Under the aegis of

International Society of Blood Transfusion

ISTM

World Apheresis Association

Pediatric Hematology and Oncology Chapter
Indian Academy of Paediatrics

POSTGRADUATE INSTITUTE OF CHILD HEALTH
NOIDA

SOUVENIR 2024

SATURDAY, 21ST DECEMBER 2024

International Symposium on Neonatal and Pediatric Transfusion Practices

Organised in association with the International Society of Blood Transfusion (ISBT)

Organized by

Department of Transfusion Medicine

Post Graduate Institute of Child Health, Noida, India

GET IN TOUCH
pedstransfusionmedicine@gmail.com
For more details :
www.childpgitransfusion.in

Organizing Team

Patron

Prof (Dr) Arun Kumar Singh

Advisors

Prof (Dr) DK Singh
Prof (Dr) Mukul Jain
Prof (Dr) Jyotsna Madan
Prof (Dr) Ruchi Rai

Organizing team

Organizing Chairperson

Dr Seema Dua

Organizing Secretary

Dr Satyam Arora

Treasurer

Dr Anupa Pokhrel

Scientific Committee

Dr Seema Dua
Dr Satyam Arora
Dr Nita Radhakrishnan
Dr Anupa Pokhrel
Dr Anuj Singh
Dr Silky Jain
Dr Kriti Batni

Organizing Team

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Dr Vikrant Sharma
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Dr Umesh Shukla
Dr Abhishek Dubey
Dr Kavita Gupta
Dr Ganga R
Dr Jashim Debbarma
Dr Prathma Garewal
Dr Arisha Khan
Dr Akshay Paliwal

International Symposium on Neonatal and Pediatric Transfusion

21st December 2024

Organised by

Department of Transfusion Medicine
Post Graduate Institute of Child Health, Noida, UP

In association with

International Society of Blood Transfusion (ISBT)

Under the Aegis of

Indian Society of Transfusion Medicine (ISTM)
World Apheresis Association (WAA)
National Neonatology Forum (NNF)
Pediatric Hematology Oncology Chapter of the Indian Academy of Pediatrics (IAP)

"Accreditation with UP Medical Council for 3 hours"

POSTGRADUATE INSTITUTE OF CHILD HEALTH

Sector-30, Noida, Gautam Buddha Nagar-201303

Website: www.ssphpgti.ac.in, Email- childpginoida@gmail.com, Phone No.-0120-2524102

(An Autonomous Institute under Govt. of Uttar Pradesh)

Message

It gives me immense pleasure that Department of Transfusion Medicine is going to organize an International symposium on Neonatal and Pediatric Transfusions on 21st December, 2024.

Transfusion Medicine constitutes an important segment of medical science & health care services. Pediatric Transfusion Medicine is an emerging subspecialty which is getting due importance recently in pediatric patient care. Recent advancements in cellular therapy, stem cell transplant and therapeutic apheresis services have opened up a new arena in treating certain critical pediatric illnesses. I am confident that such symposium will prove extremely productive exercise where participants learn & share the current trends.

It is heartening to note that eminent faculty of Transfusion Medicine and Pediatric specialties and Hematology from all over India and globe will enrich the delegates with their knowledge and experiences.

Such academic programs will enable our institute to establish link with distinguished faculty and academicians across the globe.

I extend my warm welcome to all the guest faculty and delegates and wish the symposium a grand success

Prof. Arun Kumar Singh
Director

The ISBT Foundation is proud to support this important symposium, focussing on neonatal and paediatric transfusion and apheresis. The organisers have brought together experts in the field of clinical transfusion, apheresis, and immunohematology from within India and globally. It is a great opportunity to explore ways to better support children with haematological / oncological conditions. Enjoy coming together to make new connections and to share knowledge, ideas and experience!

Best wishes,

Jenny White,
Executive Director,
ISBT

International Society of Blood Transfusion

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MESSAGE FROM PRESIDENT, I.S.T.M.

Dr. Debasish Gupta
President, Indian Society of Transfusion Medicine
Professor and Head
Department of Transfusion Medicine
Sree Chitra Tirunal Institute for Medical Sciences
and Technology
Trivandrum, Kerala

As the President of Indian Society of Transfusion Medicine (ISTM), it gives me an immense pleasure to extend a warm welcome to the eminent faculty and distinguished guests and delegates who have come to participate in the Symposium on "Neonatal and Pediatric Transfusion Practices" organized by the Department of Transfusion Medicine, Post Graduate Institute of Child Health, N

Gathering the finest professionals in Pediatrics, Hematologists and Transfusion Medicine from across the globe and India, this one-day academic extravaganza promises a deep dive into the latest advancements in the field of pediatric and neonatal transfusion practices. The scientific program has been meticulously curated to encompasses a wide range of topics vital to transfusion practice in neonates and pediatrics, creating a platform for collaboration, knowledge exchange, and the establishment of valuable connections within the community.

Delegates can look forward to a plethora of scientific presentations and engaging panel discussions led by distinguished experts in this subject.

Let's embark on a journey together to explore fresh perspectives, foster collaboration, and ignite innovation in the realm of Neonatal and Pediatric Transfusion.

I express my best wishes to the team of the Organizing Committee and the participating delegates for this symposium and wish it a grand success

(PROF. DEBASISH GUPTA)

INDIAN SOCIETY OF TRANSFUSION MEDICINE

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Message

I am delighted to know that Department of Transfusion Medicine and Pediatric Hemato-oncology at Postgraduate Institute of Child Health, Noida, UP is organizing an International Symposium on Neonatal & Paediatric Transfusion and pre symposium workshop on Paediatric Apheresis on 20th-21st December, 2024. Transfusion medicine has made exponential progress in last 2 decades with the advent of cellular therapies, and therapeutic role of apheresis. Blood safety has considerably improved with introduction of highly sensitive screening tests such as Nucleic Acid Testing and Pathogen inactivation in different parts of the world. We periodically keep on updating ourselves with conferences CME's, seminars and workshops. I congratulate the organizers for coming up with the idea of organizing an International Symposium on Paediatric Transfusion Medicine Practice at PGICH, Noida, UP to discuss and resolve the issues related with paediatric & neonatal transfusion.

I am fully confident that deliberations by faculty members will open newer avenues to handle various clinical and laboratory aspects related to the subject. This will also provide an excellent opportunity to our postgraduates and young faculty to update themselves with the recent developments in the speciality

I wish the International symposium & a pre-symposium workshop a grand success.

Dr (Prof) R.R.Sharma
Secretary, Indian Society of Transfusion medicine,
Professor & Head, Dept. of Transfusion Medicine,
PGIMER, Chandigarh.

NATIONAL NEONATOLOGY FORUM

(Founded on 1980)

To
Department of Transfusion Medicine
Post Graduate Institute of Child Health, Noida, India

Subject: Organizing International Symposium on Neonatal and Pediatric Transfusion Practices in Association with ISBT

Dear Ma'am/Sir,

On behalf of the National Neonatology Forum (NNF), we extend our heartfelt congratulations to the Department of Transfusion Medicine, PGI Chandigarh, Noida, for successfully organizing the **International Symposium on Blood Transfusion in association with the "International Society of Blood Transfusion (ISBT)".** This event would serve as a valuable platform for exchanging cutting-edge research, discussing best practices, and addressing emerging challenges in the field of neonatal and pediatric transfusion.

This symposium stands as a significant milestone in fostering global collaboration and advancing knowledge in the field of blood transfusion, particularly as it pertains to neonatology. Your commitment to enhancing the standards of care and sharing cutting-edge research is commendable and will undoubtedly benefit healthcare professionals worldwide.

We are proud to be part of this momentous event and look forward to continued collaboration in promoting excellence in transfusion medicine and neonatal care.

Warms Regards,

Dr. Surender Singh Bisht
Secretary General, NNF

INDIAN ACADEMY OF PEDIATRICS
PEDIATRIC HEMATOLOGY-ONCOLOGY CHAPTER

Regd. Office: Kailas Darshan, Kennedy Bridge, (Nana Chowk), Mumbai 400007 (India)
Society Regn. No. Maharashtra State, Mumbai 1828/2006 200 GBBSD

Correspondence:
Dr. Manas Kalra
Hon. Secretary, PHO Chapter of IAP

Senior Consultant,
Division of Pediatric Hematology
Oncology & BMT
Institute of Child Health,
Sir Ganga Ram Hospital
New Delhi – 110060

Ph: 9958255228
Email: secy.pho@gmail.com

Date: 13th December 2024

Support for the International Symposium on Neonatal and Paediatric Blood Transfusion Practices

We are writing to express our enthusiastic support for the upcoming International Symposium on Neonatal and Paediatric Blood Transfusion Practices, being organized by the Postgraduate Institute of Child Health, Noida, under the aegis of the World Apheresis Association and International Society of Blood Transfusion.

The Paediatric Haematology Oncology Chapter of the Indian Academy of Pediatrics (an umbrella body that joins together all the Paediatric haematology and Oncology doctors and other stakeholders working for children with blood and cancer disorders) is proud to support this significant initiative. As a leading organization dedicated to the health and well-being of children, we recognize the critical importance of safe and effective blood transfusion practices.

India, unfortunately, has a substantial burden of blood-related disorders, including thalassemia, sickle cell disease, aplastic anemia and childhood cancers. There has also been a boom in the stem cell transplant arena. These conditions necessitate frequent blood transfusions, making it imperative to adhere to the highest standards of transfusion medicine. However, it is disheartening to note that many practices in our country are suboptimal and often lead to adverse outcomes.

The proposed symposium offers a unique opportunity to address these challenges by bringing together renowned experts from around the world to share their knowledge and experience. This gathering will undoubtedly contribute to: Raising awareness, Enhancing knowledge, Improving pediatric care and Strengthening collaborations.

We would like to extend our sincere appreciation to Dr. Satyam Arora and his team for their tireless efforts in organizing this important event. Their dedication to improving pediatric healthcare is commendable.

We urge all concerned stakeholders to support this symposium and actively participate in its proceedings. By doing so, we can collectively work towards improving the quality of life for countless children in India and beyond.

Sincerely,

Dr Shripad D. Banavali
Chairperson, IAP PHO Chapter
Professor of Pediatric Oncology
Director Academics
Tata Memorial Center
Mumbai

Dr. Manas Kalra
Honorary Secretary IAP PHO Chapter
Senior Consultant, Pediatric Hematology
Oncology & Bone Marrow Transplantation
Institute of Child Health
Sir Ganga Ram Hospital
New Delhi

Department of Transfusion Medicine
Post Graduate Institute of Child Health

International Symposium on Neonatal & Pediatric Transfusion

Organised in association with the International Society of Blood Transfusion (ISBT)

Saturday, Dec. 21st 2024
5th Floor
Main Auditorium
PGICH, Noida

From the desk of the Organizing Team

Dear Seniors and Colleagues,

Greetings from the Department of Transfusion Medicine, Post Graduate Institute of Child Health (PGICH), Noida. We are pleased to invite you to the "International Symposium on Neonatal and Pediatric Transfusion Practices" on the 21st of December 2024. The symposium is organized with the support of the International Society of Blood Transfusions (ISBT).

Pediatric patients are not small adults. Transfusing blood components to these patients is a challenge to transfusion medicine specialists and neonatologists/ pediatricians as it requires a careful understanding of pediatric physiology and pathology. Regular revisions in transfusion triggers, recent advances in the understanding of transfusing complex neonatal/ pediatric scenarios and unprecedented technological innovations in the field of transfusion medicine led us to plan this international symposium on pediatric transfusion medicine practices. The focus of the symposium will be on the most routine day-to-day issues related to neonatal/ pediatric transfusions and immuno-hematology along with recent advances.

For this symposium, we have brought together faculty members from across the globe representing the most prestigious institutes. International stalwarts in the field of neonatal and pediatric transfusions will grace the symposium with their presence during the symposium. Faculty for the CME will discuss issues that are often unanswered or not focused even during post-graduate teaching and clinical training.

Faculties from both transfusion medicine and pediatric sub-specialities will aim to create a stimulating atmosphere for the exchange of knowledge and to define best practices in this field. The symposium will provide a platform to encourage young talent in pediatrics and pediatric sub-specialities as well as transfusion medicine, to interact with the doyens in the field. We believe the event will be of interest to practising and training pediatricians, transfusion medicine specialists as well as to pathologists and medical officers from blood banks. This CME is being conducted under the aegis of the Indian Society of Transfusion Medicine (ISTM), the National Neonatology Forum (NNF) and the Pediatric Hematology Oncology Chapter of the Indian Academy of Pediatrics (IAP).

As part of the pre-symposium training, we plan to host a workshop on "Apheresis in Pediatric Patients" with the collaboration with World Apheresis Association on 20th December 2024. As part of the workshop, we aim to highlight the advances in the therapeutc aspect of transfusion medicine, such as therapeutic plasma exchange with recent concepts in apheresis, photopheresis, gene therapy and stem cell processing. This workshop will provide an opportunity for residents to interact with global experts in the field of pediatric apheresis.

We look forward to welcoming you all in December 2024 for an academic feast in the vibrant field of pediatric Transfusion Medicine.

