



Better working together

SCOTTISH NATIONAL BLOOD TRANSFUSION SERVICE ANNUAL REPORT 1999/2000



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Donor Centres – co-ordinate blood collection activities in local communities across Scotland.



Processing & Testing Centres – test blood donations and make blood products.

Clinical Centres – provide specialist transfusion advice and services to local hospitals.



National R&D Laboratory – SNBTS's R&D also takes place at other sites including NHS Trusts and universities.



Liberton Campus – is the central base for: Protein Fractionation Centre; Diagnostics Scotland; Bone and Tissue Directorate; Corporate Services.

Working for Scottish patients,
hand in hand with our international partners



Our organisation at a glance

SNBTS serves the whole of Scotland and therefore operates from a variety of locations across the country. As you can see from the map, blood collection activities are co-ordinated from five local donor centres; two processing and testing centres ensure blood donations are safely manufactured into life-saving products; our vehicle fleet provides an integrated transport network to support blood collection teams and deliver blood products throughout Scotland; transfusion specialists at the five clinical centres assist local doctors in the selection and use of appropriate blood products for their patients; R&D projects can be centrally or locally managed but SNBTS's overall programme is driven by our R&D Director based in the national laboratory in Edinburgh; the Liberton Campus is home to the core manufacturing plants of the Protein Fractionation Centre, Diagnostics Scotland, bone and tissue products and central support services such as financial management and capital planning.

Donor Centre Details & Opening Times

- Glasgow 80 St. Vincent Street, Glasgow, G2 5UA 0141 226 4111
Mon & Tues 11.00am–4.30pm Wed & Thurs 11.00am–7.00pm Friday 9.30am–4.30pm Saturday 9.30am–2.30pm
- Edinburgh 41 Lauriston Place, Edinburgh, EH3 9HB 0131 536 5360
Mon–Thurs 11.00am–7.00pm Friday 11.00am–4.00pm Saturday 9.00am–1.00pm
- Dundee Level 8, Ninewells Hospital, Dundee DD1 9SY 01382 645166
Wednesdays (for appointments) 10.00am–5.30pm Walk-in 2.00pm–6.00pm Last Sunday of every month 2.00pm–5.00pm
- Aberdeen Foresterhill Road, Aberdeen, AB25 2ZW 01224 685685
Tues 4.30pm–8.00pm Wed 3.45pm–7.30pm Fri 8.30am–10.30am
- Inverness Raigmore Hospital, Inverness, IV2 3UJ 01463 705315
Monday am (appointments only) 10.00am–12.40pm Last Wednesday of every month 10.00am–6.00pm

SNBTS is a division of the Common Services Agency of the National Health Service in Scotland.

Introduction by National Director



Angus Macmillan Douglas with Jean Adam of DiaMed AG, one of SNBTS's international partners.

"We are increasingly forming partnerships with trusts, universities, commercial companies and other blood transfusion services to ensure we stay at the forefront of international development"

The last year has been another one of great progress for the Scottish National Blood Transfusion Service (SNBTS). Work on implementing the modernisation programme, which was developed and widely consulted on the year before, got underway and has already resulted in many practical improvements for both donors and patients.

The year-on-year decline in blood supply which occurred through most of the '90s has been reversed. The support of additional blood donors during the last year made it possible for our hospital colleagues to meet the rising demand for blood to treat patients across the country including premature babies, patients with cancer and leukaemia and those who required major surgery. I would therefore like to take this opportunity, on behalf of the Service, to say a huge thank you to everyone who gave blood during 1999/2000.

We also recognise that the only way to encourage more donors in the future is to make it more convenient for people with busy lives to give blood. Although significant improvements have already been made we acknowledge that we still have some way to go to further develop and expand our collection programme across Scotland.

For patients, we have introduced a number of product improvements during the year; the most significant of which has been the removal of white cells from blood products which are transfused. Although this was introduced to reduce the theoretical risk of variant CJD it has also reduced adverse transfusion reactions

in some patients. The Bone and Tissue Products Directorate was established during this year and has concentrated on achieving consistent quality standards for products supplied for use in orthopaedic and surgical procedures. As part of our 'Effective Use of Blood' programme we are working with the Scottish Executive, colleagues in Trusts and our Clinical User Group to promote good transfusion practice in hospitals throughout Scotland.

