PROBLEMS FACING THE NATIONAL BLOOD TRANSFUSION SERVICE -
PARTICULARLY WITH REGARD TO THE PROVISION OF BLOOD COMPONENTS

1. Writing in the May 1976 edition of "Health Bulletin" issued by the Chief Medical Officer of the Scottish Home and Health Department, Major General H C Jeffrey (Director, Scottish National Blood Transfusion Service) had the following to say about component therapy:

> "The essence of component therapy is to give the patient only that part of blood which he lacks, promoting more effective and safer treatment and the optimal use of blood".

In the same article he lists the blood components under 5 main headings as follows:-

Red Cells
Leucocytes
Platelets
Whole plasma
Plasma components

The plasma components are subdivided into 9 main groups including:

> Purified Protein Fraction (PPF), the requirement for which will, according to some, dictate the amount of blood which a nation must collect; Factor VIII, to the preparation of which some 500,000 donations of blood are already being devoted annually in England and Wales; and the specific immunoglobulins which are important in the prevention and treatment of certain infectious diseases including rabies and tetanus.

2. Devising and effectively managing a balanced programme for the preparation and distribution of these components is probably the most urgent task facing the NBTS. Apart from the high level of technology and expensive plant which the production of certain components require, there is the difficulty, if excessive waste is to be avoided, which arises because components are not necessarily present in blood in the proportions in which clinicians are accustomed to using them. It is estimated that the treatment of the 3000 haemophilia patients alone will require the fractionation of something approaching 1 million blood donations annually, and meeting this requirement will greatly influence the availability of the other blood components besides Factor VIII.

3. There is ample evidence that the NBTS has the knowledge and experience to meet NHS requirements for most blood components in full. The difficulties currently being encountered appear to arise to a substantial extent from the complication of financing a service in which Regions make a contribution to a national programme for the provision of a particular blood component and in so doing incur expenditure which may bear no relationship to the value of the amount of that component which the Region requires for its own purposes. There are many reasons why a Region's ability to contribute to a national programme may not always match its requirement for the finished product.

4. As long as the collection, testing and despatch of whole blood was the predominant occupation of blood transfusion centres they were able to function as independent regional units which were largely self-sufficient except in times of emergency. The adequacy of independent self-sufficient regional units was however greatly reduced with the introduction of component therapy on a large scale. What now appears to be needed is some method of building up a "production partnership" between the individual Regional Transfusion Centres and the central Blood Products Laboratories so that they each contribute to the maximum to the total NHS requirement for blood products, possibly according to an agreed programme.

5. The customary method of financing the NBTS is not conducive to the development of such a partnership and it was probably this more than any other single factor which led to the delay in mounting the AHG (Factor VIII) Concentrate production programme. It was not until there were specific allocations of money to Regions, based on the extra expenditure which they were expected to incur in achieving a national target, that production of plasma for the preparation of freeze-dried concentrate began to build up. Furthermore, the present method of financing blood products production in the NHS is totally inimical to any rationalisation of the production processes at present carried out at individual blood transfusion centres.

6. It could be argued that no change in the existing financial arrangements would be required if the efforts of all Regions in contributing to the production of particular components were so arranged as to match their requirements. It is, however, very doubtful whether NHS self sufficiency in blood products could be achieved on this basis, especially in the face of competition from commercial suppliers, if only because such an arrangement would largely stultify attempts to rationalise harvesting and processing arrangements.

7. It is tempting to think that all processes in the preparation of blood components could be costed so that there could be "full accountability" at all stages between parties to any transaction concerned with the preparations of blood components.

A major problem would arise, however, in apportioning to each of 30 or so products a proportion of the cost of collecting blood, testing it and harvesting components and a complete costing system would be expensive to introduce and operate. A simple arrangement of pricing products so that clinicians can be aware of the value of the blood products they use is however necessary if they are to be used economically. The most immediate requirement appears to be to acquaint Finance Division with the problems inherent in blood component production on the scale now required and seek their advice on means of financing the "production partnership" which is necessary between the Regional Transfusion Centres and the Central Blood Products Laboratories.

