NEONATOLOGY AND BLOOD TRANSFUSION
The titles published in this series are listed at the end of this volume.
Neonatology and Blood Transfusion

Proceedings of the Twenty-Eighth International Symposium on Blood Transfusion, Groningen, NL
Organized by the Sanquin Division Blood Bank Noord Nederland

edited by

C.TH. SMIT SIBINGA
Sanquin Consulting Services and
Academic Institute for International Development of Transfusion Medicine,
Groningen, The Netherlands

and

N. LUBAN
Center for Cancer and Blood Disorders,
Children's National Medical Center,
Washington DC, U.S.A.

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INTRODUCTION

The 28 years tradition of annual international scientific symposia on blood transfusion in Groningen started in 1976 has come to an end.

Over the years the symposia have covered a wide range of themes in relation to blood transfusion, painting transfusion medicine in all its fascinating and colorful aspects on the canvas of daily practice, academic research and international development.

The strength of the symposia has not only been the format and the informality, but more explicitly the science, exploring the horizons of transfusion medicine as a vein to vein bridging science in a brain to brain fashion. These horizons always have provided the opportunities for bringing the various players in the field of transfusion medicine together for advanced discussion and cross-fertilisation.

The organisers thank the scientific contributors, the professional audience, the supporting industry, and the staff of the Sanquin Blood Bank Northeast for their loyalty and enthusiasm. Without them the tradition would never have occurred, the reputation never have been established and recognised, and the knowledge transfer never been managed and documented the way it happened.

Groningen, 10 October 2003
Prof. Dr. Cees Th. Smit Sibinga
Initiator
CONTENTS

Introduction ........................................................................................................................................... VII
Moderators and Speakers .................................................................................................................. XI
Opening Address ............................................................................................................................... XIII

I. **Foetal and Neonatal Haematology**

Regulation of Developmental Haematopoiesis by GATA transcription factors
............................................................................................................................................................. 3
 Chr. Dame

Development of the Immune System in the Foetal and Perinatal Period .............. 25
G.T. Rijkers

Foetal and Neonatal Immunohaematological Responses:
Consequences for Practical Management? ......................................................................................... 31
A. Brand

Biology of Thrombopoietin in the Human Foetus and Neonate .............................. 43
Chr. Dame

Discussion ............................................................................................................................................. 63

II. **Immunohaematology and Haemostasis**

Management of Red Cell Alloimmunization in Pregnancy ............................. 71
H.H.H. Kanhai

New Treatment Options in Neonatal Hyperbilirubinaemia ............................ 115
P.T. Pisciotto

Consensus and Controversy in Foetal and Neonatal Alloimmune Thrombocytopenia .............................................................................................................................................. 129
J.B. Bussel

The Bleeding Infant ......................................................................................................................... 145
H.M. van den Berg

Discussion ............................................................................................................................................. 151
X

III. Blood Transfusion in the Neonate
Neonatal Thrombosis ........................................................................................................167
C.S. Manno

Criteria for Selecting of Red Blood Cell Product to Transfuse
Anaemic Infants ........................................................................................................175
R.G. Strauss

Hazards of Transfusion: GvHD ..................................................................................183
N.L.C. Luban

Non-immune, Non-infectious Complications of Transfusion ....................................205
P.T. Pisciotto

Extracorporeal Membrane Oxygenation in the Neonate with Respiratory
Failure ......................................................................................................................217
N.L.C. Luban

Discussion ..................................................................................................................231

IV. Cellular Therapies in Neonatology
Genetic Engineering for the Foetus and Neonate ................................................247
C.S. Manno

Meta-Analysis and Evidence-based Decision Making in Neonatal Care ..............253
R.G. Strauss

Placental Blood Banking in the Year 2003 ...............................................................263
L. Lecchi

Discussion ..................................................................................................................277

Epilogue .....................................................................................................................285
Index .........................................................................................................................287
MODERATORS AND SPEAKERS

**Moderators**

N. Luban (chairman) – Center for Cancer and Blood Disorders, Chair, Laboratory Medicine & Pathology, Director, Transfusion Medicine/Donor Center, Children's National Medical Center, Washington, DC, USA

A. Brand – Sanquin Division Blood Bank Southwest, Leiden, NL

Chr. Dame – Department of Neonatology, Charité – Medical School University Berlin, Campus Virchow, Berlin, D

E.L. van Leeuwen – Concern Staff, Sanquin Blood Supply Foundation, Amsterdam, NL

C.Th. Smit Sibinga – Academic Institute for International Development of Transfusion Medicine, Faculty of Medical Sciences, University of Groningen WHO Collaborating Centre Groningen, Sanquin and AABB Consulting Services, Groningen, NL

R.G. Strauss – DeGown Blood Center, University of Iowa College of Medicine, Iowa City, IA, USA

**Speakers**

J.B. Bussel – Weill Cornell Medical Center, New York, NY, USA

H.M. van den Berg – Pediatric Haematologist, University Hospital Utrecht, The Netherlands, Utrecht, NL
L. Lecchi – Milano Cord Blood Bank, Centro Trasfusionale e di Immunologia dei Trapianti, IRCCS Ospedale Maggiore, Milan, I

C.S. Manno – The Children’s Hospital of Philadelphia, Division of Hematology, Philadelphia, PA, USA

P.T. Pisciotto – University of Connecticut Health Center, Farmington, Connecticut, USA

G.T. Rijkers – Department of Pediatric Immunology, Wilhelmina Children’s Hospital, University Medical Center, Utrecht, NL

B.L. Short – Chief, Division of Neonatology, Children’s National Medical Center, Washington, DC, USA
I feel extremely privileged and honoured to give the opening address of the 28th Sanquin International Symposium on Blood Transfusion, especially because this will be the last in a long series of excellent symposia. Prof. Cees Th. Smit Sibinga started these symposia in 1976. Since then the symposium has been an annual event, every year with excellent topics and speakers. All different aspects of blood transfusion have been discussed.