More generally, we are increasingly forming partnerships with universities, commercial companies and other blood transfusion services to ensure we stay in the forefront of international development. We continue to promote the economic use of all our publicly funded assets, including intellectual property – this is particularly relevant to our plasma product, diagnostic and research activities.

I am confident that SNBTS has made a major contribution to the NHS in Scotland (NHSiS) during the last year as well as enhancing our international reputation as a world leader in the development of new products and manufacturing processes. In achieving this, I cannot praise sufficiently the contribution of our staff who have shown the flexibility and commitment which has made this progress possible.

Angus Macmillan Douglas, National Director SNBTS

The blood supply chain

– an integrated network



Millennium donor day, Glasgow Donor Centre



The Dumfries blood collection team

“A hugely successful millennium donor day was organised at centres across Scotland to encourage people to give blood in advance of the extended Hogmanay celebrations”

The blood supply chain encompasses the collection, processing and testing of blood donations together with stock management and distribution of finished blood products to hospital blood banks for patient care across Scotland. The successful operation of this integrated chain of activities is at the heart of SNBTS – teamwork and communication have played a vital part in the significant achievements of the blood supply chain throughout this year.

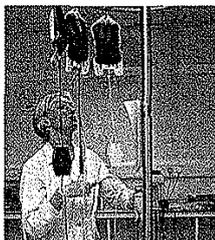
Blood Collection

Recent research has shown that busy lifestyles are making it more difficult for people to find the time to give blood. In response, a number of new initiatives, aimed at making it easier to donate, were introduced during the year:

- The Edinburgh Donor Centre was refurbished to create a modern, stylish setting and offer longer opening hours (including Saturday opening)
- A state-of-the-art mobile donating centre (MDC) was commissioned offering better accessibility to communities and workplaces as well as significantly enhancing facilities for donors

- A team of donor recruiters were employed to recruit new blood donors from schools, universities & workplace sessions and publicise the work of the Service
- 'Donate by Appointment' was established in each Centre, offering donors the convenience of a guaranteed time to donate
- The new Dumfries blood collection team settled into their first year of operating within the local community, resulting in 700 more donors from the area

A new hard-hitting cinema commercial was launched during the year to raise awareness of the fact that only five out of every hundred people give blood. New radio commercials were produced to increase awareness of the constant, urgent need for blood and urge the public to come forward during shortages. A postcard with the caption 'Wish you were here!' was sent to donors to remind them of the importance of their donation throughout the summer holiday period. A hugely successful millennium donor day was organised at centres across Scotland to encourage as many people as possible to give blood in advance of the extended Hogmanay celebrations.



In-line filtration of blood donations



The new mobile donating centre with extending side area



Inside the new mobile donating centre

Blood Processing & Testing

During the year the process of leucodepletion (removal of white cells by filtration) from blood products (red cells, platelets and plasma) was fully implemented by laboratory staff in both national processing and testing centres. Removal of these white cells was recommended by the Government as a precautionary measure to reduce the theoretical risk of variant CJD being transmitted through blood. A new PCR (Polymerase Chain Reaction) test for Hepatitis C was introduced for plasma products. Work to adapt this highly sensitive test for use on red cells and platelets is also underway to further enhance the safety of these products.

New manufacturing methods have now been adopted which have improved the consistency and quality of platelet products using 'buffy-coat' removal. This year also saw the introduction of new semi-automated processing equipment to the laboratories to replace previously manual methods. It is a key goal of the processing and testing function to adopt 'best practice' where possible and in the coming months a programme of internal review and external benchmarking will bring the Service closer to achieving this objective.

Stock Management and Logistics

National stock management systems were refined to further improve the use of available supplies and ensure blood continues to be distributed according to need throughout the country. IT systems were devised to monitor national stock levels on a daily basis and facilitate longer-term strategic planning.

SNBTS's transport staff support blood collection activities and provide an integrated system for the delivery of products to hospitals across Scotland. During 1999/2000 several vehicles were introduced into the fleet to ensure this vital link is maintained - the most significant of which was the new mobile donating centre pictured above.