With Regards, Organizing Team

World Apheresis Association

Scientific Program

Workshop on "Apheresis in Pediatric Patients"

Organized by

Department of Transfusion Medicine

Post Graduate Institute of Child Health, Noida, India

Under the aegis of the World Apheresis Association (WAA)

Friday 20th December 2024

Venue: **5th Floor Main Auditorium, PGICH, Noida**

Time	Sl #	Topic	Min.	Speaker	Chairperson
12:00-13:00		**Registration and Lunch**			
		Basics in Pediatric Apheresis			
13:00-14:00	1	Physiological differences in adults and pediatrics	15	**Dr Anupa Pokhrel,** Asst Prof, Transfusion Medicine, PGICH	**Dr Seema Dua** Addl Prof and Head, Transfusion Medicine, PGICH, Noida **Dr Mukul Jain** Professor and Head, Pediatric Anasthesia, PGICH, Noida
	2	Anticoagulation and Venous access in pediatrics	15	**Dr Amardeep Pathak** Consultant and Head, Transfusion Medicine, RGCI, Delhi	
	3	**Indications** of Therapeutic Plasma Exchange in Pediatrics	15	**Dr Divya Setya** Associate Consultant, Transfusion Medicine, Artemis Hospital Gurgaon	
		Discussion	15		
		Therapeutic Exchange in Pediatrics			
14:00-15:00	4	Therapeutic Plasma Exchange in Pediatric Liver failure	15	**Dr Meenu Bajpai** Professor and Head, Transfusion Medicine, ILBS, Delhi	**Dr Umesh Shukla** Addl Prof and Head, Pediatric Gastro, PGICH, Noida **Dr Vikas Jain** Addl Prof, Pediatric Gastro PGICH, Noida
	5	RBC Exchange in Pediatric (Sickle Cell Disease)	15	**Dr Mohit Chowdhry** Sr. Consultant & Head, Department of Transfusion Medicine, Apollo Hospital Delhi	
	6	Therapeutic Plasma Exchange in Atypical HUS in Pediatrics	15	**Dr Rekha Hans** Additional Professor, Transfusion Medicine, PGIMER, Chandigarh	
		Discussion	15		
		Tea Break			
		Cytapheresis in Pediatrics (Speakers presenting online)			
15:00-16:10	6	Extracorporeal photopheresis in pediatrics	20	**Dr Volker Witt** Department for Pediatrics, St. Anna Kinderspital, Medical University of Vienna, Vienna, Austria.	**Dr Satyam Arora** Addl Prof, Transfusion Medicine, PGICH, Noida **Dr Nita Radhakrishnan** Addl Prof and Head, Pediatric Hematology and Oncology, PGICH, Noida
	7	PBSC collection in pediatric patients/ donors	20	**Dr Hans Vrielink** Former President WAA, Apheresis Medicine Specialist, Sanquin, Blood Supply Foundation, Amsterdam, The Netherlands	
	9	Autologous PBSC harvest for Gene therapy in Thalassemia	20	**Dr Jennifer Schneiderman** Professor of Pediatrics, Stem Cell Transplant & Cellular Therapy Program; Medical Director, Therapeutic Apheresis Program; Director, Advanced Fellowship in Stem Cell Transplant & Cellular Therapy; Ann & Robert H. Lurie Children's Hospital of Chicago; Northwestern University Feinberg School of Medicine; Chicago, USA	
		Discussion	10		
16:10-18:00	10	**Demonstration** Red Cell Priming in Apheresis and Discussion		**Dr Anupa Pokhrel** Asst Prof, Transfusion Medicine, PGICH & **Dr Kriti Batni** Senior Resident, Transfusion Medicine, PGICH	
18:00		**Valedictory Sesion and Tea**			

Scientific Program

Symposium on Neonatal and Pediatric Transfusion Practices

Saturday 21st December 2024

In association with the International Society of Blood Transfusion (ISBT)

Organized by

Department of Transfusion Medicine

Post Graduate Institute of Child Health, Noida, India

Accredited by UP Medical Council for (3) three accreditation hours

Venue: 5th Floor Main Auditorium, PGICH, Noida

40 Dedicated Abstracts will be presented

Time	Sl #	Topic	Min.	Speaker	Chairperson
08:00		**Registration and Tea**			
		Neonatal Transfusions: Recent Updates			
9:00-10:00	1	Neonatal Transfusion: What's in my blood bag?	15	**Dr Abhishekh Gowda,** Additional Prof, Transfusion Medicine, JIPMER, Puducherry	**Dr Ruchi Rai** Professor, Neonatology, PGICH, Noida **Dr Sangeeta Pahuja** Professor, Immunohematology and Blood Transfusion LHMC, New Delhi **Dr Tulika Chandra** Professor, Immunohematology and Blood Transfusion KGMU, Lucknow
	2	Intrauterine Transfusions: AIIMS New Delhi Experience	15	**Dr Hem Chandra Pandey** Additional Professor and Head, Transfusion Medicine, AIIMS, New Delhi	
	3	Transfusion Reactions: Specific to neonatal age group	15	**Dr Surender Singh Bisht** NICU & Senior Specialist Pediatrics Swami Dayanand Hospital, Delhi	
		Discussion	15		
		Pediatric Transfusion Medicine and Apheresis: Recent Updates			
10:00-11:00	1	Granulocyte Transfusions in Pediatrics Oncology	15	**Dr Manas Kalra** Senior Consultant, Pediatric Hematology Oncology, Sir Ganga Ram Hospital, Delhi	**Dr Simon Stanworth** Consultant Hematologist, John Radcliffe Hospital NHSBT and Oxford University Hospital Foundation, UK **Dr DK Singh** Professor and Head, Pediatrics, PGICH, Noida **Dr Geeta Negi** Professor and Head, Transfusion Medicine, AIIMS, Rishikesh
	2	Autologous peripheral stem cell harvest in Neuroblastoma: PGIMER Experience	15	**Dr Ratti Ram Sharma,** Professor and Head, Transfusion Medicine, PGIMER, Chandigarh	
	3	Diagnosis and transfusion support in Pediatric AIHA	15	**Dr Rajendra Chaudhary** Former Professor and Head, Immunohematology and Blood Transfusion, SGPGI, Lucknow	
		Discussion	15		

Saturday 21st December 2024

Time	Sl #	Topic	Min.	Speaker	Chairperson
11:00-11:30		**TEA with Snacks and Poster Walk**			
		Inauguration and Plenary sessions			
11:30 - 13:30		**Inauguration**	20		**Dr Neelam Marwaha** Former Professor and Head, transfusion Medicine, PGIMER, Chandigarh **Dr Priti Elhence** Professor and Head, Immunohematology & Blood Transfusion, SGPGI, Lucknow **Dr RN Makroo** Former Professor and Head, Transfusion Medicine, Apollo Hospital, New Delhi **Dr Tulika Seth** Professor, Hematology, AIIMS, New Delhi
	1	Red Cell Transfusion threshold in pediatrics and neonatology: Evidence based practice	25	**Dr Simon Stanworth** Consultant Hematologist, John Radcliffe Hospital, NHSBT and Oxford University Hospital Foundation, UK	
	2	REDS-IV-P: Need for vein to vein data in pediatric transfusions	25	**Dr Cassandra Josephson** Professor, Oncology, Pediatrics & Pathology, Johns Hopkins University School of Medicine, USA	
	3	Sickle Cell Disease: Inching towards transfusion independence	25	**Dr Ruchika Goel** Professor Internal Medicine and Pediatrics, SIU School of Medicine Adjunct Faculty, Pathology Transfusion Medicine Division, Johns Hopkins University Senior Medical Director, Corporate Medical Affairs, Vitalant, USA	
	4	Indian CAR-T program and hope in pediatric oncology	25	**Dr Gaurav Kharya** Founder; Director Cellogen Therapeutics Pvt. Ltd.	
13:30-14:30		**LUNCH with Poster Walk and Assessment**			
		Awarded Abstracts Session		**Chairpersons**	
14:30-15:00	1	Oral Abstract Presentations	30	**Dr Debashish Gupta** Professor and Head, Transfusion Medicine Sree Chitra Tirunal Institute of Medical Sciences and Technology, Kerela **Dr Kamini Khillan** Vice Chairperson, Transfusion Medicine, Sir Ganga Ram Hospital, Delhi **Dr Meenu Bajpai** Professor and Head, Transfusion Medicine, ILBS, Delhi	
		Panel Discussion 1			
15:00-15:30	1	Ethics in Pediatric Transfusion medicine	30	**Dr Simon Stanworth,** Consultant Hematologist, John Radcliffe Hospital, Oxford University, UK **Dr Ruchika Goel,** Professor Internal Medicine And Pediatrics, SIU School of Medicine, USA **Dr Aseem Tiwari,** Director Transfusion Medicine, Medanta, Gurugram **Dr Richa Gupta,** Professor, Transfusion Services, GTB Hospital, Delhi **Dr Gopal Patidar,** Addl Prof, Transfusion Medicine, AIIMS, New Delhi **Dr Tapas Bandyopadhyay** Associate Prof, Neonatology, RML Hospital, Delhi	Moderator: Dr Silky Jain Assistant Prof, Peds Hemato-Oncology, PGICH, Noida

Saturday 21st December 2024

Time	Sl #	Topic	Min.	Speaker	Chairperson
		Changing Era of Pediatric Transfusion Medicine			
15:30-16:30	1	**Residual Risk of TTI** after NAT Adaptation in the Current Indian Scenario	15	**Dr Dheeraj Khetan** Professor, Immunohematology & Blood Transfusion, SGPGI, Lucknow	**Dr Ravneet Kaur** Professor and Head, Transfusion Medicine, GMCH, Chandigarh **Dr Somnath Mukherjee** Professor and Head, Transfusion Medicine, AIIMS, Bhuvneshwar **Dr Rasika Setia** Director and Head, Transfusion Medicine & Lab Services, BLK Hospital Delhi
	2	**Scope of Gene Therapy** in managing hematological disorders	15	**Dr Nita Radhakrishnan** Additional Prof & Head, Peds Hem Onc, PGICH, Noida	
	3	Massive Transfusion in Pediatrics	15	**Dr Ajay Gandhi** Director, Clinical and Medical Affairs, India and South Asia, Werfen	
		Discussion	15		
		Panel Discussion 2			
16:30-17:00	1	**Pediatric Transfusion Medicine** Clinical Consultation	30	**Dr Cassandra Josephson** Professor, Oncology, Pediatrics & Pathology, Johns Hopkins University School of Medicine, USA	Moderator: **Dr Sangeeta Pathak** Director & Head Transfusion Services, Max Saket, Delhi
				Dr Bhanu K Bhakhri. Professor, Pediatrics, PGICH, Noida	
				Dr. Sadhana Mangwana Director, Transfusion Medicine & Immunohematology, Sri Balaji Action Medical Institute, Delhi	
				Dr Anubhav Gupta, Assoc Prof, Transfusion Medicine, AIIMS, Jodhpur	
				Dr Anuj Singh, Asst Prof, Peds Hem Onc, PGICH, Noida	
17:00-17:30		**Valedictory session and Tea**			

Contact us at:
pedstransfusionmedicine@gmail.com
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Organizing Team

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Dr (Prof) Arun Kumar Singh
Director, PGICH, Noida

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Dr DK Singh,
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Dr Abhishek Dubey
Dr Kavita Gupta
Dr Silky Jain
Dr Ganga R
Dr Jashim
Dr Prathma
Dr Arisha
Dr Akshay

Internation Speakers (In person)

Dr Cassandra Josephson, MD
Professor of Pediatrics and Pathology,
Director,
Cancer and Blood Disorders Institute,
Johns Hopkins All Children's Hospital,
Fl, USA

Dr Simon Stanworth
Department of Haematology, Oxford University Hospitals NHS Trust, Oxford, UK
Radcliffe Department of Medicine, University of Oxford, Oxford, UK
Department of Transfusion Medicine, NHS Blood and Transplant, Oxford, UK

Dr Ruchika Goel
MD MPH CABP
Professor of Internal Medicine and Pathology, SIU School of Medicine and Johns Hopkins University.
Senior Medical Director,
Vitalant National Office, Scottsdale, AZ, USA

Internation Speakers (Online)

Dr Volker Witt
Department for Pediatrics,
St. Anna Kinderspital,
Medical University of Vienna, Vienna, Austria.

Dr Hans Vrielink
Past President WAA
Apheresis Medicine Specialist,
Sanquin Blood Supply Foundation
Amsterdam, The Netherlands

Dr Jennifer Schneiderman
Professor of Pediatrics, Stem Cell Transplant & Cellular Therapy Program Medical Director,
Therapeutic Apheresis Program,
Director, Advanced Fellowship in Stem Cell Transplant and Cellular Therapy
Ann & Robert H. Lurie Children's Hospital of Chicago
Northwestern University Feinberg School of Medicine, Chicago USA

