



**USE AND
SUPPLY OF
BLOOD PRODUCTS
IN NORTHERN
IRELAND**

CREST
CLINICAL RESOURCE EFFICIENCY SUPPORT TEAM

In 1988 the Clinical Resource Efficiency Support Team (CREST) was established to promote clinical efficiency in the Health Service in Northern Ireland. One of CREST's first initiatives was to address the question of the use of Blood and Blood Products in Northern Ireland. A small Working Group was therefore established under the Chairmanship of Professor John Bridges and this booklet contains a summary of the group's deliberations and gives helpful practical advice to clinicians and Boards.

Special thanks are due to Dr. McClelland who made the major contribution to the production of the booklet.

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Use and Supply of Blood Products in Northern Ireland

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Conclusions

1. Usage of certain blood products, notably fresh frozen plasma and albumin, has shown a very marked increase in Northern Ireland in recent years and is now substantially higher than most regions in the UK.
2. Current production capacity is insufficient to keep up with demand and the shortfall is having to be purchased from commercial sources. Apart from being a very expensive solution to the problem this does not accord with the policy of the Government and World Health Organisation which is to encourage self-sufficiency in all blood products.
3. The use of alternative strategies to reduce demand and optimise usage must therefore be considered.

Recommendations

1. Each clinician should review their prescribing policy for blood products in the light of the constraints referred to above.
2. Each acute hospital should establish a Hospital Transfusion Committee, which would monitor and audit the use of blood products and also promote good clinical practice by consultants and junior doctors.
3. Each Health & Social Services Board should establish a Committee to monitor and audit the use of blood products in hospitals throughout its area. Each Board should identify an individual doctor to oversee this monitoring and audit role and ensure that Hospital Transfusion Committees –
 - i are established in each hospital;
 - ii fulfill their monitoring role; and
 - iii are active in the promotion of good practice.

4. At regional level, the N. I. Blood Transfusion Service together with representatives of clinical specialties, should draw up regional guidance on the use of blood products in their particular area of expertise. The clinical representatives may be drawn from the appropriate Specialty Advisory Committee.
5. Formal procedures for ordering blood products should be established. These would involve the use of request forms completed in respect of each patient. Every effort should be made to ensure that these procedures are uniform throughout Northern Ireland and, if possible, that a common request form is introduced. This would require the Blood Transfusion Service to work closely with Hospital Transfusion Committees.

Use and Supply of Blood Products in Northern Ireland

1. Introduction

- 1.1 The purpose of this booklet is to draw to the attention of clinicians the emerging problem with respect to the supply and use of blood products and, in particular, plasma products.
- 1.2 All plasma products used by hospitals in Northern Ireland are supplied from the Northern Ireland Blood Transfusion Service (NIBTS) usually via hospital blood banks. These plasma products which include Factor VIII, Albumin and Immunoglobulins are manufactured by the Protein Fractionation Centre, Edinburgh using, as raw material, plasma supplied by NIBTS.
- 1.3 A wide variety of plasma products are available, many of which have specialised applications. This booklet deals mainly with 3 products, fresh frozen plasma, plasma protein solution and 20% albumin, all of which are used in many clinical specialties.
- 1.4 During the past few years the usage of these three products has increased dramatically in Northern Ireland. The financial costs have been substantial and the capacity of the Blood Transfusion Service to respond to the increased demand has been stretched to the limit. Furthermore, as the increasing demand shows no sign of slackening it is opportune to review current usage patterns. This has become particularly important because, as described below, further increases in plasma supply will require an entirely new production strategy which, in turn, would have major cost implications.

2. Pattern of Usage

- 2.1 The tables in [Appendix 1](#) demonstrate the increasing usage by hospitals of plasma protein solution, albumin and fresh frozen plasma. It is important to note that as usage of fresh frozen plasma increases a corresponding reduction in plasma is available as raw material for the manufacture of blood products.

- 2.2 A detailed analysis of figures from England, Wales and Scotland has revealed that usage rates per million population of 20% albumin and fresh frozen plasma are substantially higher in Northern Ireland – in the case of 20% albumin as much as 5 fold higher than in some regions in GB.

The approximate costs of blood components, plasma fractions and some alternative fluids used for volume resuscitation are tabulated in [Appendix 2](#).

3. The Problem of Plasma Supply

- 3.1 Until recently the amount of blood collected from donors was largely dictated by the requirement for red cells (whole blood, red cell concentrates etc.). Plasma was harvested from these units as a 'by-product' and used either for direct transfusion to patients (as fresh frozen plasma) or for the manufacture of purified protein derivatives. Over 90% of blood donations are now processed and, by using optimal additive solutions(SAG-M) for cell suspension, the maximum possible amount of plasma is now being harvested from the available supply of blood.
- 3.2 Demand for red cell transfusions has remained fairly static and any further increases in plasma collection can only be achieved by either:
- a Additional blood donations which are used for plasma only (the remainder of blood being discarded).
 - b Plasmapheresis programme- a technique by which plasma is collected directly from donors.