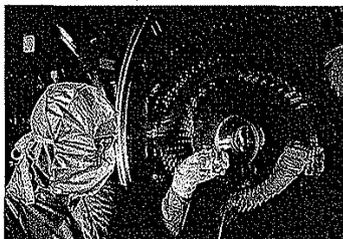
"At least 7 out of 10 children with acute leukaemia are now cured – this would not be possible without the marvellous gift of blood donors. These children would not be able to survive their treatment without blood."

Dr Ted Fitzsimmons, Senior Lecturer in Haematology & Head of the Haematology Department, Western Infirmary, Glasgow

"Providing our clinical colleagues with the right blood at the right time – every time – is the fundamental purpose of the blood supply chain team."

Diane Connor, Blood Supply Chain Director, SNBTS

Protein Fractionation Centre (PFC) – developing plasma products



Studies on freeze-drying of plasma products



Range of plasma products manufactured by SNBTS

“The specialist expertise at SNBTS continues to be called upon by a number of diverse organisations and individuals.”

The manufacture and supply of specialist medical products from human plasma continues to be a key activity for SNBTS. Products include a range of antibody products, albumin and coagulation factors. These are used to treat a wide range of patients including those who have experienced major blood loss, people with immune disorders, patients undergoing chemotherapy and people who have suffered major burns. Exploring the potential for new applications of plasma products in the treatment of a wide range of diseases and disorders continues to be a priority.

SNBTS continued to meet the needs of the NHSIS for all major plasma products during 1999/2000 in addition to providing emergency supplies of plasma products to the wider UK and Eire. The Protein Fractionation Centre (PFC) maintained a very active product development programme and is currently working with a Scottish company (IATROS) to develop a unique Virus Inactivation system based on very high intensity UV light which, if successful,

will lead to even greater margins of product safety. Clinical trials of plasma products exposed to this new UV treatment will commence next year.

In addition to its primary role in meeting the needs of the NHSIS, PFC has also continued to develop and expand its contribution to the prominent Scottish biopharmaceutical industry, through a wide range of collaborative and contract activities within the UK and internationally. This includes the provision of services and advice to a number of commercial companies including the leading Edinburgh pharmaceutical company PPL Therapeutics Ltd. The specialist expertise at SNBTS continues to be called upon by a number of diverse organisations and individuals. For example, PFC staff have made significant contributions to international conferences on virus safety and variant CJD. Representatives have held discussions with a number of key UK and European regulatory agencies and government advisory committees.

“We are pleased to not only continue to meet the needs of the NHSIS but also to be able to develop exciting relationships with the wider Scottish and International biopharmaceutical industry.”

Dr Bob Perry, Director Protein Fractionation Centre, SNBTS

Diagnostics Scotland

– a new partnership



Blood grouping Reagents



Performing ABO grouping

“SNBTS remains at the forefront of biotechnological advances and continues to be a leading player within the highly competitive global diagnostics industry”

Diagnostics Scotland was established in April 1999 following the merger of SNBTS Diagnostics and the Scottish Antibody Production Unit (SAPU).

The creation of this new Directorate, which brings together the expertise of two internationally renowned organisations, will improve service delivery, increase cost effectiveness and provide a more secure platform for long term growth and new product development. This will ensure that SNBTS remains at the forefront of biotechnological advances and continues to be a leading player within the highly competitive global diagnostics industry. A £2m extension to the existing diagnostic manufacturing unit at the Liberton Campus in Edinburgh is being planned to provide a single base for the Directorate which currently operates on two separate sites.

Diagnostics Scotland manufactures a range of over 300 products. These are used in the diagnosis of medical conditions, including the identification of cancerous tumours and the monitoring of heart disease, and to perform a range of tests to identify and classify blood according to blood group and antibody

content. These essential diagnostic tests make it possible to match the blood of a donor correctly with that of a patient thus avoiding serious transfusion reactions which in some cases can be fatal.

SNBTS currently supplies these diagnostic products to over a thousand organisations, both within the NHSIS and throughout the rest of the world.