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For more details :
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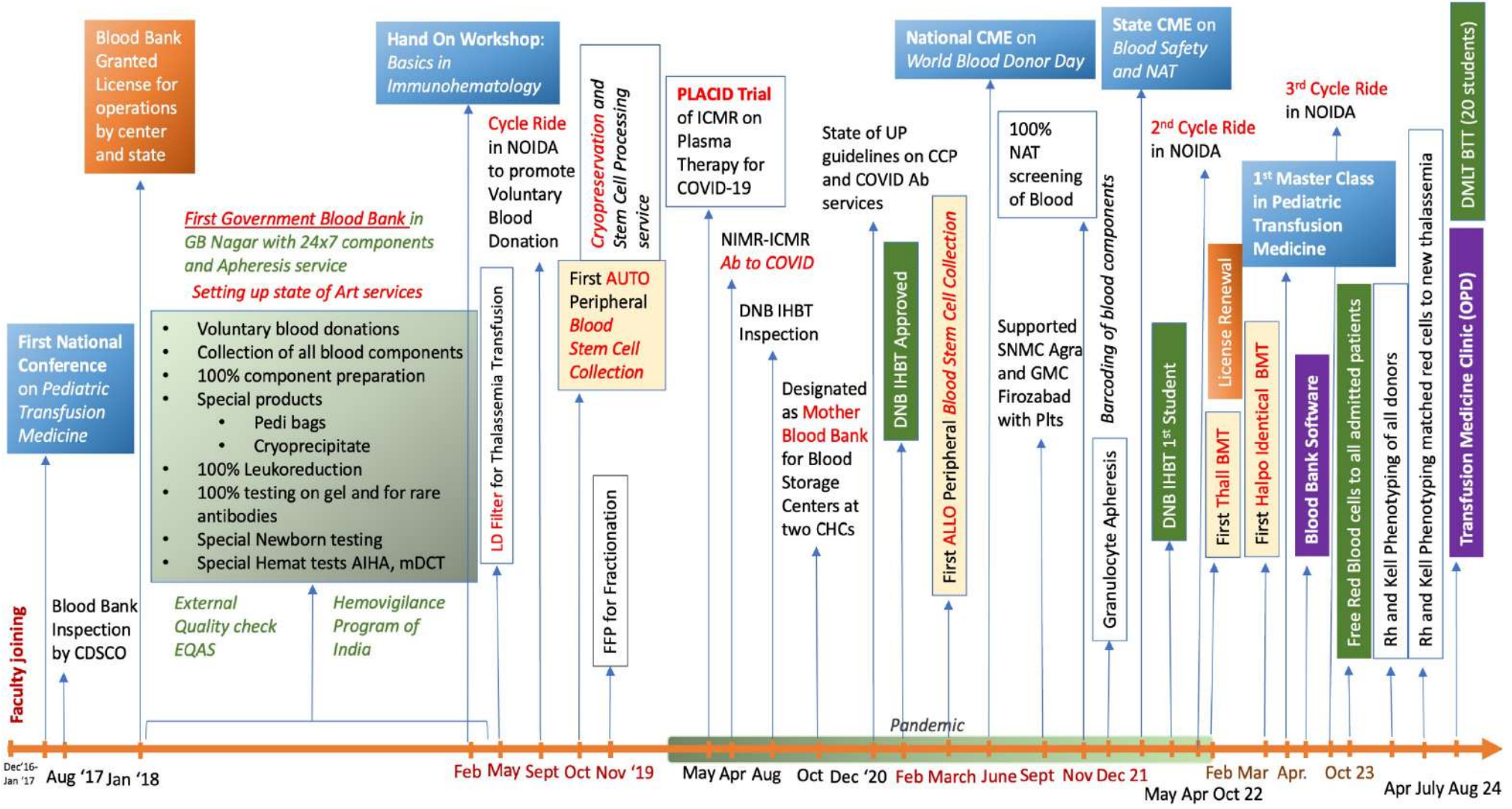
The Journey so for 2018-2024



NEONATAL TRANSFUSION: *"What is in my blood bag?"*

Dr Abhishekh B,
Additional Professor and Hea, Department of Transfusion Medicine, JIPMER, Puducherry

The key difference that impacts transfusion practices in neonates are (i) variable physiological responses to alteration in blood volume, hypoxia, etc., (ii) immature immune system, (iii) immature organ systems that can handle the products and additives in blood, namely hepatic and renal (iv) hematopoietic and coagulation response (v) smaller body size and vulnerability to heat loss.
So hereby we summarise as to what or how the contents in the blood bag can impact the neonate differently against the adults.

Volume: Whole blood is generally collected in either a 450 ml or 350 ml blood bag. A 10% variability in the volume is generally accepted (405-495ml or 315-385ml, respectively). This is collected in a bag of about 63 or 49 ml anticoagulant-preservative, which is generally CPDA(Citrate-phosphate-dextrose-adenine solution). 100 ml of SAGM (Saline adenine glucose mannitol) is added for the preparation of Packed Red Blood Cells. The corresponding volumes of Packed Blood red cells for those collected from 450 and 350 blood bags will be 225-275ml or 135-165ml, respectively.
Small-volume transfusions (10–15 ml/kg) transfused over 2–4 hrs in the neonatal population do not result in deleterious effects on hepatic or renal function.

Hb content (Hct): 65-70% when stored in CPDA1 solution and 50-60% when stored in SAGM solution

Additive solution: CPDA-1(anticoagulant preservative) used during collection can cause hypocalcemia in small-sized recipients. Ionized calcium levels should be monitored frequently in large-volume transfusions (>20 ml/kg). Hypocalcemia may occur after rapid transfusion of citrate, and alkalosis may develop after the metabolism of large amounts of citrate.
There is a concern that Adenine may fail to be excreted in infants up to the age of 1 year due to the immaturity of their kidneys. Mannitol is a potent diuretic with effects on fluid dynamics that can result in fluctuations in the cerebral blood flow of preterm infants.
The reported toxic doses are 15 mg/kg/dose for adenine and 360 mg/kg/day for mannitol. Their concentration in blood units is much lesser than any of these levels. A 450 ml bag contains 17.3 mg of adenine. 100 milliliters of Saline-Adenine-Glucose-Mannitol (SAGM) contains 525 mg of mannitol.

CMV screening: CMV may be transmitted through blood transfusion. The risk has been reported to be 1-3%. With the advent of new-generation leukoreduction filters, the incidence of the same has been almost reduced to zero (CI,0.1- 0.3%) per unit of blood. If

whole blood is not leukoreduced with a platelet-sparing filter, it is important to obtain CMV-seronegative fresh WB in pre-term neonates who are at risk for CMV infection. The seroprevalence rate for CMV in the adult population in India is between 80% and 90%.

Fresh vs. stored blood: Changes associated with red cell storage lesions include increased extracellular potassium, decreased 2,3-diphophoglycerate (2,3- DPG), and increased plasma hemoglobin.
The potassium content of the blood unit increases with their storage age. The transfusion of an aliquot from an RBC unit that has sedimented by gravity with 80% hematocrit and stored in an extended storage medium for 42 days would deliver 2 ml of plasma containing 0.1mmol/L of potassium when transfused at 10ml/Kg. (**Note:** the daily requirement of potassium for a patient weighing 1 kg is 2-3mmol/L.) Irradiation potentiates the leakage of potassium from red cells.
2-3 DPG levels in RBCs tend to decline after 1-2 weeks of storage. By storage day 21, the amount of 2,3-DPG is completely depleted from the red blood cell unit. Because of this, it has been suggested that fresh blood products be used for neonates undergoing large-volume transfusions in order to increase the amount of 2,3-DPG that they receive. Generally, less than 5 days old is preferred, but should at least ensure that blood bags of storage age less than 14 days.
Given their small blood volumes, neonates are at an increased risk of developing metabolic imbalances following transfusion secondary to red cell storage lesions. This is due, in part, to the inability of their immature liver to effectively metabolize citrate and the reduced glomerular filtration rate associated with kidney immaturity that causes slower excretion of excess potassium, acid, and calcium.

Aliquoting of blood: The purpose of aliquoting(creating small-volume aliquots) is to limit donor exposure, prevent circulatory overload, and decrease blood wastage.

Other relevant issues:

Plasma content: The plasma content of the unit of PRBC can cause allergic reactions, increase in intravascular volume, or contain incompatible antibodies. Volume reduction or washing may be performed to mitigate these issues. Platelets from WB are volume reduced by centrifugation to 10–15 mL/unit.

Infection by transfusion: On average, premature infants weighing less than 1 kg are exposed to more than five donors during a single hospital stay. This can be significantly reduced by using a sterile connecting device for aliquoting and using it from a single unit.

Immunological: The presence of viable lymphocytes can cause TAGVHD (Transfusion-associated Graft versus Host Disease) in premature neonates.
Febrile nonhemolytic transfusion reactions (FNHTRs) are caused by leukocyte antibodies and/or accumulated cytokines within a cellular blood component.

The most severe Acute Hemolytic Transfusion Reactions (AHTRs) occur in red cell transfusions that are ABO incompatible with the recipient's isohemagglutinins. Preformed IgM or IgG antibodies recognize the corresponding donor red cell antigens, leading to acute intravascular destruction of the transfused cells resulting in hemolysis, hemoglobinemia, and hemoglobinuria. IgM and, when present in high enough concentrations, IgG antibodies can activate complement, leading to the production of C3a, C3b, and C5a, which are anaphylatoxins that coat the donor red blood cells, assemble a membrane attack complex, and lead to intravascular hemolysis. C3a and C5a also promote the release of histamine and serotonin from mast cells, resulting in vasodilation and smooth muscle contraction predominantly within the respiratory and gastrointestinal tracts. C3a and C5a also stimulate monocytes, macrophages, endothelial cells, and platelets to release cytokines, leukotrienes, free radicals, nitric oxide, interleukin-8 (IL-8), tumor necrosis factor-alpha (TNFα), IL-1β, IL-6, and monocyte chemoattractant protein-1 into the bloodstream. The antigen-antibody complex itself stimulates the release of bradykinin and norepinephrine, and phagocytosis of IgG-coated red blood cells leads to additional cytokine release.

Transfusion-Related Acute Lung Injury (TRALI) has been associated with antibodies to leukocyte antigens and the transfusion of biologic response modifiers (BRMs) that initiate a sequence of events resulting in cellular activation, basement membrane damage and leakage of protein-rich fluid into alveolar spaces leading to pulmonary edema.

Scope of Gene Therapy in managing hematological disorders

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Genetic disorders in hematology are a heterogenous group ranging from inherited bone marrow failures to coagulopathies to hemoglobinopathies. Some involve defects in plasma proteins where as others intracellular proteins or DNA repairs. Till a decade ago, the only curative option for many of these disorders were hematopoietic stem cell transplantation. Gene therapy is a novel therapeutic option to supply the missing or defective gene by either correcting it or ameliorating its effect. The advent of gene therapy has emerged as a single point curative treatment for many hematological disorders despite the numerous challenges faced over the past few decades.

The goal of gene therapy is to correct the defective gene through either transfer of a healthy gene or gene editing of the patient's cells to correct the defect. There are 2 ways of delivering the corrected gene. In the in vivo approach, the gene is directly delivered to the target cells locally (such as into the liver in hemophilia) and the integrated vector delivers the therapeutic product. In ex vivo gene therapy, transfer of therapeutic gene occurs during invitro culture of the stem cells harvested from the patient. These autologous corrected stem cells then are readministered to the patient. The patient receives chemotherapy prior, so that residual defective stem cells are removed prior to infusion of the corrected stem cells.

The initial approach to gene therapy involved adding new genes to cells (gene addition) via viral or non-viral delivery methods. For disorders with deficiency of protein such as hemophilia, in vivo gene therapy primarily using adeno associated vector (AAV) that are infused intravenously is used. In disorders involving blood cells such as hemoglobinopathies, primary immune deficiencies or bone marrow failure, ex-vivo applications using retro or lentiviral vectors, that integrate into the cell genome and persist after autologous transplantation is used. The more recent approach is gene editing, where site specific genome editing is done either by in vivo approach for cell modification or ex vivo for protein replacement. The methods used for gene editing uses a site specific nuclease to introduce a DNS double stranded break (DSB) at the necessary location in the genome and then utilize cell repair pathway to introduce the desired edit. Of the nucleases, CRISPR/Cas9 or Clustered Regularly Interspaced Short Palindromic Repeats/ CRISPR- associated protein 9 has been widely studied. Once the DNA DSB is introduced at a target site in the genome, the repair can be by non-homologous end joining with introduction of insertion or deletions into the DSB site or by homology directed repair.

Clinical trials for gene therapy for hematological diseases

AAV vector	Hemophilia
Gamma retroviral vectors	ADA Severe combined immune deficiency Gaucher disease Chronic granulomatous disease Leukocyte adhesion deficiency X linked SCID Wiskott Aldrich Syndrome
Lenti viral vectors	X linked adrenoleukodystrophy Metachromatic leukodystrophy ADA deficiency SCID Artemis SCID Linked SCID Wiskott Aldrich Syndrome Leukocyte Adhesion Deficiency Sickle cell disease Beta Thalassemia / Hb EB thalassemia Hemophilia

Gene therapy for hemophilia and other protein deficiencies

As discussed before, Adeno Associated Vectors have been developed that deliver cDNA expression cassettes for FVIII or FIX for hemophilia A or B respectively. When administered intravenously, the vector selectively transduces hepatocytes, integrate with the host genome and causes continuous production of clotting factors. There have been multiple revisions to improve the efficacy and safety of the vector, its tropism to the hepatocyte and to improve gene expression by use of FIX Padua, which has higher activity.

Gene therapy with hematopoietic stem cells for cellular defects in hematopoietic stem cells

Immune disorders with T cell dysfunction such as severe congenital immune deficiency and its various subtypes have been studied extensively. Initial studies with retroviruses, was associated with reports of insertional mutagenesis resulting in leukemic transformation. The integrated retrovirus could induce leukemogenesis through activation of the enhancer element of the vector resulting in transactivation of the cellular protooncogene adjacent to the vector integration site.

In the case of hemoglobinopathies such as sickle cell anemia and beta thalassemia, the abnormal hemoglobin structure can be corrected by genetically modified hematopoietic stem cells. These ex vivo hematopoietic stem cell based therapies have shown significant therapeutic benefits leading to FDA approval for few agents. In vivo gene editing is also a possibility with CRISPR/Cas technology for SCD and beta-thalassemia which may simplify the and may overcome the risks.

Continued improvements in gene delivery systems will allow extension of gene therapy to an ever-increasing range of human diseases.

Autologous Peripheral Stem Cell Harvest in Neuroblastoma

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Neuroblastoma is one of the most frequent extracranial solid tumors of childhood, with a metastatic stage in half the cases. Neuroblastoma arises from the sympathetic nervous system and accounts for 8-10% of total childhood cancers. However, it is responsible for >15% of childhood cancer deaths (1).

It has a broad range of clinical presentations and behavior; High-risk neuroblastoma is still a significant clinical challenge and remains one of the most complicated pediatric tumors (2). A biologic characteristic, i.e., amplification of the MYCN oncogene (the presence of segmental chromosomal alterations and diploidy) is associated with inferior outcome in patients with neuroblastoma. Universally, children who have tumors with MYCN amplification are considered to have high-risk disease. Children more than 18 months of age at the time of diagnosis with metastatic disease are considered to have high- risk disease in the absence of MYCN amplification (3).

