has no other senior microbiologist.

(iv) In the context of current and impending legislation there is a need to consider whether the introduction of a new (specificity) donation screening test in the SNBTS is a policy matter outside the provenance of CSA policy. Because these matters relate to the safety of blood transfusion practice there would appear to be a requirement to formalise the responses to specific professional requests in this area.

	1989/90	1990/91	1991/92
Top Grade Scientist: National Microbiology Manager & Reference Laboratory Director	£23,000		
Chief MLSO		£15,000	
Senior MLSO		£12,800	
Disposables for reference work	£10,000	£20,000	£10,000
ALT screening of donations	£85,000	(£25,000)	
NANB screening of donations		£300,000	
HTLV-I screening of donations		£300,000	
HIV-2 screening of donations			£300,000
TOTAL	£118,000	£622,800	£310,000

COMPUTING DEVELOPMENTS

The currently approved in principle national computing developments will have a substantial long-term impact on the performance of the SNBTS, with respect to enhancing safety and management

performance. The maintenance of the planned progression of this programme will largely depend on the sustained availability of capital and revenue funds. This development should be regarded as a high priority one.

1989/90	1990/91	1991/92
£25,000	£25,000	£25,000

REVENUE COSTS OF MAJOR CAPITAL (BUILDING) PROJECTS

In the period this PES covers we can anticipate four significant building projects will be completed - all directed towards ensuring the relevant Centres (Aberdeen, Dundee, Inverness and PFC) can obtain manufacturing licences. The size of the estimated increased revenue costs of these projects in overall terms may be regarded as modest but set in the context of the amount of new revenue monies currently made available to the SNBTS and the fact that the programmes are likely to be completed in successive years then the consequences are likely to have a prolonged and major destabilising effect on the general development of the SNBTS's services to the SHS. It is for this reason that this topic has been selected for specific reference in the PES proposals.

	1989/90	1990/91	1991/92
Aberdeen		£110,000	
Dundee			£ 50,000
Inverness			£ 30,000
TOTAL		£110,000	£ 80,000

ANIMAL TESTING FACILITIES

In anticipation that PFC, in the context of obtaining product licences, would require animal testing facilities to undertake specialised efficacy and safety testing the Agency has funded a post within the HC laboratories and gained access to animal house facilities in the University of Edinburgh. Since the original proposals were put

forward it has become apparent that PFC's demand for these services is increasing. Accordingly provision has been made in the current PES proposal to invest further in this work.

	1989/90	1990/91	1991/92
SSO (new post)		£16,400	
Disposables	£15,000	£ 5,000	£ 5,000
TOTAL	£15,000	£21,400	£ 5,000

TISSUE TYPED BLOOD DONOR PANEL: PLATELET THERAPY/ BONE MARROW TRANSPLANTATION

Planning is now well advanced, with DHSS co-operation, to establish a UK tissue typed blood donor panel. This panel will be used primarily as a source of unrelated bone marrow for transplatantion purposes and to a lesser extent to obtain donors for the management of patients (usually leukaemic) who have developed resistance to conventional (random donor) platelet therapy. The proposed UK programme will be run by the UK blood transfusion services and the central register of tissue typed blood donors will be located at Bristol RTC. The SNBTS contribution to this programme (based on population) will be to recruit and tissue type 10,000 donors over 5 years. The programme will be co-ordinated by Dr Crawford (W BTS) and the major effort and investment will only be required over a period of 5 years. Thereafter the panel will simply be maintained.

1989/90	1990/91	1991/92
£65,000		

SNBTS 50th ANNIVERSARY CELEBRATIONS

Planning has already commenced for the 50th anniversary celebrations for the SNBTS in 1990. It is the view of the Directors that substantial efforts should be made to make this occasion an opportunity to display the work of the SNBTS in high public profile. We believe this will have an important impact on the public's attitudes to

the Service and thus our blood collection campaigns.

Proposal:

It is proposed that the Organising Committee be given a budget of £100,000 for this exercise. This should be phased as follows: £20,000 in 1989/90 and £80,000 in 1990/91. An indication as to whether this proposal is acceptable to SHHD will be required in the current financial year (1988/89).

1989/90	1990/91	1991/92
£20,000	£80,000	(£100,000)

HAEMOGLOBIN SOLUTIONS

Work is now well advanced in the HQ laboratories with the development of a programme designed to produce an acute volume expander which carries and delivers oxygen, virus free and does not require crossmatching. It is anticipated that pilot plant (PFC) production scale up will commence in mid 1989. Two surgical teams (Edinburgh and Belfast) have already been recruited to undertake clinical trials. The Belfast team have agreed to undertake animal studies in the summer/autumn of 1988 and preliminary basic animal studies have been completed at Porton Down (British Army). This project was originally conceived to be directed towards a product for civil defence and military use. It is now becoming clear it may have a major contribution to make in routine hospital practice as a first-line infusate instead of blood (red cells) for a very large number of patients.

Proposal:

The requested funding is designed primarily to be invested in PFC.

1989/90	1990/91	1991/92
£10,000	£50,000	£50,000

NORTHERN IRELAND FRACTIONATION

The figures included in the proposals reflect the growth estimates based on discussions with NI colleages.

1989/90	1990/91	1991/92
£ 5,000	£ 5,000	£ 5,000

SUPPLY OF PRODUCTS TO THE PRIVATE SECTOR

The figures are estimates based on discussions with the private sector.

1989/90	1990/91	1991/92
£ 5,000	£ 5,000	£100,000

COMMERCIAL INTERFACE STEERING GROUP

A modest increase in provision is proposed.

1989/90	1990/91	1991/92
£ 5,000	£ 5,000	£ 5,000