Why would Cees Smit Sibinga have selected neonatology to be the topic of this last symposium? Paediatrics only was the topic of the symposium in 1980 neonatology never was a topic all these years. Would it have been that newborn infants like small adults are given only small amounts of blood? However, at the same time they are the most interesting creatures of human life. Everything that can go wrong in humans goes even more wrong in newborn infants. As a former neonatologist of course I am extremely glad that the topic now is the newborn, better late than never.

Neonatology for sure has a much shorter history than blood transfusions. Recently I read an interesting historical novel in which they claimed that the first blood transfusion was done in 1663 in Cambridge. Compare that to neonatology, the first clear description of the intensive care treatment of a tiny newborn is from 1945 in New York. Unfortunately, however, both the first patient after a blood transfusion and the newborn infant after neonatal intensive care treatment died, although of different complications. The historical novel does not explain the medical reasons why the old lady in 1663 receiving a transfusion died. It might have been of course blood group incompatibility. The newborn infant died, after discharge, at the age of 3 months as it was bitten by rats in a New York apartment!

When looking over the last years there have been many changes in the practice of transfusion in the newborn infant. 25 years ago we were used to give whole blood to newborn infants. This was understandable as the reason for a transfusion usually was blood taken for laboratory analysis. That we used whole blood was not only because there were no other products. We honestly believed that whole blood was to the benefit of the newborn child. We argued that when we took whole blood, we should replace it with whole blood. Secondly, we were highly convinced of the very healthy properties of whole blood including white cells, immunoglobulins and clotting factors.

We were also used to transfuse to relatively high levels. We believed that an infant needed a haematocrit of at least 0.40, the minimum of a haematocrit for a
newborn infant. Later on we realized that a child at least without complications will do extremely well with haematocrit values as low as 0.25. This reduced the need of blood transfusions.

A second reason for needing help of the Blood Bank were the exchange transfusions. When I started my residency in paediatrics, there was almost one exchange transfusion per day in our unit. Exchange transfusions were performed with heparinised whole blood. This practice clearly has changed dramatically. Today exchange transfusions are extremely rare. Some of the residents leave our unit after 6 months without ever having done an exchange transfusion. Secondly, we are not using heparinised whole blood anymore. The Blood Bank is making specially tailored products for us. Tailored products such as reconstituted blood made of packed cells, plasma and perhaps other compounds. Also we are not using heparin anymore, but citrate or other anticoagulants.

Another reason for performing exchange transfusions 25 years ago were studies showing that patients with severe sepsis had a higher likelihood to survive when they were given an exchange transfusion with extremely fresh blood whereby we reasoned that the active white cells, immunoglobulines and other compounds in blood could help the newborn infant. Actually, the first abstract I ever wrote in my medical career was describing the outcome of infants with severe sepsis after an exchange transfusion. Of course the abstract indicated that the outcome was better after an exchange transfusion. However, we did not realize at that moment, that there were negative aspects of an exchange transfusion with very fresh whole blood as well. I do remember still today a 10 days old, very low birth weight infant where I performed an exchange transfusion. Two days later the child had all signs of Graft versus Host Disease, although we hardly recognized these signs at that time as being a Graft versus Host reaction.

The Blood Bank now recommends not to use whole blood and not to use fresh blood for blood transfusions. Instead, blood products or component us has been introduced in the unit. It is not, as will be discussed at this meeting, however, a simple answer which blood products should be used. Packed cells of course are extremely well known. However, at first we only used red cells at least 2 days old to reduce the risk of CMV infections. Because of fear for haemolysis, the cells should not be older than 2-3 weeks. Due to the risk of transfusion associated Graft versus Host the packed cells were first irradiated and then filtered. During this meeting you will hear the latest news about how to use red cells.

Another type of cells that has been used for some time in neonatology are white cell transfusions. White cells were separated and given to infants with severe infections. Very mixed results are published and probably infants developed Graft versus Host reactions, as indicated before. After some years and many studies the administration of white cells was abandoned. Another issue that also will be discussed extensively during this meeting is the transfusion of thrombocytes. Many newborn infants do have a low number of thrombocytes. However, does this mean that we have to transfuse thrombocytes? Only during the last years there is more knowledge regarding the cause of thrombocytopenia and we have obtained a better insight into the question
whether or not to transfuse these infants. Over the last 10 years another topic in neonatology has been the use of growth factors - Erythropoietin, G-CSF and thrombopoietin are used with varying results. During this meeting you will hear the latest news about the use of these products. The hype some 10 years ago was that blood transfusions would not be needed anymore due to the use of these growth factors, in my opinion has at least partly faded away.

Prof. Cees Smit Sibinga, you put together an excellent programme covering all the important issues of transfusion in the newborn infant. Over the last 50 years many practices in transfusing the newborn infant were introduced and forgotten. I am extremely pleased that we will hear the "state of the art" during this meeting. On behalf of all paediatricians and neonatologists I thank you for composing this excellent programme. Finally, I do hope that, although this is the last symposium in a long series, there will be other meetings organised by you in the future. I wish you an excellent meeting.

Prof. Dr. Pieter J.J. Sauer,
Department of Paediatrics and Neonatology,
University Hospital Groningen, NL