Both of these options are expensive compared to the current method of plasma procurement. The further option of purchasing plasma products from commercial sources is likely to be even more expensive and in any case conflicts with present Government policy of self-sufficiency in blood products.

4. Reasons for Increased Use of Plasma Products

A number of possible factors have led to this increase.

- a **Clinical efficacy and new therapeutic applications.** It is important to stress that the changing patterns described above do reflect a trend towards using blood products rather than whole blood, a policy which is being encouraged by all experts in the field. (This general approach undoubtedly makes the best use of available blood supplies and is considered to be in the best interests of patients as a whole).
- b **Decreased availability of whole blood.** There has been an overall decrease in the availability of whole blood due to the fact that, increasingly, blood is being processed rather than transfused directly. This may account for some of the increased usage of albumin and fresh frozen plasma but, if so, it is debatable if this can be justified.
- c **Ready availability of plasma products and unawareness of any limitations in supplies.**
- d **No financial constraints on clinical users.** As all plasma products are supplied from the Blood Transfusion Service which receives separate funding from the Eastern Board, the costs have no direct impact on hospital budgets. If the latter did apply it is possible that users would choose less expensive products for transfusion eg crystalloids or synthetic plasma expanders instead of plasma protein or albumin.

5. Recommendations

- 5.1 In view of the above it is important that mechanisms are established which ensure that clinical users of blood products are made aware of the current constraints and costs involved in their supply.

5.2 The following approaches are recommended

- a **Hospital Transfusion Committees.** Each acute hospital should establish a Hospital Transfusion Committee composed of representatives from the major clinical specialties as well as the hospital blood bank. A representative from the Blood Transfusion Service (ex officio) should also be included. Apart from providing a mechanism for auditing usage of blood and blood products such a committee would, of course, address all aspects of transfusion medicine within the hospital.
- b **Guidelines for use of blood and blood products.** It has been suggested that there could be considerable benefit if regional guidelines for use throughout the Province could be agreed. These might cover specialised clinical areas such as use of blood products in intensive care units, and be drawn up and agreed by groups of appropriate specialists working closely with representatives of the Blood Transfusion Service. The clinical representatives could be drawn from the appropriate Specialty Advisory Committee.
- c **Request Forms.** A specific recommendation is that formal procedures involving the use of request forms should be used when ordering all blood products, including plasma protein solution and albumin. Apart from facilitating monitoring and control, this approach is highly desirable as a means of maintaining proper records and ensuring that all blood products are fully accounted for.

- 5.3 A number of relevant guidelines produced by National Committees (UK and USA) have been published recently: -
- a Guidelines for transfusion for massive blood loss. A publication of the British Society for Haematology. Clinical and Laboratory Haematology, 10 : 265-73, 1988
 - b Consensus conference. Fresh frozen plasma. Indications and risks. JAMA 1985 : 253,551-3
 - c Consensus conference. Platelet transfusion therapy. JAMA 1987 : 257, 1777-80
 - d Handbook of Transfusion Medicine. UK Blood Transfusion Services. Published by HMSO. 1989.

Appendix 1

Annual usage of Albumin (Plasma Protein Solution +20% Albumin) – Northern Ireland

Year	Plasma Protein Solution 20g/Bottle	20% Albumin 20g/Bottle
1980	5006 bottles	2259 bottles
1981	5220 bottles	2361 bottles
1982	5275 bottles	2184 bottles
1983	9012 bottles	2310 bottles
1984	9806 bottles	2752 bottles
1985	11432 bottles	2940 bottles
1986	11804 bottles	2950 bottles
1987	13681 bottles	5077 bottles
1988	13933 bottles	5927 bottles

Annual Issues of Fresh Frozen Plasma from NIBTS

Year	Fresh Frozen Plasma 220ml/unit
1980	1574 units
1981	2396 units
1982	4943 units
1983	4883 units
1984	6795 units
1985	7945 units
1986	8355 units
1987	9217 units
1988	9423 units

Appendix 2

1988/89 Prices of Blood Components and Plasma Fractions

Blood Components (based on DHSS handling Charges to Private Sector)

Whole Blood	£26
Concentrated Red Cells	£14
Platelet Concentrate(1 donation)	£14
Fresh Frozen Plasma(200-250ml)	£12
Plasma Fractions(based on Commercial Suppliers Charges)	
Plasma Protein Solution 400ml (5% Albumin)	£35
20% Albumin 100ml	£35

Prices of Other Fluids for Volume Resuscitation

Crystalloids

Sodium Chloride	500ml	£0.5
Ringer's Lactate	500ml	£0.5

Non Plasma Colloids

Dextran 40	500ml	£2.5-6.5
Dextran 70	500ml	£4.0-5.0
Haemaccel	500ml	£3.8
Hetastarch	500ml	£15-16
Gelofusin	500ml	£2.5-3.0