

McCRUDEN  
Br 68021

# NATIONAL BLOOD TRANSFUSION SERVICE

## REGION VII

---

### THE WORK OF THE NATIONAL BLOOD TRANSFUSION SERVICE

(For the Information of Local Organisers)

---

During the War, everyone realised that blood transfusion on a large scale was necessary for the treatment of wounded soldiers, sailors and airmen. Blood donors came forward readily to offer their services; thousands of lives were saved; and blood donation took its place in the life of the nation as a form of personal service which could be given by anyone in a normal state of health. Even in remote country villages, people began to look on the visit of the Blood Transfusion Service as a normal event in their lives.

With the end of the War came the inevitable "letting-up". People felt that blood was not so urgently needed and when the summons came to give a blood donation, donors were apt to put the card on one side and forget it, if the appointment happened to be a little inconvenient.

As a result of this apathy, hospitals in many parts of the country were unable to obtain the supplies of blood necessary to bring new life to their patients. At the very time when war-time research and experiment had opened the way to a great increase in the use of blood transfusion, the supplies had begun to dry up.

### THE NATIONAL BLOOD TRANSFUSION SERVICE

The great success of the War-time Blood Transfusion Service in the saving of life which resulted from it, has led to a tremendous increase in the use of blood in our hospitals. The increase in this Region alone is from 600 transfusions in 1938 to an estimated 30,000 in 1947. That is to say, fifty times as much blood is required now as was needed before the War. This gigantic increase has led to a unanimous demand from the hospitals, and from the medical profession in general, that a blood transfusion service should be a permanent feature of our peace-time medical services.

It is in response to this demand that the National Blood Transfusion Service has been set up with laboratory centres in twelve university cities throughout the country. The laboratory and main blood-bank for South-West England are in Bristol, and arrangements have now been made to open an auxiliary centre at Plymouth to serve Devon and Cornwall.

### THE REGIONAL CENTRE

The Regional Laboratories are located at Bristol, because there is a University with a medical school and associated teaching hospitals. This enables research to be carried out in co-operation with the University and the hospitals. The function of the Regional Transfusion Centre is not only to collect blood to supply the hospitals, but also to provide a consultant service for difficult cases and advise the hospitals on the use of blood for transfusion.

Nevertheless, the collection and distribution of sufficient blood to meet the needs of the hospitals is of primary importance. The amount of blood required in this Region is equivalent to 30,000 donations, and each county has been asked to supply sufficient donors to meet the needs of its

own hospitals. "Quotas" for 1947 have been allocated as follows:-

Bristol	-	7500 donors
Gloucestershire	-	4500 donors
Somerset	-	4500 donors
Wiltshire	-	4500 donors
Devon	-	4500 donors
Cornwall	-	3000 donors
Dorset	-	1500 donors

The British Red Cross Society has offered to act as the co-ordinating body for the enrolment and welfare of donors, and an Honorary Blood Donor Organiser has been appointed in each county.

The County Organisers have undertaken the responsibility of securing sufficient donors to meet the county quota, and they have, in this work, the willing assistance of voluntary local organisers in factories, towns and villages. The local organisers belong to many organisations (Red Cross, St. John Ambulance, W.V.S., T.O.C., British Legion and Trade Unions) and most of them have been doing this valuable work throughout the War. Our organisers share with the donors a keen spirit of service to the community and a knowledge that they are contributing to the establishment of a first-class medical service in this Region.

#### HOW THE BLOOD IS COLLECTED

Before one of the mobile units of the Regional Blood Transfusion Service visits your district, the local organisers are busy advertising the sessions and giving appointments to volunteers. By the way, it is a good thing to see your local organiser and make a definite appointment, as this means that you will not be kept waiting. Also, remember that we only ask for sufficient volunteers to keep the hospitals supplied, so if you have made an appointment and find that you cannot keep it, do try to get a friend to take your place. Someone's life may depend on this.

#### AT THE BLOOD DONOR SESSION

When the day comes, the donors who have been given appointments duly present themselves at a local hall which has been transformed, for the occasion, into something resembling a hospital ward.

The local organiser and her helpers are there to welcome each donor and to provide a reminder that, although the actual collection of the blood is done by a skilled doctor and nurses from Bristol, the purpose of the session is to ensure a supply of blood to your local hospital. It is also a comfort to donors to know that there is a representative of the Service in their own town, to whom they can go for information and advice.