Treatment of high-risk neuroblastoma consists of 3 main components which include induction phase, i.e., multi-agent chemotherapy and surgery, consolidation phase, i.e., myeloablative chemotherapy with HSCT and the post-consolidation phase to treat the minimal residual disease which comprises immunotherapy, i.e., the chimeric 14.18 antibody directed against the disialoganglioside GD2. ABMT after high dose chemo-therapy appears to be the most sympathetic approach to avoid delays between courses as well as to minimize risk from prolonged neutropenia and thrombocytopenia (4).

The first HSCT using bone marrow-derived HSCs was performed in 1957 at the Fred Hutchinson cancer research center led by E. Donnall Thomas and the team. They described that the damaged bone marrow be repopulated through intravenous infusion of bone marrow obtained from healthy donors (5). HSCT has evolved quickly over recent decades and broadly useful in various hematological malignancies as well as non-malignant diseases. However, the use of PBSCs for transplantation in pediatric malignancies was first reported in 1989 (6).

In an ABMT, the patient receives his own previously collected stem cells to replace the damaged marrow. Stem cells for collection are available from the bone marrow, umbilical cord blood, and GCSF induced peripheral blood (7). However, from the last two decades, PBSCs have become a substitute for bone marrow grafting and replaced bone marrow transplant to a huge extent. Harvesting of PBSCs from G-CSF-induced peripheral blood is a simple procedure with negligible pain, shorter period of hospital stay, no anesthesia required, and enhanced stem cell yield for transplants. PBSCs can be

collected from the body of the entire assembly of HSCs and provides a greater number of stem cells than bone marrow aspirations (8).

The PBSCs contain twice HSCs as stem cells as compared with bone marrow and also results in faster engraftment (9). The collection of PBSCs begins with mobilization, the process of growing stem cells, and moving them from the bone marrow into the peripheral bloodstream. In mobilization regimens, the patient is administered a dose of hematopoietic growth factors such as G-CSF or GM-CSF with or without cytotoxic chemotherapy. Once moved to the peripheral blood, the PBSCs can be harvested via an apheresis machine (10, 11). The patient is then able to receive a high dose of chemotherapy or radiation to destroy cancer. This high-dose chemotherapy usually damages or destroys the patient's bone marrow resulting in an inability to produce new blood cells. The PBSCs previously collected are returned to the bloodstream through an intravenous infusion. These cells migrate from the peripheral blood to the empty marrow space and replace the destroyed bone marrow (12).

For the recognition and quantification of these HSCs, a surface CD34 marker is used. Cells that express high levels of the CD34 antigen are called CD34+ cells. The CD34 antigen is a family of differentially glycosylated type 1 transmembrane single-chain stage-specific surface glycoprotein and is used to identify cells in the early stages of hemopoietic differentiation. Literature suggests that human HSCs express the CD34 surface glycoprotein, which is present on 1% to 2% of human bone marrow cells but not expressed on mature blood cells or malignant cells. It is well established that PBSCs are enriched in HSCs and contain specialized progenitors as well as primitive progenitors and stem cells capable of establishing long-term hematopoiesis. The CD34+ cell content in PBSC collection has appeared as the most reliable indicator of the quantity of desired cells in a PBSCs harvest. It has been demonstrated that the CD34+ cell content of the PBSC product is the most important factor for the recovery of patients; there is a direct correlation between the amount of CD34+ cell collected and the patient recovery time (13-15).

The apheresis procedure is very challenging to ensure that a sufficient number of HSCs are collected in a single procedure. So, the patients require aggressive mobilization therapies, due to previous chemotherapy trials, which can have considerable side-effects and can become expensive. Additionally, the data available on PBSC collection in small pediatric patients is minimal. PBSC harvesting procedures are not easily feasible in small children because of physiologic differences, including smaller blood volumes as compared to adults (16-18). However, the PBSC harvesting experience in these small children at our centre is quite encouraging and we will share the same during the Symposium.

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Granulocyte Infusion in Pediatric Patients: A Critical Perspective

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Pediatric patients, particularly those undergoing chemotherapy or post stem cell transplantation, continue to face significant risks from bacterial and fungal infections. The prolonged periods of neutropenia that often accompany these treatments create a vulnerable population, where the threat of infections can lead to severe complications and even mortality. This challenge is exacerbated in low and middle-income countries, where healthcare systems are often strained, and the increased prevalence of multi-drug resistant bacteria poses a significant threat to patient outcomes.

While granulocyte infusions have emerged as a potential therapeutic intervention for neutropenic patients, particularly in the context of severe infections, the current evidence supporting their efficacy remains limited. Randomized controlled trials, which are the gold standard for establishing treatment protocols, have not yet provided conclusive support for the widespread use of granulocyte infusions. Despite this, many transplant centers in India have adopted this practice, reflecting a gap between clinical experience and scientific validation.

The unique challenges faced by pediatric patients in India necessitate a tailored approach to data collection and analysis. It is essential to document the outcomes of granulocyte infusions in our population, as the circumstances and healthcare dynamics in low and middle-income countries differ significantly from those in the West. Collecting robust data will not only contribute to the global understanding of this treatment but could also pave the way for optimized protocols that are better suited to our specific context.

In my view, granulocyte infusions represent a critical intervention that can save the lives of seriously ill neutropenic patients. However, the efficacy of this treatment hinges on two key challenges: the availability of donors and the motivation to undergo the necessary mobilization procedures, such as steroid and GCSF administration. Furthermore, developing reliable methods to predict which donors will yield high-quality granulocyte collections would be invaluable. Research into alternative collection methods that minimize the need for steroids and GCSF could also expand the donor pool and make the process more accessible.

Finally, assessing the efficacy of granulocyte infusions remains a priority. Establishing standardized metrics for evaluating patient outcomes post-infusion will be crucial in refining our approaches and ensuring that we provide the best possible care for our pediatric patients. In conclusion, granulocyte infusion holds promise as a life-saving treatment for neutropenic children facing severe infections. However, a concerted effort is needed to gather data, improve donor mobilization strategies, and assess treatment

efficacy. By addressing these challenges, we can enhance our understanding and application of this intervention, ultimately leading to better outcomes for our patients.

Massive Transfusion Practices in Paediatrics

Dr Ajay Gandhi

Massive transfusion is a concept being increasingly challenged the world over, and pediatric patients are no exception to it. However, in certain situations and under considerable circumstances, massive transfusion may be required in the pediatric age-group. All in all, massive transfusion is a critical procedure often needed in cases of severe trauma or major surgery. Here are some essential tips, risks, and guidance:

Tips for Massive Transfusion

1. **Timing of Activation of Protocols**: Massive transfusion protocols (MTP) must NOT be initiated early unless the patient is exsanguinated or grossly hemodynamically stable. Ratio-based transfusion is a concept that has lost the conviction and evidence to support its sustained usage. The aim of any transfusion should be to ensure rapid and coordinated delivery of blood products, which must be a conscious and guided intervention.
2. **Balanced Resuscitation**: The very definition of MTP (Massive transfusion protocol) is to use predefined ratios of red blood cells (RBCs), plasma, and platelets. However, as the knowledge expands and the evidence grows, this concept has been diluted amidst the recommendations to guide the transfusion of the right products in the right quantity.
3. **Monitoring and Adjustments**: Transfusion is a dynamic and demanding process that responds to ongoing hemorrhage and maintains the patient's hemodynamic status. It should be corroborated with the patient's vital signs, blood gases, and coagulation parameters, and it is best done by the treating physician or surgeon to adjust transfusion needs in real-time.
4. **Warming Blood Products**: Hypothermia is a crucial contributor to ensuing or ongoing coagulopathy, and it is further pronounced in the pediatric population where the hemostatic physiology is not completely developed. Hence, the recommendation to warm blood products to 37°C to prevent hypothermia must accompany the blood supply document(s).

Risks of Massive Transfusion

1. **Dilutional Coagulopathy**: One of the most immediate and obvious pathophysiologic outcomes of transfusion is dilution. Not only does this add to the volume, but it also dilutes the patient's clotting factors and platelets, further leading to bleeding complications.

2. **Hypocalcaemia and Hyperkalaemia**: Some effects result from the transfused product per se. Citrate in stored blood binds calcium, potentially causing hypocalcemia. Potassium levels can also rise due to cell lysis in stored blood. These variables can further complicate a patient's hemostatic physiology.

3. **Acid-Base Imbalance**: Large volumes of transfused blood can cause metabolic acidosis or alkalosis, depending on the patient's and the blood product's storage conditions.

4. **Transfusion-associated circulatory overload (TACO) and Transfusion-Related Acute Lung Injury (TRALI)**: TACO is particularly more pertinent and pronounced in the pediatric age group. TRALI is a severe complication that can occur due to immune reactions between donor and recipient blood. These complications may not manifest immediately and are not always ascribed directly to transfusion. These complications are increasingly becoming evident, considering the rising awareness around it.

Guidance for Safe Practice

1. **Damage Control Resuscitation**: While exsanguinated patients are treated as per emergency response lifesaving protocols, in all cases of massive bleeding, the focus should be on controlling hemorrhage and maintaining perfusion with minimal crystalloid use.

2. **Use of Simulation Training**: Regular simulation training (comprising of communication, competence, and collaboration-boosting behaviors) for healthcare teams can improve preparedness and response times.

3. **Comprehensive Protocols**: Develop and adhere to comprehensive hemorrhage protocols (rather than MTPs) that include criteria for goal-directed bleeding management, algorithm activation, resuscitation targets, and post-transfusion care, as well as audits.

4. **Multidisciplinary Approach**: Bleeding management is an art that cannot be completely mastered. Several stakeholders participate in blood or bleeding management and every decision to transfuse. To manage complex cases effectively, involve a multidisciplinary team, including surgeons, anesthesiologists, and hematologists.

This is the changing era of transfusion medicine, and pediatric care is no stranger to it. Implementing these strategies can help improve outcomes and reduce complications in pediatric patients requiring massive transfusions.

Indian CAR T cell Program & A Hope in Paediatric Oncology

Gaurav Kharya

The possibility of using immune competent T cells for curing various human ailments has intrigued scientists and physicians for a long time. Earliest reports emerged in 1989 from Israel when Zelig Eshhar reported “Expression of immunoglobulin-T-cell receptor chimeric molecules as functional receptor with antibody-type specificity” and subsequently in 1991 reported “Targeting of T lymphocytes to Neu/HER2- expressing cells using chimeric single chain Fv receptors”. These initial reports were not hugely successful as the structure lacked the necessary components to activate and proliferate T cells in a targeted fashion when exposed to a stimulus. Subsequently as the understanding of T cell functioning improved, it was realized that few essential components need to be added to Chimeric Antigen Receptor T Cell (CART) to make it functionally potent. This led to 1st generation CART which had antigen binding domain connected by a hinge to transmembrane domain (CD8/CD28) which in turn was connected to intracellular signalling domain (CD3ζ). This greatly improved the functionality of the CART but the desired anti-tumor effects were not observed to its full capacity either due to poor downstream signalling or amplification. This led to the addition of co-stimulatory domain either as CD28 or CD4-1BB which led to generation of 2nd generation CART. An important component of CART is viral vector which is used to deliver the CAR into the T cell. Various vectors have been tried and tested but the two which have stood the test of the time are retroviral vectors and lentiviral vectors. These viral vectors are modified in a way that they retain their viral integrating potential but lack the proliferation potential thus differentiating them from actual viruses. Using the 2nd generation CART construct (CD28 or CD4-1BB as co-stimulatory domain) and the two viral vectors (retroviral or lentiviral vector), few products have been FDA approved for clinical use such as YESCARTA by GILEAD for DLBCL and KYMRIAH by NOVARTIS for B cell ALL. A 3rd generation CART is also being tested which has two co-stimulatory domains put together primarily aiming to improve the persistence of the CART cells along with its anti-tumor effect. Apart from this many other approaches are been tried where scientists are trying to mix and match various components of a CART construct to get best individual effects.

All these developments have so far been with viral vectors and are patient specific. This incurs huge cost to get a ready to use CAR for any patient in need. The average cost of available products is to the tune of 400000-700000 USD which by no means is going to be ever useful and feasible for a country like India and various other resource limited countries. This brings the concept of ready to use UNIVERSAL CART in picture where CART is manufactured using 3rd party T cells which have been made deficient of TCR and MHC so that both GvHD and CART rejection can be taken care off. This will greatly reduce the

cost as CART cells can thus be manufactured like any other drug and can be used off the shelf as and when required.

Other interesting dimension to explore is using a very different approach for CART manufacturing which is CRISPR mediated. CRISPR as we all know has evolved as a very interesting and useful gene editing tool. It has long been explored to target and repair

defective gene sequences for various monogenic disorders like transfusion dependent thalassemia, sickle cell disease or severe combined immune deficiency. The CRISPR technology has a dual advantage, 1st it does not need a viral vector, thus decreasing the cost of large-scale vector production significantly and on top of this it eliminates the risk of insertional mutagenesis which is always there with viral vectors; 2nd CRISPR is a very precise and a relatively inexpensive tool to knock down the TCR locus and introduce the CAR construct into the T cell.

The current use of CART is limited to B cell malignancies but a lot of work is on-going to overcome the challenges of solid tumours and make efficacious CART for solid tumors as well.