8. Another major source of difficulty for the NBTS arises from the fact that the RTCs, the central Blood Products Laboratories and the Department have responsibility for a blood components production project, costing possibly £1-1½ million per annum, without a clear idea in many instances of what the clinicians require. Furthermore, opportunities for bringing the range, properties and indications of blood products to the notice of clinicians and for influencing their choice are limited. The uncertainty of clinicians about their requirements is understandable but it creates major problems for the NBTS and the Central Blood Products Laboratories. The clinicians now believe that they will require 3 times the amount of Factor VIII originally forecast and there is equal uncertainty about the amount of the specific immunoglobulins required. There are widely differing views on the amount of PPF required. Some clinicians believe that PPF requirements will eventually govern the amount of blood which must be collected, while others maintain that sufficient PPF is already available if full use is made of synthetic substitutes.

9. In some cases the reason for the clinicians' uncertainty is well known, as for example, with Factor VIII, where the availability of the Factor has opened up new treatment possibilities such as home treatment and rehabilitative surgery. In others, the uncertainty may arise from complete unawareness that a product is available or doubts about the value of particular components. At the root of the problem lies the fundamental question of whether, in preparing blood components, the NBTS should simply respond where there is a manifest demand for a product or should seek to prepare new products, convince clinicians of their value and advise on their use. If the NBTS were to adopt a completely passive role, interest would soon wane, and the industry would probably take over to a greater extent than at present; on the other hand, an aggressive selling role seems equally out of place. At present Regional Transfusion Directors do what they can to educate clinicians about the use of blood components but it is doubtful whether, as component therapy expands, they can succeed unaided. The efforts of the NBTS will be largely wasted

if their work in preparing components is not matched by a parallel effort to educate clinicians about their use. This subject might usefully be aired on the Central Committee once the Department has a clearer view about what it wishes to achieve.

10. In view of Ministers' concern that the NHS should attain self sufficiency in blood products the Department should consider carefully what is involved. So far, self-sufficiency has been thought of almost entirely in terms of Factor VIII requirement but there are other blood components available to the NHS from commercial sources. Self-sufficiency in blood products is clearly not a static situation which once achieved will require only infrequent modification. In its fullest sense it would mean attempting to keep up with developments in the world industry in blood products which shows few signs of reducing its activities despite WHO resolutions about the undesirability of relying on paid blood donors. It might be advisable to obtain the views of the Central Committee on what self-sufficiency in blood products can mean in practice given the strength and limitations of the NBTS, including, possibly, the extent to which it is considered necessary to resort to plasmapheresis.

11. Another problem which requires the closest attention is that of cryoprecipitate yields. This is already being examined and a separate minute has been circulated. In view of the cost of producing Factor VIII in the form of freeze dried concentrate and the problems of securing high yields, the Department might also consider with the Central Blood Products Laboratories whether there have been improvements in plasma fractionation techniques which necessitate a re-examination of methods of production at Elstree and Oxford.

12. The question whether all Regional Transfusion Centres should undertake the range of activities in connection with the preparation of blood components which they undertake at present requires examination. Blood collection, testing and supplying hospital requirements of whole blood would appear to be best organised as at present, on a Regional basis, and the detection and bleeding of suitable donors for special products is something for which the existing arrangements appear to be ideally suited. There may, however, be some aspects of component production what could with advantage be organised on a supra-regional basis if suitable methods of financing such activities can be worked out.

13. For those blood products which are not prepared solely to meet Regional requirements equitable distribution arrangements must be worked out. The problem is at present being encountered in connection with the distribution of Factor VIII prepared at the Central Blood Products Laboratories where distribution arrangements based on

numbers of haemophilia patients in a Region may mean that the amount of finished product may not be related to the amount of plasma sent for processing.

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