Whilst the value of product issues to the NHSIS remained consistent at £2.1m during 1999-2000, issues of products outside the NHSIS increased by 10.5%.

Other notable achievements during 1999 – 2000 included:

- The signing of a 10 year strategic collaboration agreement with DiaMed AG – the largest international manufacturer of blood typing test systems
- Investors In People accreditation for the combined unit
- EN46001 quality registration (medical systems) – to supplement existing ISO 9001 registration
- Appointment of additional product distributors in Hungary and Romania

Bone and tissue products – quality across Scotland



Clean room facilities

"Close collaborations between SNBTS staff, hospital and organ transplant teams are essential if collection programmes are to be maintained and improved"

During 1999/2000 the National Bone and Tissue Directorate was created within SNBTS to provide bone and tissue products for patients in Scotland. These patients include children with heart defects, patients who require hip and knee replacements and people with tendon damage often acquired through sports injuries. The national co-ordination of bone and tissue maximises collection opportunities, makes it easier to match donations to patients and ensures consistent quality standards are maintained across the country.

Highlights of 1999/2000:

- Bone banking continued at a steady level with over 2200 collections and 1500 suitable bone donations issued
- The number of tendons implanted reached 22 – more than double the figure for the previous 2 years
- 40 heart valves were banked in the year – a 33% increase on the previous year

The demand for bone and tissues is expected to rise year-on-year creating a key challenge for SNBTS in future years.

Close collaborations between SNBTS staff, hospitals and organ transplant teams is essential if collection programmes are to be maintained and improved. As with blood products, high quality systems and processes are essential to maintain safety standards. In addition, a new IT system is being developed to further improve quality control and stock management.

"We really appreciate the high standards
of products supplied by SNBTS"

Mr W Ledingham, Orthopaedic Consultant, Grampian University Hospital Trust, Aberdeen

"When you come so close to death it really turns
your world upside down and you learn to appreciate
everything you're able to do." Emma Niven

Patient care

– delivering clinical excellence



Lyndsey Brown, saved by blood transfusions in the womb



Emma Niven and friends after their fundraising 10 km run. Emma, now fully recovered, received 24 units of blood following a rare condition which developed after the birth of her daughter

“The safety of blood products supplied for patient care remains a top priority”

Blood plays an important role in supporting the care of a number of diverse groups of patients throughout the country. These include patients of all ages from the youngest premature babies, whose tiny bodies are unable to make their own blood, to senior citizens undergoing hip replacement surgery.

Some patients may require a single emergency transfusion for example after a road traffic accident, whilst others, including patients with cancer or leukaemia, may require regular transfusions throughout their treatment programme. Less common, but equally important, are the patients with blood disorders who require ongoing blood transfusion support throughout their entire lives.

The safety of blood products supplied for patient care remains a top priority and in the past year two new developments have been successfully implemented:

- The removal of white cells from every donation was introduced as a precautionary measure to reduce the theoretical risk of variant CJD being transmitted to patients through blood. This action has also substantially reduced the number of patients who experience minor transfusion reactions such as chills, shivers and fevers.
- The virus inactivation of plasma has also been achieved and it is anticipated that in the next two years it will be possible to apply similar techniques to other blood products as a further safeguard against blood-borne infections.

SNBTS's 'Effective Use of Blood' group is identifying the best systems for handling blood in hospitals. This will test different ways of ensuring that the right blood is given to the right patient for the right reasons every time and will hopefully reduce the number of transfusion problems caused by human error which is the most common cause of adverse transfusion reactions.

The SNBTS User Group, chaired by Mr. Robert Jeffrey, Consultant Cardiac Surgeon in Aberdeen, made significant progress during the year including the organisation of a meeting where hospital transfusion committee representatives from across Scotland met to discuss how transfusion could be made even safer.

Work commenced on a new national state of the art blood transfusion centre at Gartnavel hospital in Glasgow which will replace the existing processing and testing centre at Law Hospital. In addition to providing front line patient services, particularly in the field of cancer care, the new centre will facilitate closer academic and research links with the University of Glasgow's departments of haematology and virology.