India as a country although being a little late in initiating the cell therapy programs but has made some remarkable breakthrough. With ImmunoACT being the pioneer, which initiated its R & D in 2014 and came up with the first indigenously developed CD19 directed 2nd generation CAR T cell which was licenced by GOI for clinical use in Dec 2023 for patients suffering from B cell malignancies > 18 years of age. This was followed by Imuneel which initiated phase I/IIb trials on an in-licenced Spanish CD19 construct. Unfortunately, both these products are currently being approved for patients > 18 years of age. Apart from these two, another lesser-known start up called as Cellogen Therapeutics is working on indigenously developed bi-specific 3rd generation CAR constructs to address the challenges of exiting monospecific 2nd generation which is relapse post CAR either due to antigen escape of lack of persistence. Riding on the success of encouraging pre-clinical data, the start up is trying hard to get the phase I/IIb clinical trials initiated in very near future.

The future of cell therapy is very promising as in one hand it gives us the strength of harnessing the potential of our own T cells to kill the abnormal cells and on the other it decreases the risk of long-term complications posed by high dose chemotherapy which are currently being used for various malignancies. However, bringing it to clinical use for larger group of our paediatric patients is the need of the hour. A strong advocacy from all walks of life is required to have fast-track approvals for these lifesaving therapies being available for our little warrior's which they rightly deserve.

Disclosure: Author is founder and director of Cellogen Therapeutics Pvt Ltd.

Submitted Abstracts

Abstract Number	AB01
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Rising Above The Ordinary, The Extraordinary Role Of Therapeutic Apheresis In Pediatric Medicine: A Comprehensive Review Of Different Types Of Apheresis Procedures In Children In A Tertiary Care Hospital In Eastern India

Introduction: therapeutic apheresis has emerged as one of the most significant advancements in modern medicine, offering state of the art potential for treating a wide range of complex and challenging conditions. It has emerged as a highly promising tool in treating wide range of conditions in adult population. However, there is paucity of data regarding the impact of therapeutic apheresis in pediatric population, necessitating further research to fully understand its impact and efficacy in this age group.

Aims And Objectives: the aim of the study was to review different types of apheresis procedures in pediatric population. The objective of the study was to determine the safety, efficacy and versatility of the procedures.

Materials And Methods: a total of 121 procedures were evaluated in the pediatric population in which 112 plasmapheresis(92.56%),5 erythrocytapheresis (4.13%),2 PBSC harvest(1.65%),1 emergency leucocytapheresis(0.83%) and 1 lymphocytapheresis(0.83%) for molecular modification to be used as CAR-T cell therapy was done. The procedures were done by spectra optia terumo BCT apheresis automated machine using central venous access. Volume of replacement fluid used was calculated using nadler's formula.

Result: the indications of plasmapheresis were mainly neurological(81.25%), hematological(12.5%) and acute liver failure(6.25%) conditions. Erythrocytapheresis was mainly done for SCD patients with serious complications. Muscle strength and tone of neurological patients showed significant improvement after each cycle. Hematological parameters, LFT, urea, creatinine, coagulation profile improved. The HBS level of SCD patients drastically fell providing symptomatic relief. WBC count was decreased alleviating the symptoms and inflammation and improving patient outcome. Procedure related complications such as allergic reactions, catheter dysfunction and RBC priming in view of low hematocrit were observed.

Conclusion: Based On Our Experience, Therapeutic Apheresis Turns Out To Be A Blessing In Disguise In Pediatric Patient Management. By Combining Innovation And Technology It Gives Hope Of Better Prognosis When Other Therapies Might Not Be Effective.

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Improvising Neonatal Thrombocytopenia Management: Insights From Split, Reduced Volume Single Donor Apheresis Platelets (SDAP) – A Case Series

Introduction: Platelet Transfusions In Neonates Is Given Below A Specific Threshold With A Goal To Increase Platelets By 50,000 To 100,000/ µl. This Is Achieved By Transfusing 10 To 15 Ml/Kg Of Platelets Providing Around 10×10^9 Platelets. This Dose Is Defined Unlike The Platelet Product That Varies Widely. In India Random Donor Platelets (RDP) Are Usually Transfused And 10ml Of RDP Should Contain Minimum Of 7-10 $X10^9$ Platelets. Single Donor Apheresis Platelets (SDAP) Are Mostly Reserved For Adults. Cases: We Report Case Series Of Eight Neonates Admitted To NICU Who Underwent Split, Reduced Volume SDAP Transfusions After Showing A Refractory Response To RDP For Multifactorial Early Or Late Onset Thrombocytopenia.

Methods: SDAP Were Collected Using Continuous Cell Separator, Spectra Optia® Apheresis System (Terumo BCT Inc., Lakewood, Colo., USA) Using A Modified Program That Collected Adult Dose ($300X10^9$) In A Reduced 100ml Of Product Volume. This Product Was Then Split Into 3 To 5 Parts And Stored For 5 Days As Required. Mean Increment Of Platelets After 20-24hrs Of Split SDAP Transfusions Were Noted. Results: Eight Neonates [1 (Term):7 (Preterm)] Were Refractory To A Range Of Three To Seven RDP Transfusions. Split SDAP Was Requested And Prepared In Three To Five Parts And Transfused In A Range Of Two To Five. Mean Platelets Per 10ml Of Reduced Volume SDAP Were $24x10^9$ Platelets And Mean Platelets Transfused Per Kg Of Neonates Weight Was 62X109 Platelets. Mean Platelet Increment After 20-24hrs RDP And Split SDAP Transfusion Was 14,265 / µl And 70,514/ µl Respectively. Platelet Recovery Ranged From 16.6% To 52.3% After Split SDAP Transfusions. 75% Neonates Survived And 25% Had Pulmonary Haemorrhage. Cost Implications Were Almost Compensated On Comparison Of Five To Seven RDP To One SDAP. No Transfusion Related Complications Were Observed

Conclusion: Split, Reduced Volume SDAP May Prove Beneficial In Persistent Thrombocytopenia In Neonates. This May Be Attributed To More Platelet Count Per 10ml Of Product Than Standard SDAP Or RDP With Additional Benefits Of Leucodepletion, Minimal Donor Exposure And ABO Matching.

Abstract Number	AB03
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TPE, Willson's Disease Pediatric Case

Introduction: Rare AR inherited disorder of impaired copper excretion. Characterized by excessive deposition of copper in many tissues and organs, principally the liver, brain, and eye. Discovered by Samuel Alexander kinnier Wilson (1878-1937)

Aims And Objectives: Observe the effect of TPE in pediatrics case(Wilson's disease).

Material And Methods: The most ideal vein was the central line vein, while femoral veins may also be used for phlebotomy procedures for Therapeutic Plasma Exchange. TPE was done by a TPE PL1 Kit, which is a Closed System by COM.TEC, Fresenius Kabi, Germany®. Anticoagulant ACD ratios used during TPE cycles range from 1:8.0 to 1:12. The TPE process was used blood flow rates between 30 and 50 ml/min.

Results:

1) First cycle of Therapeutic Plasma Exchange on 26/12/2023: Request received & Consent taken. Duration of procedure: 90minutes. Anticoagulant used: Anticoagulant Citrate Dextrose Solution A (ACD-A). Replacement Fluid: FFP. TPV = TBV x (1-PCV) where TBV = 70ml x Body weight, TPV = [70 x 36] x (1-0.43) = 1436 ml, 1.18x TPV = 1700ml (Volume Exchanged). Post Exchange Clinical Examination : Facial twitches perioral tingling sensation

2).Second cycle of Therapeutic Plasma Exchange on 28/12/2023: During this, TPV = TBV x (1-PCV) where TBV = 70ml x Body weight, TPV = [70 x 36] x (1-0.34) = 1663 ml,1.0xTPV = 1785ml (Volume Exchanged), Post Exchange Clinical Examination : Perioral tingling sensation

3) Third cycle of Therapeutic Plasma Exchange on 30/12/2023: During, TPV = TBV x (1-PCV) where TBV = 70ml x Body weight, TPV = [70 x 36] x (1-0.35) = 1764 ml, 1.0xTPV = 1889 ml (Volume Exchanged), Post Exchange Clinical Examination : Peroral tingling sensation Twitching at jaw

4) Forth cycle of Therapeutic Plasma Exchange on 30/12/2023: During, TPV = TBV x (1-PCV) where TBV = 70ml x Body weight, TPV = [70 x 36] x (1-0.35) = 1789ml, 1.0xTPV = 1889 ml (Volume Exchanged), Post Exchange Clinical Examination :Peroral tingling sensation , Twitching at jaw

Conclusion: FWD/Wilsonian Crisis/ACLF/ALF high mortality almost up to 50% especially those HE grade 3 and 4. Diagnosis of this syndrome is better with conventional diagnostic criteria: Ratios limited value in children. MARS and TPE are newer modalities of bridging therapy to LT. TPE/ MARS in a percentage (albeit very small) of cases may help in avoiding LT. Graft and Recipient survival after LT is good.

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Rare Alloantibody Anti-F And Anti-C In An Obstetric Patient Impacting The Newborn: A Case Report

The ‘F’ Antigen Or ‘Ce’ Antigen Belongs To The Rh Family And Is Expressed On Red Cells If ‘C’ And ‘E’ Antigens Are On The Same Haplotype. Patient Who Is Negative For ‘F’ Antigen May Develop Allo Anti-F, When Exposed To It Through Pregnancy Or Transfusion. There Are Only Few Cases Reported On Anti-F Worldwide. The Current Report Is Of Incidentally Diagnosed Anti-F And Anti-C In An Antenatal Case Which Also Impacted The Neonate. A 32 Year Old G2P1L1A0 Was Found To Have Anti C At 20 Weeks Gestation With Undetectable Titer By Tube Method. A New Alloantibody Anti-F Was Identified At 28 Weeks Gestation Besides Preexisting Anti-C. The Titer Against Ccee And Ccee Cells Was At The Peak At Around 28 Week Gestation I.E 2 And 16 Respectively. Throughout Pregnancy, The Fetal Middle Cerebral Artery Peak Systolic Flow Velocity Were <1.5 Mom. The Newborn Had Hyperbilirubinemia With Serum Bilirubin Of 19.2 Mg/Dl And Reticulocyte Count Of 4.99% At Day 5 Of Birth Which Required Hospitalization. The Baby Recovered Well With Phototherapy And Intravenous Immunoglobulin In His One Day Of Hospital Stay. The Fetus Escaped Major Hemolytic Disease However, Newborn Required Interventions To Deal With The Hemolytic Disease.

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Tandem Therapeutic Plasma Exchange (TPE) With Continuous Renal Replacement Therapy (CRRT) In Critically Ill Paediatric Patients – A Case Series

Introduction: Tandem Therapeutic Apheresis Is Where Apheresis Is Performed Simultaneously With Another Extracorporeal Circuit. It's A Complex But Potentially Life-Saving For Critically Ill Patients With Acute Liver Failure, Immune-Mediated Renal Diseases And Multiple Organ Dysfunction Syndrome(MODS). Tandem Procedures Will Eliminate Small, Water-Soluble Molecules Like Ammonia Through CRRT And Large, Albumin-Bound Molecules Such As Bilirubin And Inflammatory Cytokines Through Plasmapheresis, As A Bridge To Recovery Or Liver Transplantation.

Aims& Objectives: To Evaluate The Efficacy, Clinical Improvement, Advantages And Disadvantages Of Tandem Plasmapheresis In Pediatric Patients.

Material & Methods: We Combined Plasmapheresis(Spectra-Optia) With The Ongoing CRRT(Prismaflex) In 5 Critically-Ill Children. Three-Way-Connecters Were Connected To The Dialysis Catheter Arterial And Venous Limbs And Both The TPE&CRRT Machines Were Attached To These. Thus Both Circuits Were Run Simultaneously In "Parallel" From One Site Of Venous Access And Return, Each Processing A Portion Of The Total Blood Flow From The Patient Without The Need For Pausing Either Circuit. Proper Preparations And Adjustments Were Made To Meet The Special Needs Of Pediatric Population. All Patients Received Calcium Gluconate Infusions Via A Peripheral Line. Closely Monitored Heart Rate, Blood Pressure, Respiratory Rate, And Neurological Status During The Procedures And Adjusted Inlet Speed And Inlet: Anticoagulant Ratio Accordingly.

Results: Five Pediatric Patients Of Median Age(7.6) Underwent TPE+CRRT Procedures During The Study Period(2023-2024). Among Them, Three Were Of Dengue Shock Syndrome And Two Of Acute Liver Failure, With All Ended Up In MODS. The Wilcoxon Matched-Pair Signed-Rank Test Performed Between The Medians Of The Lab Parameters (Bilirubin, Ammonia, Activated Thromboplastin Time, PT, INR) Before And After Tandem Showed A P Value <0.05, Which Is Statistically Significant.

Conclusion: Significant Advantages Apart From Its Efficient Clinical And Laboratorial Improvement Observed Includes Patient Comfort, Patient Safety, Less Time Consuming, Resource Personnel Comfort. Dialysis Efficiency Was Also Maintained As CRRT Was Continuing During Apheresis.

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Spectrum Of Red Blood Cell Alloimmunization And Transfusion Transmitted Infections In Multiple Transfused Pediatric Patients At Tertiary Care Center In North India

Introduction: Alloimmunization To Red Cell Antigens Is One Of The Most Important Immunological Transfusion Reactions, Which Cause Delayed Type Of Transfusion Reaction.

Aim & Objectives: To Determine The Incidence And Analyze The Associated Risk Factors Of Antibody Formation And Prevalence Of TTIs.

Material & Methods: A Prospective Cohort Study Was Conducted At Blood Center Of MLNMC, Prayagraj, UP, Over The Period Of 1 Year. Patients Receiving More Than Or Equal To 4 Transfusion In Last 6 Months Were Included In This Study. Patients With Known Connective Tissue Disorders Were Excluded From This Study. ABO & Rh Typing, Direct & Indirect Coombs Test (By Column Agglutination Technique), 3 And 11 Cell Panel, CBC, USG, LFT, KFT & Ttis Testing (By Rapid, ELISA, NAT) Were Performed.

