6. EXCHANGE TRANSFUSION IN THE NETHERLANDS: A PERSONAL VIEW

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It is four o'clock on a December morning and snow has been falling incessantly the whole night. In a hospital 50 km away an exchange transfusion is planned and fresh heparin blood of group O Rhesus negative is requested. A suitable donor has been called to the Donor Centre and blood was withdrawn by 4.45 a.m. As the blood was put on to an emergency taxi for transport information came that the baby had died. In this case it is unlikely that death could have been prevented and there is no doubt that the baby was acutely ill when first being considered for exchange transfusion. Time is a critical commodity here. The hospital concerned keeps a small stock of group O Rh negative blood which could have been made available within minutes from stock. A vital three-quarters of an hour could have been saved if stored Citrate Phosphate Dextrose (CPD) blood not more than 72 hours old had been acceptable.

My second case illustrates the human and scientific problems of such a situation. On an evening in November we were asked to supply fresh heparin blood for a Rhesus HDN baby of a mother with Rh antibodies anti CD in her serum at that point in time – and previously. Our own donor file is arranged positive or negative on the basis of presence or absence of the D antigen only. However, after a routine donation the Rh negative blood is further checked for the presence of C and other Rhesus antigens. A donor responded to our call at 10.0 p.m. but was not bled because of hypertension and low haemoglobin. A second suitable donor was found and blood withdrawn and sent directly to the Department of Paediatrics where it arrived at 11.30 p.m. By 2.0 a.m. the laboratory had reported cross matching difficulties with the donation which on investigation the next day it transpired were due to the presence of the C antigen. At about 3.0 a.m. the baby's serum bilirubin level was rising; the business of heparin blood was leading to nowhere! At that point the author persuaded the supervising paediatrician that there were 6 units of 48 hour old CPD blood in the bloodbank grouped for all Rhesus antigens and other tests.
These were likely to be suitable and would do for exchange transfusion as well if not better than heparin blood.

The advice was accepted and the exchange went through at 3.0 a.m. with good clinical results. The lesson to be learnt from this is that organising heparin blood is not only a problem of organisation but also involves the human element. The donor, being human, is subject to sickness and non-availability. In the situation described this was further complicated by the serology causing unusual delay. There is considerable risk in relying on a single unit of uncontrolled blood by a recipient known to have serum alloantibodies. Such a recipient is clearly defined as "dangerous". However, this extraordinary situation could easily have been avoided by accepting the CPD blood from the bank.

The third observation that I make in this saga is related to facets not generally appreciated by the expert medical world. A donor was called out at night and asked to report to the Donor Centre as soon as possible. To save a life he speeded up his driving and ice on the road landed him and his car on a nearby frozen canal; fortunately the accident was not serious.

A blood transfusion centre is not a magician, able to produce a suitable donor at the drop of a hat. The donors themselves are volunteers who wish to help society. But to subject them unnecessarily to physical and emotional risk is unacceptable. I must ask whether such heroic exploits are justified by their benefits when alternative treatment is quite clearly established and acceptable, clinically as well as scientifically.

These are the 1980s. We are on the verge of a new century. The formula for interferon has been agreed upon and in the not-too-distant future it may come to be more widely prescribed. One particular interferon is derived from human leucocytes harvested from buffy coat of donated blood, and so may be considered a blood product. This is one example of the scientific developments of the last two decades in blood transfusion practice that have played a significant role in patient care in almost all branches of clinical medicine. A simple concept of component policy in blood transfusion has been a major breakthrough; some of the potential has yet to be realised. It is simple - each therapeutic component is harvested, and when necessary given to the patients. Examples of cellular components include red cell concentrate, washed red cells and platelet concentrates; plasma components are fresh frozen plasma, cryoprecipitate and plasma fractionation products like Factor VIII, albumin and immunoglobulin.