New Technology

Blood testing has undergone a major change recently with the introduction of Polymerase Chain Reaction (PCR) technology which further improves the safety of blood products via early detection of infection in blood donations. Although PCR testing for Hepatitis C is being extended to all blood products in the period 1999-2001, there is new emerging technology which promises to modernise blood testing further. Based on microarray (biochip) technology, if successful, these developments offer the potential to revolutionise blood sample analysis, making blood testing even more efficient and safe. SNBTS is committed to utilising its expertise, patent portfolio and industry partnerships in the development of such advanced R&D.

Partnerships and Intellectual Property

SNBTS has enjoyed great success in 1999/2000 both in its own right and mutually rewarding collaborative ventures with international partners. Listed opposite are just a few examples of where these have worked for the benefit of Scottish patients and world-wide healthcare:

Patenting

SNBTS's patent portfolio continued to grow with patents granted for endotoxin specific monoclonals, stem cell growth and thrombin processing. Three further patents were filed in the areas of prion removal by filtration, intravenous IVIgG processing and UV virus inactivation, the latter jointly with IATROS Ltd.

Collaboration

- SNBTS continued work with European colleagues on an EU funded research project into prion inactivation and removal from plasma products – believed to be a key element in the prevention of variant CJD transmission. Significant 'leading edge' knowledge has already emerged which will improve future blood safety

- SNBTS worked alongside Swiss partners DiaMed AG to secure and extend the supply of blood grouping reagents
- SNBTS and the University of Aberdeen combined their respective expertise and resources to develop and enhance transfusion medicine
- SNBTS developed its partnership with the Scottish company IATROS Ltd, making significant advances in its joint technology to inactivate infectious agents in plasma products

Licensing of Intellectual Property

SNBTS signed a licensing agreement with VitaResc Biotech AG of Germany which enables the use of a patented monoclonal antibody in the development of a new therapeutic product to treat patients suffering from bacterial endotoxin poisoning – often fatal at present.

SNBTS continued its collaboration with Taiwanese partner BioTrust to provide a secure supply of therapeutic plasma products for the people of Taiwan, sourced from their donors.

Contracted Services

SNBTS continues to look for opportunities to share its expertise and facilities to ensure best use is made of NHSIS resources. During 1999/2000, PFC continued to provide contract filling services to PPL (the Edinburgh-based pharmaceutical company), generating income which was reinvested in SNBTS's facilities. In addition, SNBTS signed a service agreement with the Blood Transfusion Service of Ireland to provide PCR virus detection testing on blood donations for a number of years – sharing our expertise to provide safer blood products for the people of Ireland.

"PPL has been working with the SNBTS for a number of years and has always been very satisfied with the service we contract from them. We have the highest regard for the work of the SNBTS."

Dr Martyn Breeze PhD, Commercial Director of PPL Therapeutics plc

Our team

– better working together



Blood collection team visiting Dunfermline



Patient undergoing therapeutic apheresis

“How effective we are as a team has an impact on ourselves, donors, patients and others working in the wider NHSiS”

At the core of SNBTS are five national directorates, each concentrating on delivering a distinct set of products and services for the NHSiS. These 'front-line' units are: Blood Supply Chain, Plasma Products (PFC), Diagnostics Scotland, Bone and Tissue Products and Clinical Services. Smaller, specialist groups work closely with them providing essential support in the areas of R&D, Finance & Procurement, Information Systems, Estates & Capital Planning, Personnel and Engineering. A national management board, with members from across Scotland, provides leadership and strategic direction.

With employees based across Scotland in a wide variety of roles, working 'together' is the key to success for SNBTS. How

effective we are as a team has an impact on ourselves, donors, patients and others working in the wider NHSiS. In recognition of this, SNBTS has embarked on the development of our 'People Strategy'. A series of workshops were held in the Autumn and Spring of 1999/2000, involving cross-sections of staff. The objective – to develop a shared view of how we wish to work together and what practical changes we can make to improve teamwork. Thanks are due to all those who took part, the workshops were extremely useful and the outcomes from the process will form the foundation of our People Strategy to be launched in 2000/2001.