Results: Total 76 Patients Were Included In This Study. Among Them Male Were 63% & Females Were 36%. Alloantibodies Were Present In 9.2%(7/76) Patients, All Were Directed Against Rh System, Of Them 57% Were Anti-E & 53% Were Anti-D. After Blood Transfusion 20% Patients Became TTIs Reactive & 34% Patients Found Positive DCT. The Mean Age Of Patients Were 6.9 Years, Mean (SD) Of Duration Of Transfusion Were 27(21) Days & The Mean (SD) Of Total No. Transfusion Was 71(51). Alloimmunization Was Significantly Associated With Total Number Of Transfusion (P=<.00001)(Mann-Whitney U Test), With Age Group (P=<0.00001). The Reactivity Of TTIs Was Significantly Correlated With Total Number Of Transfusion (P=0.0011)(Spearman's Correlation Test).

Conclusion: The Incidence Of Alloimmunization Was 9.2%, Of Them 57% Alloantibodies Were Anti-E. RBC Alloantibody Detection On Regular Interval, Strict TTI Screening In Autologous Donors & Antigen Negative Blood Transfusion Is Strongly Recommended In Multiple Transfused Pediatric Patients.

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Therapeutic Apheresis: Two Cases Illustrating The Procurement Of Hematopoietic Stem Cells From Pediatric Donors

Introduction Collecting Hematopoietic Stem Cells From Young Donors Necessitates Meticulous Monitoring And Collaborative Efforts Across Medical Disciplines. We Are Presenting Two Such Cases That Illustrate The Comprehensive Preparations Involved In Harvesting Stem Cells, The Challenges Encountered And The Successful Engraftment Following Transplantation.

Aim & Objectives To Ensure Adequate Collection Of Hematopoietic Stem Cells From Pediatric Donors.

Material And Methods

Case I: 10-Month-Old Donor (10 Kg) With 12/12 HLA Match, Underwent Stem Cell Harvest For 12-Year-Old Sibling With Pre-B Cell ALL (14.9 Kg). Bi-Directional ABO Incompatibility Was Present (Donor: B Rh D Positive, Recipient: A Rh D Positive; Donor's Anti-A Titres: 1:8). Donor Was Mobilized With G-CSF & Plerixafor Followed By Stem Cell Collection. Pre-Procedure CD34 Levels Were 216 Cells/µl.

Case II: 15-Year-Old Donor (51 Kg), With 11/12 HLA Match, Underwent Stem Cell Harvest For 18-Year-Old Sibling (58 Kg) With AML-M2. There Was Minor ABO Incompatibility (Donor: O Rh D Positive, Recipient: B Rh D Positive; Donor's Anti-B Titres: 1:32). Donor Mobilization Was Similar To Case I. Pre-Procedure CD34 Levels Were 254 Cells/µl.

Results Case I: RBC Priming Was Performed With A Group-Specific, Crossmatched PRBC Unit To Prime The Kit. Symptoms Of Hypoglycemia, Hypovolemia And Hypocalcemia Encountered During The Procedure Were Effectively Managed. 125 Ml PBSC Product Was Collected And Transfused, Which Resulted In A CD34+ Count Of 9.6 X 106 /Kg Of The Recipient's Weight. WBC And Platelet Engraftment Took Place On Days 11 And 14 Post-Transplant.

Case II: RBC Priming Was Not Required. Symptoms Of Hypocalcemia During The Procedure Were Managed With IV Calcium Gluconate. 267 Ml PBSC Product Was Collected, Which Resulted In A CD34+ Count Of 26.2 X 106 /Kg Of The Recipient's Weight, Of Which Only 100 Ml Was Transfused. WBC And Platelet Engraftment Took Place On Days 14 And 16 Post-Transplant.

Conclusion: These Interdisciplinary Collaborations, Stringent Monitoring, And Advanced Apheresis Platforms (Spectra Optia) Enhance The Collection Process's Efficacy And Minimal Donor Reactions.

Abstract Number	AB08
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Insights Into The Impact Of Therapeutic Plasma Exchange On Pediatric Neurology

Background And Objectives: Therapeutic Plasma Exchange Is A Procedure That Lowers The Levels Of Circulating Autoantibodies,Alloantibodies,Monoclonal Proteins And Immune Complexes By Centrifugation And Replacement Of The Plasma With Albumin Solution Or Fresh Frozen Plasma.Ithas Emerged As A Promising Intervention In Pediatric Neurology, Particularly For Conditions Such As Autoimmune Encephalitis , Myaesthania Gravis , And Demyelinating Diseases. This Case Series Aims To Evaluate The Efficacy And Safety Of Therapeutic Apheresis In Pediatric Patients.
Materials And Methods: This Is A Retrospective Study Conducted At A Tertiary Care Hospital Conducted Between The Years 2023-2024. Patients Aged Below 13 Years Were Considered In The Study. This Series Of Cases Involves Pediatric Patients Diagnosed With Neurological Disorders Who Did Not Show Significant Improvement After Administration Of Steroids And Had Undergone Plasma Exchange .The Clinical Data That Were Collected Include Demographic Details ,Diagnosis, Length Of Stay, Procedure Details Like Replacement Fluid, Number Of Procedures, Complications, And Overall Outcome Of The Patient
Results: A Total Of 6 Patients Were Included, With A Mean Age Of 12 Years. Indications For Apheresis Included Neuromyelitis Optica, Optic Neuritis , And NMDA Positive Encephalitis. Significant Clinical Improvements Were Observed In Neuromyelitis Optica And Optic Neuritis Especially In Vision .Adverse Events Were Minimal And Manageable ,Which Suggests A Favourable Safety Profile For This Intervention.
Conclusion: This Case Series Highlights The Potential Of Therapeutic Plasma Exchange As A Valuable Treatment Modality In Pediatric Neurology. The Findings Align With Recent Studies That Advocate For Its Use In Specific Neurologic Conditions, Underscoring The Need For Further Research To Optimize Protocols And Enhance Outcomes.

Abstract Number	AB09
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Role Of Maternal-Fetal Blood Group Incompatibility In Neonatal Jaundice: A Comprehensive Immunohematological Analysis.

Introduction: Neonatal Hyperbilirubinemia Is Defined By An Elevated Serum Bilirubin Concentration In Newborns, Manifesting As A Yellowish Discoloration Of The Skin And Sclera. The Etiology Is Complex And Multifactorial, With Clinical Presentations Ranging From Benign Physiological Jaundice To Severe Hemolytic Disease Of The Newborn (HDN), Which May Necessitate Urgent Intervention To Prevent Long-Term Neurological Consequences. Comprehensive Screening For Both Immune And Non-Immune Causes Is Critical To Mitigate The Risk Of Progression To Severe Complications In Affected Neonates.

Aims And Objectives: To Investigate The Role Of Immunohematological Factors In The Development And Severity Of Neonatal Jaundice And To Determine The Prevalence Of Blood Group Incompatibilities In Neonates Presenting With Jaundice.

Materials And Methods: This Retrospective Study Analyzed Cases Collected Between October 2022 To October 2024. Demographic Data Was Collected Along With History Related To The Causes Of Hyperbilirubinemia. Clinical Assessments, Laboratory Testing, And Comprehensive Immunohematological Analysis Were Conducted, Including Direct Antiglobulin Testing (DAT), Antibody Screening, Antibody Identification, And Rh Kell Phenotyping, Using Blood Samples Collected From Neonates.

Results: Pathological Jaundice Occurred More Frequently (63.4%) Than Physiological Jaundice (36.5%). Hemolytic Disease Of The Newborn (HDN) Emerged As The Leading Pathological Cause, With A Positive Direct Antiglobulin Test (DAT) Demonstrating 100% Sensitivity In Cases Of Rh HDN (N=46). The Most Common Antibodies Identified Were Anti-D (N=23), Followed By Anti-D + Anti-C (N=11), Anti-E (N=5), Anti-C (N=5), Anti-E + Anti-C (N=1), And Anti-Kpb (N=1). Phototherapy Alone Was The Primary Treatment For Most Cases (85.2%), While 29 Infants Received Both Exchange Transfusion And Phototherapy.

Conclusion: Prompt Diagnosis, Timely Intervention, And Appropriate Management Are Essential To Reduce Neonatal Morbidity And Mortality. A Negative DAT Result Does Not Exclude Hemolytic Disease Of The Newborn (HDN). When Clinical Suspicion Remains, More Sensitive Methods Like Elution Should Be Employed To Confirm The Diagnosis.

KEYWORDS: Neonatal Jaundice, Direct Antiglobulin Test, Exchange Transfusion.

Abstract Number	AB10
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Hemolytic Disease Of Fetus And Newborn Due To Multiple Antibodies-Anti-S And Anti-E : A Case Report

Introduction: The Transplacental Transfer Of Red Cell Antibodies In Maternal Serum Can Induce Hemolysis In The Fetal Circulation And Cause Hemolytic Disease Of The Fetus And Newborn(Hdfn). The Severity Of Hemolysis Depends On The Type Of Antibody. We Present A Case In Which Mother Had Two Antibodies But The Anemia In The Neonate Was Due To Only One Antibody Present On Neonatal Red Cells.

Case Report: A Case Of A Male Neonate At Day 3 Of Life, Born At Term, By Normal Vaginal Delivery, Appropriate For Gestational Age With Neonatal Jaundice. We Received Requisition For Dvet In View Of Rising Bilirubin TSB=24 Mg/Dl On Day 3 Of Life. The Blood Grouping Showed Both Mother And Neonate To Be O Rh 'D' Positive. The Antibody Screen And Identification On The Maternal Sample Showed Presence Of Anti-E And Anti-S Which Was Confirmed By Enzyme Studies And Select Cells.

The Anti-E Was Found To Be Igg+Igm Type And Reactive At 37 0 C And Room Temperature With A Titre Of 64 By Tube Technique And 512 By AHG Gel Technique (LISS Coombs Ahg Card. Biorad, Switzerland). The Anti-S Was Probably IgG Type As It Was Non Reactive In Plain Gel Card And Was Found In Neonatal Serum Also. The Anti-S Titres Were Negative By Tube And 1 By Gel Technique. Expressed Breast Milk Was Also Tested And It Revealed Anti-E Titres 16 And 4 By Gel And Tube Technique Respectively. The Neonate DCT Was 3+ By Column Agglutination Technology (Cat) With Presence Of Both Anti-E And Anti-S In The Serum. However, On Eluting The Neonatal Cells, Only Anti-E Was Found In The Elute. The Rh Phenotype Of The Mother And Neonate Were C+E-C+E+ And C-E+C+E+ Respectively. The Mother Tested Negative And Neonate Tested Positive For The S Antigen. This Suggested That The Hdfn Caused Was Most Probably Due To The Anti E Antibody Formed By The Mother That Sensitized The Neonatal Red Cells To Cause Neonatal Jaundice In The Neonate. Neonatal Jaundice Resolved With Phototherapy For 3 Days. On Day 7 And Day 10, The Neonate Received Top Up Transfusion And His Hb Increased From 6.6 Gm/Dl To 9.1 gm/dl.

Conclusion: Presence Of Multiple Antibodies May Pose Difficulty In Identification Of The Culprit Antibody Causing The Hdfn. Proper Immunohematological Work Up Is Required Both On The Neonatal And Maternal Sample. Also, Antibody Screening In The Rh(D) Positive Females Should Be Done To Rule Out The Presence Of Non Anti-D Antibodies.

Abstract Number	AB11
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"Experience With Therapeutic Phlebotomy In Paediatric Patients At A Tertiary Care Hospital: A Retrospective Study"

Introduction: Therapeutic Phlebotomy Is A Procedure For Reducing Blood Volume That Is Applied In Paediatric Patients To Manage Elevated Blood Viscosity Or Iron Overload. In Cyanotic Congenital Heart Disease (CHD), Phlebotomy Can Reduce Hematocrit Levels To Relieve Hyperviscosity Symptoms And Decrease Thrombotic Risk. For Sickle Cell Disease (SCD) Patients, It Helps Control Transfusion-Related Iron Overload, Blood Viscosity, And, In Certain Cases, The Frequency Of Acute Pain Crises. This Approach In Paediatrics Requires Careful Balance To Maximise Benefits While Minimising Risks, Particularly The Risk Of Anaemia.

Materials And Method's: This Retrospective Study Was Conducted By Reviewing Records Of Paediatric Patients Who Underwent Therapeutic Phlebotomy Between January 2019 And October 2024.Patient Clinical And Laboratory Parameters Details Were Recorded To Assess Improvement In Symptoms After The Procedure. The Study Included Paediatric Patients (Aged 0–18 Years) Who Received Therapeutic Phlebotomy.

Results: A Total Of 21 Paediatric Patients Underwent Therapeutic Phlebotomy From 2019 To 2024, Including 10 With Sickle Cell Disease (Notably Improving Acute Pain Crisis),7 With CHD (Stabilised Pre-Surgically By Reducing Hematocrit With Post Procedure HCT Range 50%-67.8%), 2 With Nephritic Syndrome And Polycythemia (With Post Procedure HCT Range 50%- 55%),1 Haemochromatosis Patient Whose Ferritin Decreased From 2883 To 2240 Ng/Ml After 3 Cycles,1 With Triple-Negative Myeloproliferative Neoplasm (MPN),With Associated Polycythemia. Overall, Patients Receiving >2 Cycles Showed Greater Clinical Improvement.

Conclusion: Therapeutic Phlebotomy Effectively Managed Haematological Complications In Paediatric Patients With Sickle Cell Disease, Congenital Heart Disease, And Haemochromatosis. Early Initiation And Tailored Blood Removal Improved Clinical **Outcomes** Including Symptom Relief, Optimised Hematocrit Levels, And Reduced Iron Burden. More Than Two Cycles Were Associated With Better Responses, Highlighting The Importance Of Individualised Phlebotomy Protocols.