At the centre, each donor is given a serial number, which is eventually attached to the bottle of blood and which enables the Service to trace the bottle as it goes on its life-giving journey from donor to patient. The donor then lies down on a bed, where he is watched over by an attentive nurse, while the doctor asks questions to ensure that he is fit to give blood. A blood-pressure reading is taken, and only if the doctor is absolutely satisfied that the donor is fit, does the donation proceed.

Not more than four-fifths of a pint is taken. As each person has a reserve of about two pints in addition to the blood in the circulation, the donation amounts to less than half of one's emergency reserve. After giving the donation, the donor rests for twenty minutes during which time tea and biscuits are provided. The tea not only helps to replace the fluid lost during the donation, but helps to give the session a more informal atmosphere.

## HOW THE BLOOD IS USED

While the donation is being given, samples are collected for blood-grouping and for "cross-matching". (i.e. for matching with the blood of the patient to whom it will ultimately be given).

As many of these tests are intricate scientific processes, all blood collected is returned to the Bristol laboratories, where there is a staff of technicians specially trained in this work. For blood-grouping, two separate tests are done by different technicians to ensure accuracy, and it is only after these tests have been found to agree, that the blood is labelled. Finally the blood has to be certified free from certain transmissible diseases, before it is declared ready for issue to the hospitals. During the whole period from the time the blood is collected, until just before it is given to the patient, the blood is stored in a refrigerator at 4° Centigrade.

When the blood is finally issued to the hospitals, a sample tube is attached to the bottle so that it can be matched up with the patient's blood before any transfusion takes place.

## THE AREA BLOOD BANK

A "bank", or reserve of blood, is held by the main general hospitals in each county. Every week a supply of blood, sufficient to meet its own needs and those of smaller hospitals and nursing homes in the surrounding district, is sent out to each of these "blood-bank" hospitals. In this way, the blood collected each week by our mobile units is distributed throughout the Region, so that supplies of blood are readily available wherever they may be needed. In addition a reserve bank is kept at the Regional Transfusion Centre to meet any unusually heavy demands. We have also emergency panels of donors who have agreed to give blood at short notice, just in case a "run on the banks" should cause a sudden shortage.

Let us consider the case of a small hospital which uses, on the average, two bottles of blood a week. The local organiser in this district would be asked to provide 100 donors. The blood from these donors would be collected on one day and would be distributed throughout the Region. In return for this contribution, the needs of the local hospital would be supplied for twelve months. In effect, this district would supply the needs of the whole Region for one day, and in return the Region would supply the local hospital for twelve months.

By this method, the donors gain because the blood is collected by an experienced medical officer, who is accustomed to assessing the fitness of volunteers, and who can take the blood without causing any inconvenience to the donor. The hospital gains, because it has always some blood in stock, without the inconvenience of sending for, and collecting blood from, local donors.

In the case of an operation, the surgeon can have the blood in the theatre ready in case it should be required. Under the old system, he would have to arrange for one or two donors to attend and wait just in case their blood might be needed. If the blood were suddenly needed, he would have to arrange for the blood to be collected, with unavoidable delay while this was being done. If blood was not needed, the donors would go away after having wasted perhaps one or two hours.

Through the area blood bank system, we ensure that even if a patient lives in a remote country district, blood will readily be available if a transfusion is required.

In addition to the four main blood groups (AB, A, B and O), it is now known that there are very many sub-groups. On account of this, it sometimes happens that a patient requires blood of a certain rare sub-group which cannot be found in his own district. The fact that all blood collected goes through

the Regional Transfusion Centre enables us to keep supplies of the rarer types, so that no case need go untreated because of difficulty in finding blood of a suitable group.

#### TYPES OF CASES REQUIRING TRANSFUSION

1. Accidents. Industrial injuries and road and rail accidents are examples of cases where blood is required to replace that which has been lost by haemorrhage. Severe injuries, involving the loss of limbs, may require as many as 15 - 25 bottles of blood over a period.
2. Anaemias. Blood can now be concentrated, by "packing" the red cells from two bottles of blood into one pint of fluid. In this way, the patient receives the "goodness" of two bottles without overloading the circulation. We have one patient who, during the last five years, has received the donations of over 200 donors in this way. She is now recovering.
3. Operations. A patient who is too weak to undergo a major operation necessary to save his life, can often be built up by blood transfusions. One man of this type received six bottles before the operation; another two during the operation; and is now making a good recovery aided by further transfusions.
4. Maternity Cases. One of the most dramatic advances in transfusion work has been in the field of infant mortality. A few years ago, it was discovered that an acute anemia of newly-born babies was due to incompatibility between the blood of the baby and that of its mother. This condition can be successfully treated by transfusing the baby with carefully matched blood of a particular type, known as "Rhesus negative". The mother, in these cases, can also be treated in this way if she requires a transfusion.