Launch of refurbished Edinburgh donor centre



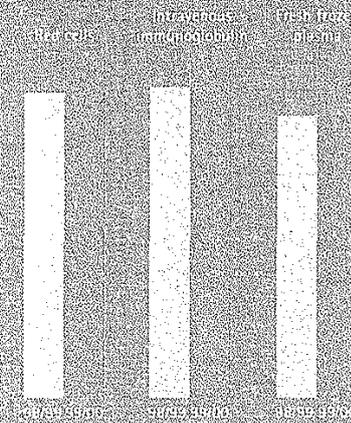
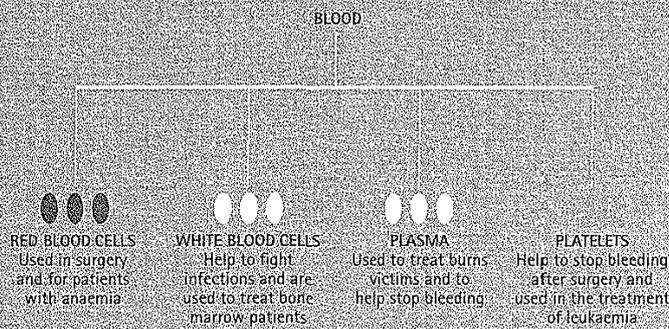
Thanking organisations for their support

Facts and figures

Blood components & products

Blood donations are separated and processed to make many different products. The charts/figures below show the major products issued for patient care in Scotland.

What happens to my blood?



During 1999/2000, SNBTS responded to increasing hospital demand for red cells – an increase of 2% on the previous year. Also notable is the 20% increase in issues of fresh frozen plasma (FFP) during this year reflecting an increase in patient treatments, such as plasma exchange, which use this product. There were also some key changes in plasma product issues in response to changes in prescribing practice. This has led to a fall in issues of Factor VIII, Albumin and Intramuscular Immunoglobulin but, on the other hand, has driven a worldwide increase in demand for Intravenous Immunoglobulin, used in a variety of patient care including treatment for people who cannot produce specific antibodies or who suffer from auto-immune diseases.

	1999/2000	1998/1999
BLOOD PRODUCTS ISSUED		
Red cells	1,000,000	980,000
Platelets (one unit - 100 million platelets)	27,000	29,000
Whole plasma	1,000,000	800,000
Fresh frozen plasma	1,000,000	800,000
PLASMA PRODUCTS ISSUED		
Factor VIII (IU)	10	10
Factor IX (IU)	20	20
Albumin (IU)	10	1000
Intravenous immunoglobulin (IU)	100	70
Anti-D (IU)	50	60
Anti-C (IU)	100	100
Anti-Human C (IU)	200	100
Intramuscular immunoglobulin (IU)	200	200
Factor X (IU)	100	100

1 iuu: million international units, a standard measurement of biological potency

Financial Information

The SNBTS receives central funds for most of its activities and provides blood and plasma products free to the National Health Service in Scotland. The figures below are taken from the Annual Accounts of the Common Services Agency and have been prepared on an income and expenditure basis.

EXPENDITURE

	1999/00 (£)	2000/01 (£)
Salaries and Wages	20,418,771	23,200,704 ^a
Operational Supplies	4,705,415	15,169,616 ^b
Equipment Purchase and Maintenance	2,761,688	2,257,687
Building Running Costs	1,052,786	2,057,003
Transport & Travel	1,017,301	1,177,277 ^c
Communication & Public Relations	725,881	1,101,413
Other Expenditure	1,876,714 ^d	2,481,466
Capital Charges	1,174,888	1,308,241
Total Expenditure	34,523,324	49,657,398
Surplus	1,331,570	1,510,129

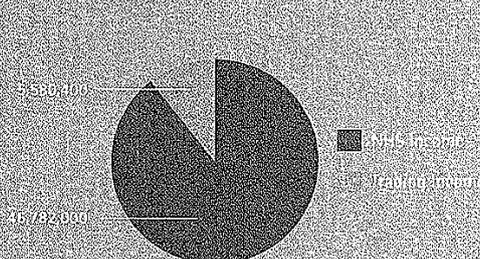
FUNDING SOURCES

	1999/00 (£)	2000/01 (£)
NHS Income	41,729,052	40,719,019 ^e
Trading Income ^f	7,011,021	5,510,401
Total Income	48,740,073	46,229,420