Abstract Number	AB12
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A Comparative Analysis Between Retrograde Autologous Blood Priming Vs Allogenic Blood Priming In CPB Circuits During Pediatric Cardiac Surgery

Introduction: Cardiopulmonary Bypass (CPB) Is Essential In Cardiac Surgeries, But Traditional Crystalloid Priming Causes Significant Hemodilution. Low Hematocrit In CPB Is Associated With Renal Dysfunction And Other Morbidity. This Study Compares Autologous Blood And Allogenic Blood For CPB Priming In Different Dimensions. A Consensus For The Ideal Priming Fluid In CPB Pumps For Pediatric Cardiac Surgery Is Lacking. To The Best Of Our Knowledge, This Research Is The First To Address This Knowledge Gap.

Aims And Objectives: To Compare Various Aspects Of Pediatric Cardiac Surgery On CPB Using Autologous And Allogenic Blood Priming.

Materials And Methods: Cases Undergoing ASD Closure In CPB With Weight More Than 10kg In A Pediatric Surgery Department In A Tertiary Care Centre Is Included In The Study

Data Of 5 Cases With Autologous Priming Was Collected Retrospectively From Patient's Charts And Perfusion Records Over A Period Of 10 Months From January 2024 Till October 2024.The Collected Data Was Compared With Equal Number Of Cases With Age, Gender, Surgical Team And Equipment Matched ASD Closure With Allogenic Blood Priming In The CPB. Comparison Was Made Between Mean Duration On CPB, Mean Duration Of Aortic Clamp Time, Patient Outcome, Hospital And ICU Stay And Economical Aspect Etc.

Results: Autologous Blood Priming Doesn't Cause Any Aberration In The Biochemical Parameters Of The Patients Similar To Allogenic Blood Priming. Cases Which Have Undergone Autologous Priming Didn't Need Any Additional Support During Procedure Other Than Routine Support. A Temperature Spike Was Observed In 2 Cases Of Allogenic Priming. The Financial Burden Associated With The Allogenic Blood Is Also Substantial.

Conclusion: RAP Reduces The Exposure To Allogenic Blood And Hence To The Associated Immunomodulation And Other Adverse Events. RAP Is As Safe And Effective Like Allogenic Blood Priming In CPB For Pediatric Patients.

Abstract Number	AB13
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Therapeutic Plasma Exchange Combined With Continuous Renal Replacement Therapy For Pediatric Acute Liver Failure – A Potential Bridge Therapy To Mitigate Associated Co-Morbidities

Introduction/Objective: Pediatric Acute Liver Failure Is A Fatal Condition. Extra-Corporeal Liver Support I.E. Therapeutic Plasma Exchange With Continuous Renal Replacement Therapy Can Be Used As A Bridge Therapy Until Suitable Donor Organ Is Identified For Liver Transplant Or The Liver Itself Regenerates. The Suggested Mechanisms Involve Eliminating Both Albumin-Bound And Unbound Toxins, Aiming To Avert Complications Linked To A Compromised Detoxification Function Of The Failing Liver. Previous Studies Published Were Limited.

Aim: To Study Effect Of Therapeutic Plasma Exchange Combined With Continuous Renal Replacement Therapy For Pediatric Acute Liver Failure – A Potential Bridge Therapy To Mitigate Associated Co-Morbidities.

Methods: This Case Series Study Was Conducted For Pediatric Patient Undergoing TPE+CRRT From July 2023 To August 2024 At The Pediatric Intensive Care Of Dr B.L. Kapur Memorial Hospital, A Tertiary Care Hospital. These Patients Were Treated With Artificial Liver Support Including On-Line Hemodiafiltration And Plasma Exchange.

Result: Five Patients Were Included In This Study. The Youngest Patient Was 10yr Old And Weighed 28kg. Median Age And Bodyweight Are 11yr And 40kg Respectively. Among Five Cases, Three (60%) Survived To Discharged And Two (40%) Died On The Waitlist To Liver Transplant. Three Cases Were Associated With Hep A Infection Out Of Which Two (66%) Survived. Declining Trends In Liver Enzyme And Serum Ammonia Concentration Seen In All Cases Post PLEX Sessions. Hemodynamic Stability Achieved In All Cases.

Conclusion: We Concluded That TPE Could Decrease Serum SGOT, SGPT, Alkaline Phosphatase, GGT, Bilirubin, Ammonia, And Reverse Severe Coagulopathy And CRRT Will Decrease The Levels Of Ammonia In The Serum. Significant Clinical Improvement Seen In Patients Associated With Hep A Etiology. TPE + CRRT Is Beneficial Bridging Therapy In PALF, Reducing The Associated Morbidities And Can Be Used While Waiting For The Suitable Transplant Donor Organ.

Abstract Number	AB14
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DL Antibody Testing For Paroxysmal Cold Hemoglobinuria: A Simple, Cost-Effective Diagnostic Tool To Differentiate Cold AIHA And PCH, Enhancing Treatment Outcomes In Pediatric Patients" A Case Series Of 14 Patients

Introduction: Paroxysmal Cold Hemoglobinuria (PCH) Is A Rare Form Of Cold Autoimmune Hemolytic Anemia (AIHA) Caused By The Presence Of Donath-Landsteiner (DL) Antibodies. These Antibodies Are Biphasic Hemolysins That Bind To Red Blood Cells At Low Temperatures, Leading To Hemolysis Upon Rewarming. The DL Antibody Test Is Critical In Diagnosing PCH, Particularly In Patients With Cold-Induced Hemolysis And Unexplained Anemia.

Case Series: This Case Series Evaluates 14 Pediatric Patients Presenting With Suspected Cold AIHA, All Of Whom Underwent DL Antibody Testing. Out Of The 14, 6 Patients (42.8%) Tested Positive For DL Antibodies, Confirming The Diagnosis Of PCH. 2 Of These Cases Presented With Acute Kidney Injury With Variable Severity And Needed Hemodialysis, While 3 Of These Case Had A Recent Viral Infection And Rest Were Idiopathic Cases With No Known Underlying Condition.

These Patients Presented With A Variety Of Symptoms, Including Hemoglobinuria (8 Patients), Jaundice (4 Patients), And Fever (2 Patients). Hemoglobinuria, Was Most Commonly Observed And Associated With Marked Drop In Hemoglobin Levels. Other Presenting Symptoms Included Pallor, Fatigue, And Cold-Induced Cyanosis Of Extremities. **Laboratory Findings:** Patients Who Tested Positive For DL Antibodies Demonstrated Significant Laboratory Findings, Including A Notable Fall In Hemoglobin Levels , Elevated LDH Levels , And Increased Reticulocyte Count , Indicating Active Hemolysis And Compensatory Erythropoiesis. The Coombs Test Was Positive In All 6 Patient , 3 Of 6 Having Igg Along With C3d Specificity And 3 With C3d Specificity Only Consistent With PCH While DAT Was Negative In 8 Out Of 14 Patient Suggesting Cold AIHA **Management:** Patients With Cold AIHA Responded Well To Steroid Therapy, Which Effectively Managed Hemolysis And Alleviated Symptoms. Meanwhile, 5 Patients Diagnosed With PCH Received Supportive Care Only. **Conclusion:** The DL Antibody Test Is Diagnostic Tool In Confirming PCH In Patients With Cold-Induced Hemolysis And Unexplained Anemia. This Case Series Underscores The Importance Of DL Testing In Diagnosing PCH, Particularly In The Context Of Symptoms Such As Hemoglobinuria, Jaundice, And Fever, Along With Characteristic Laboratory Findings. Early Identification Of DL Antibodies Can Guide Appropriate Management Strategies ,High Index Of Suspicion Helps Identify This Rare Illness Which Is Self-Limiting And Avoids Unnecessary Prolonged Exposure To Immunosuppressants.

Abstract Number	AB15
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Blood Ordering Practices And Perioperative Utilization Of Blood In Children Undergoing Elective Surgery In Paediatric Operation Theatres

Background : The High-Acuity Nature Of Perioperative Care Of Paediatric Patients Often Leads To An Unchecked And Exaggerated Preoperative Ordering. This Massively Over-Burdens The Blood Bank Services, Along With Intermittent Non-Availability Of Blood Products For Emergency Situations. To Describe And Quantify The Requisition And Transfusion Practices In Children Undergoing Elective Surgeries.

Methodology : A Prospective Observational Study Was Carried Out In Children Older Than 1 Month Of Age Scheduled For Elective Non-Cardiac Surgery Under General Anaesthesia, For Whom Preoperative Blood Or Blood Products Were Ordered Or Who Required Transfusion On Emergent Basis. The Cross Match To Transfusion Ratio (C:T Ratio), Adjusted C:T Ratio And The Percentage Of Patients Requiring Blood Procurement On An Emergency Basis Were Calculated.

Results : A Total Of 543 Children Were Included, Out Of Which Blood Products Were Ordered Preoperatively In 509 (93.7%) Children. Mean Preoperative Haemoglobin Was 11.3 ± 1.1 Gm/Dl. C:T Ratios Were 2.71 And 2.57 Respectively. Adjusted C:T Ratios Were 6.08 And 5.78 Respectively. The Most And Least Efficient Blood Utilization Was Noted In Gastrointestinal Surgeries (CT Ratio Of 1.4), And Genitourinary Surgeries (CT Ratio 11.6) Respectively. High CT Ratios Were Noted In Infants, Children 5-12 Years And >12 Years Of Age (CT Ratio 3.65, 3.8 And 4.25 Respectively). Least Wastage Was Noted In The Age Group Of 1-5 Years (CT Ratio 2.3).

Conclusion : CT Ratio </= 2.5 Suggests Efficient Blood Usage. The Present Study Cohort Demonstrated A CT Ratio Of 2.57, Suggestive Of Close To Appropriate Blood Utilisation.

A Multidisciplinary Team Approach Including Anaesthesiologists, Surgeons And Transfusion Medicine Physicians, For Decisions Regarding Blood Requisition And Cross Match; Adapting Adequate Storage Conditions And Timely Return Of Unused Blood; Conducting Regular Audits; And Formulating Institutional Guidelines On Blood Handling And Maximum Surgical Blood Ordering Schedule (MSBOS) Can Further Improve Practices.

Abstract Number	AB16
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Let Sleeping Children Lie:
Lupus Anticoagulant Hypoprothrombinemia Syndrome In Children

Introduction: Lupus Anticoagulant Hypoprothrombinemia Syndrome (LAHPS) Is A Rare Entity Consisting Of Lupus Anticoagulant (LA) Positivity Associated With An Acquired Deficiency Of Coagulation Factor II (FII). In The Pediatric Population, Transient Lupus May Also Give Rise To This Phenomenon. Diagnosis And Management Of This Rare Phenomenon Continue To Be An Ongoing Challenge.

Aims And Objectives: To Study The Clinical Presentation And Assess The Bleeding Symptoms Of Patients Diagnosed With LAHPS, And Compare The Same Between Pediatric And Adult Age Groups. **Materials And Methods**: Patients Identified With LAHPS Between May 2023 To May 2024 Were Included In This Study. Detailed History Was Taken For Each Of The Cases To Determine The Initial And Continual Presentation. Bleeding Symptoms Were Also Scored Based On The ISTH-BAT (Bleeding Assessment Tool). ROTEM By Modified EXTEM (Low Physiological Dose Of Recombinant TF) Was Also Studied To Quantify Bleeding Tendency.

Results: Six Cases Were Identified With LAHPS In The Corresponding Year, With APTT Values Not Correcting On Mixing, A Positive Lupus Anticoagulant On DRVVT And Reduced Levels Of Factor II. Two Of These Cases Were From The Pediatric Population. The Mean Value Of Factor II At Diagnosis Was 9.5%. Adequacy Of The Other Factor Levels Was Confirmed By Testing At Higher Dilutions Or Running Chromogenic Assays. Patients Presented With A Relatively Narrow Timespan Of Symptoms (5 Days To 3 Months), With Three Of The Cases Being Transfused Prior To Our Evaluation. Two Patients Were Treated With Vit. K Injections And Fibrinolytics: The Mainstay Of Treatment For LAHPS Is Corticosteroid Therapy. ISTH-BAT Did Not Correlate Well To The Bleeding Symptoms: An Expected Result As It Is Tailored For Congenital Rather Than Acquired Bleeding Tendencies. ROTEM May Serve As A Valuable Indicator Of Bleeding Tendency In LAHPS, As Parameters Reflecting A Hypocoaguable State Were Seen In 5 Cases.

Conclusion: LAHPS Is Associated With Lupus Positivity And Severely Decreased Levels Of Factor II At Diagnosis. LAHS Is Seen To Be Associated With Autoimmune Disease, Or In Children, Where It Often Follows An Infection. A Diagnosis Of LAHPS Should Be Considered In Bleeding Patients With Lupus Positivity, And Therapy Tailored Accordingly. Tests Of Global Haemostasis Such As ROTEM May Help Assess Bleeding Tendency In Patients Of LAHPS.

Abstract Number	AB17
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Evaluating Out-Of-Core Hours Blood Transfusions In Low Acuity Areas In Pediatric Population

Introduction: The Chain Of Events Involved In Blood Transfusion Procedures Involves A Significant Amount Of Human Error, Which Could Result In Life-Threatening Situations, Including The Recipient's Death. Clerical Mistakes In Routine Procedures Are Referred To As "Near Miss Events" And Frequently Do Not Have Major Repercussions. According To The 2005 Serious Hazards Of Transfusion (SHOT) Report, 179/485 Hospital Transfusion Laboratory Errors Occurred. 37% Of Incorrect Transfusions Occurred Between The Hours Of 2000 And 0800.