The transfusion of a baby a few days old is a highly-skilled procedure, and arrangements have now been made for babies from all parts of the Region to be sent to Bristol if transfusions are required. They can thus be looked after by medical officers of the Regional Transfusion Service, who have a wide experience of such cases.

#### THE USE OF BLOOD PRODUCTS

Normally, in the blood stream, there are two substances known as fibrinogen and prothrombin. As soon as bleeding occurs, the prothrombin turns to thrombin and acts on the fibrinogen and causes clotting. The clot is a sort of fibrous mat which forms over the wound and prevents any further loss of blood.

Both prothrombin and fibrinogen can now be extracted from the blood and many uses have been found for them. Prothrombin is converted to thrombin which can be used to stop bleeding through its action on the fibrinogen in the patient's blood stream.

Possibly the most ingenious use which has so far been made of these products is the manufacture of "fibrin-foam". This is made by whipping up fibrinogen extract into a foam and then adding thrombin. This causes it to "set", and it can then be pressed into wafers. These wafers can be used to stop bleeding during operations, and their use has enabled surgeons to tackle operations which would formerly have been too dangerous because of the risk of haemorrhage. Because they are a natural blood product, these "fibrin-foam" wafers are absorbed by the body as healing proceeds.

A concentrated fibrinogen extract of blood is also used by plastic surgeons for fixing skin grafts. This natural "gum" enables the grafts to be fixed without pressure, and results which formerly took months to achieve can now be obtained in a few days. This is of the utmost importance in rebuilding

the shattered faces and limbs of men disfigured during the War.

Other fibrinogen products are used in brain and nerve surgery and many astounding results have been achieved.

### THE RHESUS FACTOR

Under section on "Maternity Cases" passing reference was made to the Rhesus factor. In 1940 it was found that the red cells of 85% of the population contain a factor similar to one present in the blood of the Rhesus monkey. This factor is consequently referred to as the Rhesus (or Rh) factor. Those people whose cells contain it are called "Rh positive" and those who lack it "Rh negative". Like the other blood group factors, presence or absence of the Rhesus factor is not related to general health, but it is of extreme importance in determining how one's blood will mix with that of another person. The importance of the discovery lies in the knowledge that the Rhesus negative person is liable to form antibodies active against Rhesus positive blood. This may happen either after a blood transfusion or during pregnancy, and it is essential that these complicated cases be transfused with blood of the correct Rhesus type.

---

This article will show that the work of the National Blood Transfusion Service is by no means confined to collecting and distributing blood, important though this work is. We are co-operating with hospitals and doctors everywhere to ensure that blood is always available for anyone who needs it. We are pursuing research into every aspect of blood transfusion and trying to ensure that the fullest information about the results of this research is put into the hands of the doctors who are using the blood, at the earliest opportunity. In this way, we hope to make the benefits of the most recent research available, even in remote country districts.

To those who are not yet blood donors, we say this. By giving up 30-40 minutes once or twice a year, you can make a valuable contribution to the work which your local hospital is doing to alleviate suffering and to save life. The process of giving blood is simple and painless, but this simple action may be the means of bringing joy to a household which has been saddened by illness or accident.

To those who are blood donors, we say simply "Thank you". We often meet patients who have received transfusions and their relatives, and we can assure you that they always express the utmost gratitude to the unknown donors who have made new life possible. It is only because we know the importance of the work which you are doing, that we repeat:-

When you have made an appointment to give a transfusion, - keep it. A life may depend on it. If you cannot possibly keep it, try to send a substitute or at least, notify the local organiser so that a substitute can be arranged.

---

#### NATIONAL BLOOD TRANSFUSION SERVICE - S.W. REGION

YEAR ENDED 31st DECEMBER, 1946

Blood and plasma issued to hospitals	= 30,000 bottles
Blood collected	= 11,000 bottles
<b>DEFICIT</b>	<b>= 19,000 bottles</b>

During 1946 the deficit was met from stores of plasma collected for the Forces during the War.  
During 1947 it must be met by additional donors.