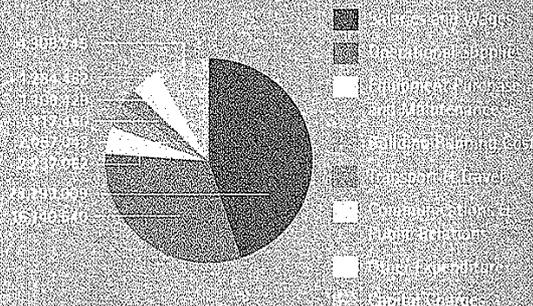
Notes

- a Increased to accommodate merger of SAPU and new staff for leucodepletion.
- b Reflects increased cost of plasma imports, leucodepletion and SAPU costs.
- c Reflect new centralised processing & testing arrangements, significant maintenance on ageing vehicle fleet which has since been replaced.
- d Includes write-off of UK plasma products with book value of £1.2 million.
- e Includes £5.8 million to complete the replacement of UK plasma with imported plasma and to fully implement leucodepletion. Also, to meet the cost of increased demand and to reflect the merger of SAPU.
- f From organisations outwith the NHSIS providing additional funds for SNBTS developments and essential Capital investments.

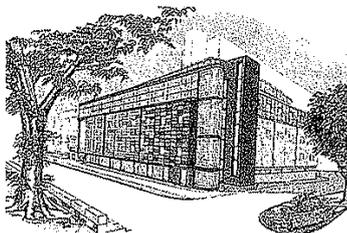
Funding Sources 1999/00 (£)



Expenditure 1999/00 (£)



Estates and capital planning



Artist's impression of the new Glasgow-Transfusion Centre at Gartnavel Hospital



Scottish Minister for Health Susan Deacon, Angus MacMillan Douglas, Dr Rachel Green and Francis Gibb mark the commencement of construction of the new Glasgow Transfusion Centre

Major Projects

Construction of the new transfusion centre at Gartnavel Hospital in Glasgow commenced in November 1999. The project is on schedule for completion and full commissioning by April/May 2001.

Minor Projects

Tissue services facilities were extended to provide additional laboratory accommodation and a second clean room was completed.

Space released in the Dundee Centre as a result of the strategic review was handed back to the local Trust, following minor alterations. These alterations included improvements in health and safety practice for the use and handling of liquid nitrogen.

Equipment

Major items of capital equipment included:

- Two lightcycler systems for PCR testing
- A Nuclisens extractor for PCR testing
- Fermenter for Diagnostics Scotland
- Improved manufacturing equipment for PFC
- Cryo storage equipment for the Aberdeen Centre

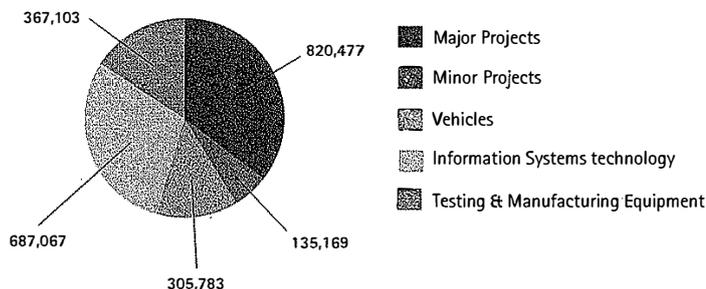
Vehicles

There was major investment in the national fleet. This saw improvements including the provision of a new mobile donating centre for Glasgow, two replacement mini buses and new vans for the local and long distance deliveries.

Information Systems Equipment

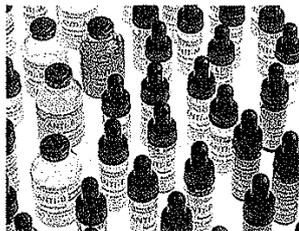
1999 saw major investment in upgrading of the SNBTS network, enabling standardisation of operating systems across the Service.

Capital Investment Projects 1999/2000 (£)



National blood donor helpline:
0845 90 90 999

Website:
www.scotblood.co.uk



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