Aim : Evaluating Out-Of-Core Hours Blood Transfusions In Low Acuity Areas And Analyzing Transfusion Practices At Our Hospital

Material And Methods : This Prospective Observational Study Was Conducted By The Department Of Immunohematology And Blood Transfusion At BLK-MAX Super Specialty Hospital, New Delhi. Transfusion Occurring From Feb 2024 To November 2024 Between 2000 Hours To 0800 Hours In Low Acuity Areas Were Evaluated.

Result: Out Of Total 4312 Out Of Core Hours Transfusion, 53 Transfusion Were For Pediatric Patients.77% Transfusion Were From The Department Of Hematooncology,5.6% From Surgical Oncology,3.7% From Pediatric Surgery, Orthopedic And Spine Surgery, CTVS, Gastroenterology And Hepatology Each,1.8% From Nephrology, HPB Surgery And Liver Transplant, Pediatric Urology Each. Total 73% PRBC Units,9.4% FFP Units And 16% Platelet Concentrates Were Transfused. Avoidable Transfusion Were 39%(21/53) For PRBC, 22%(2/9) For Platelet Concentrates And 28%(2/7) For FFP. No Adverse Reaction Observed. Average Time Between Request Acknowledgment Time And Issue Time Was Observed 6-7hours.

Conclusion: The Majority Of These Transfusions Were Administered To Hematology-Oncology Patients Who Require Regular Transfusions. Unnecessary Transfusions Have Been Noticed In Low-Acuity Settings, And This Can Be Avoided. A Noticeable Delay Between Acknowledging A Transfusion Request And Actually Issuing It Indicates A Delay That Could Easily Be Prevented Through Regular And Thorough Audits. Moreover, It Underscores The Importance Of A Hospital Transfusion Committee Establishing A Policy For After-Hours Transfusions, Advising Against Routine, Non-Urgent Transfusions Unless They Are Clinically Required. The Creation Of An Audit Tool Is Strongly Recommended To Gain A Better Understanding Of The Human Aspects Involved In The Transfusion Process. No Correlation Between Transfusion Reactions And Nighttime Hours Was Detected.

Abstract Number	AB18
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Erythrocytapheresis As An Arsenal For Optimising Challenges In Autologous Peripheral Blood Stem Cell Rescue Collection In Pediatrics Patients With Sickle Cell Disease - A Retrospective Study

Background: Erythrocytapheresis Which Aims At Removing The Patient's Deformed Red Cells And Replacing With Donor Red Cells When Performed Prior To Autologous PBSC Rescue Collection Can Prevent Excessive Clotting (Due To High Hbs Levels) In The Collection Set And Result In Single Session Dose Procurement In SCD Patients.
Aims And Objectives: To Understand The Safety And Efficacy Of Erythrocytapheresis In Overcoming Technical Challenges Encountered In Autologous PBSC Rescue Collection In These Patients. **Materials And Methods:** We Retrospectively Collected Data From Our Blood Centre Records Of Paediatric Patients With Sickle Cell Disease Who Underwent Erythrocytapheresis Procedure Prior Or After Unsuccessful First Session Of Autologous PBSC Rescue Collection From January 2016 To October 2024 At Our Tertiary Care Centre. Demographic, Clinical And Procedural Details Were Recorded And Analysed Using Descriptive Statistical Tools And Frequencies.
Results: During January 2016 To October 2024, A Total Of 22 Procedures Were Done Of Which 12 Were Performed In Paediatric Aged Group Patients. All Procedures Were Performed On Spectra Optia Apheresis (Terumo BCT, Lakewood, CO, USA). Based On Pre-Hbs Levels In Each Case Targeted FCR Was Determined (Range- 30-35%) With Mean Pre-Hbs Level- 73.86%; Mean Targeted FCR - 32.16% And Mean Final FCR - 31.25% Were Respectively. PRC Priming Was Done In 5 Cases. In One Patient, First Session Of Autologous Rescue Collection Was Aborted Due To Higher Hbs Levels Causing Excessive Clotting In Collection Set While In Other Two Cases Desired Dose Of 2-4million/Kg Was Not Achieved Despite Large Volume Leukapheresis (>3tbv) Apparently Due To Lower Pre-CD34 Counts And Higher Hbs Levels. In These Cases, Following Erythrocytapheresis, Second Harvest Session Was Done Successfully. In Subsequent 9 Cases, Erythrocytapheresis Was Done In Prior From Scheduled Autologous Rescue Collection Which Resulted In Accomplishment Of Target Dose In Single Harvesting Session. Mean Hbs Reduction Percentage Was 57.8% And No Serious Adverse Events Were Noted During Red Cell Exchanges.
Conclusion: Erythrocytapheresis Is A Safer And Effective Anteceding Procedure In Paediatric SCD Patients For Successfully Achieving Desired Dose Of Autologous Stem Cells As 'Rescue Collection'.

Abstract Number	AB19
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Analysis Of Adverse Reactions To Transfusion In Pediatric Population

Introduction: Blood Transfusions Are An Essential Intervention That Follows Strict Protocols. Research On Children's Reactions To Transfusions Is Sparse. Despite Advancements In Transfusion Therapy And Blood Banking Practices, Adverse Transfusion Reactions (Atrs) Remain A Significant Concern.

Aims And Objectives: The Purpose Of This Study Is To Examine The Data Pertaining To Atrs In Our Institution's Pediatric Population.

Material And Methods: This 2-Year Retrospective Study Was Conducted In The Blood Centre Of A Tertiary Care Hospital In North India From October 2022 To October 2024. Demographic/Clinical Data Was Retrieved Through The Blood Centre's Electronic System (Safetrans) And Transfusion Workup Records.

Results: During The Study Duration, 10,087 Transfusions Were Performed In Children (Aged: Birth - 17 Years), Maximum In Pediatrics Ward. Most Commonly Transfused Components Were Random Donor Platelets [RDP] (44.4%), Packed Red Blood Cells [PRBC] (39.8%) And Fresh Frozen Plasma [FFP] (15.7%). Total Of 29 Adverse Transfusion Events Were Documented, 16 In Males (55.2%) And 13 In Females (44.8%), More In Patients With History Of Multiple Transfusions (N=21, 72.4%), 48.3% With Prbcs, 27.6% With FFP And 24.1% With RDP. 51.7% Of These Adverse Transfusion Events Were Reported During Day Time (8AM – 8PM). Most Frequent Type Of ATR Reported Was Allergic Transfusion Reaction (N=13, 44.8%) Of Which 53.8% Were Due To RDP Transfusion, Followed By Febrile Non Hemolytic Transfusion Reaction [FNHTR] (N=11, 37.9%) Maximum (81.8%) Of Which Were Due To Prbcs. No Association Noted With Age And Diagnosis.

Conclusion: While The Overall Incidence Of Atrs In The Pediatric Population Was 0.28%, Their Impact Can Be Significant. The Study Emphasizes The Need For Vigilant Monitoring Of Pediatric Patients Receiving Blood Transfusions To Identify And Manage Atrs, Highlighting The Need For Further Investigation Particularly In Multiply Transfused Children And Those Receiving PRBC And FFP, And Continuous Education On Indications, Protocol Adherence, And Hemovigilance For Safety.

Abstract Number	AB20
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Audit Of Blood Products Requirement In Neonatal Surgical Patients In A Tertiary Care Centre.

Background: Surgical Neonates Consist Of A Distinct But Often Overlooked Population Among Neonatal Patients. There Is A Paucity Of Literature, Available For Surgical Neonates, Over The Trend Of Blood Products Used And Their Implications. We Herein Present A Departmental Audit Of Neonatal Surgeries, The Blood Products Required In Them And Factors Responsible For Requirement.

Methods: All Neonates <28 Days Were Included In The Study Who Were Operated In The Department Of Pediatrics Surgery Of Our Institute After January 2023. Patients Were Divided Into Major And Minor Procedures. Demographic Parameters Like Gestational Age, Age At Admission And Surgery, Weight At Admission And Birth; Associated Co-Morbidities, Clinical Parameters Including Need For Inotropic Support, Need For Ventilatory Support, Intraoperative Shock, Intraoperative Significant Bleeding(>10% Blood Volume), Length Of Operative Procedure, Length Of Hospital Stay, Laboratory Parameters Including Least Hb , Least Platelet Counts, Positive Blood Culture Were Recorded Along With The Final Outcome (Whether Discharged/ Mortality/LAMA). Blood Products Requirement Were Noted For Total Number Of Packed Red Blood Cell (PRBC), Fresh Frozen Plasma (FFP) And Platelet Required For The Hospital Stay.

Results: There Were 50 Patients In Total (39) Major Procedures And 11 Minor Procedures). Blood Products Were Required Mainly In Major Procedures (76%) And Only 2 Of Minor Procedures. In Both Minor Procedures, Patients Were Septic And Requirement For Platelet Transfusion Was More Than PRBC (Neonatal Pack). Similarly, In Major Procedures, On Average 1-2 PRBC (Neonatal Pack) Units Were Required As Compared To Platelet Requirement (On Average 3-4 Units). Blood Products Were More Required In Patients With Sepsis, Inotropic Support, Ventilatory Requirement, Intraoperative Shock And Hemorrhage. Plasma Was Used In 1 Case Of Significant Intraoperative Bleeding. Platelet Requirement Were Significantly More In Patients With Persistent Thrombocytopenia And Positive Blood Culture. 22 % Of Patients Requiring Blood Transfusion Had Mortality.

Conclusion: Blood Products Are More Required In Sick Neonates Undergoing Surgery With Trend Towards More Platelet Use Followed By PRBC Requirement. Various Surgical Factors Like Intra –Operative Pathology, Blood Loss / Duration Of Surgery, Infection, Co – Morbidities, Etc. Depicts The Need Of Transfusion Of Various Blood Products In Surgical Neonates.

Abstract Number	AB21
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Blood Transfusion Practices In Pediatric Onco-Surgery Patients.

Introduction: Pediatric Solid Tumors Account For About 30-50 Percent Of All Pediatric Cancers. Treatment Includes Surgery, Chemotherapy, Radiation Therapy, Immunotherapy And Stem Cell Transplantation. During Surgical Aspect Of Treatment Blood Transfusion Is Often Required In Pre, Peri And Post-Operative Period Based On Various Factors. There Is Dearth Of Studies In This Context. Herein We Present Data From Our Institute For Past 22 Months, Assessing The Transfusion Requirements In These Patients' Undergoing Surgery And Factors Responsible.

Materials And Methods: A Retrospective Study Was Performed In All Pediatric Patients Younger Than 18 Years Who Underwent Surgery For Solid Tumors From January 2023 Onwards Over A Period Of 22 Months In Our Institution. Demographic Data Was Collected For These Patients Along With Clinical Information Like Diagnosis, Procedure Performed, Preoperative And Postoperative Hemoglobin, Intra-Operative Blood Loss, Any Intraoperative Instability, Inotropic Requirement, Perioperative Blood Products Requirement Along With Type Of Blood Products Used, Any Blood Reactions, Positive Blood Cultures And Outcome Of Patients.

Results: A Total Of 55 Patients Were Enrolled In This Study, Out Of Which 17 Were Major Cases And Rest Minor Procedures. On Analysis Age < 4 Years And Intraoperative Time > 150 Min Were Determined As Independent Variables In Terms Of Need For Intraoperative Blood Transfusion. Intraoperative Blood Was Required In 8 Patients (14%) And Only 2 Had Intraoperative Instability And Requirement Of Ionotropic Support. Preoperative Blood Transfusion Was Observed In Patients With Hb Less Than 7 In Pre-Op And Intraoperative PRBC Transfusion Was Associated With Preoperative Low Hb Or Intraoperative Significant Bleeding (Total 4 Cases). Postoperative PRBC Transfusion Was Associated With Hb Less Than 8 (4 Cases). None Of The Patients Had Any Major Blood Transfusion Or Any Transfusion Related Reaction. No Significant Co-Relation Was Found Between Positive Blood Cultures And Need For Blood Transfusion.

Conclusion: In Conclusion, The Findings Obtained In This Study Suggest That Age And Surgical Duration Are Independent Risk Factors For Intraoperative Blood Transfusion In Pediatric Patients Undergoing Surgery For Solid Tumors. Particularly, In Younger Patients And Prolonged Surgeries, Closer Monitoring And Awareness May Enhance Early Detection, Leading To The Prevention Of Complications.

Abstract Number	AB22
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Evaluation Of Transfusion Related Adverse Events In Thalassemia Patients Of Jammu Province.

Introduction: Although Regular Blood Transfusions Is The Mainstay Treatment And A Life Saver For Thalassemia Patients, It May Be Associated With Various Complications Such As Iron Overload, RBC Alloimmunization, Transfusion Transmitted Infections And Endocrine Complications.

Aims And Objectives: Evaluation Of Immune And Non Immune Transfusion Reactions In Thalassemia Patients And To Study The Prevalence Of Transfusion Transmitted Infections In Thalassemia Patients.

Materials And Methods: This Study Was Carried In The Department Of Transfusion Medicine And Immunohematology, SMGS Hospital, Government Medical College Jammu From November 2023 To October 2024 Attending Thalassemia Day Care Center. A Total Of 146 Thalassemia Major Patients Were Included In The Study Who Received Regular Moderate Transfusion Regime.

Results: There Were A Total Of 59 Females And 89 Males In A Total Of 146 Patients. Minimum Level Of Serum Ferritin At The End Of Study Was 200 Ng/Ml While Maximum Level Was 5000 Ng/Ml With A Mean Of 1805.6 Ng/Ml. Of The Total 34 Patients Who Were More Than 16 Years Of Age, 17(50%) Patients Had Delayed Pubertal Development And Hypogonadism. There Were 4 Patients Each Of Hypothyroidism And Diabetes Mellitus. Transfusion Transmitted Infections Were Found In 24 Patients That Included 21 HCV Positives,2 Hbsag Positives And 1 HIV Positive Patient. Transfusion Reaction Rate Of 2.84% (84/2950) Was Observed During The Study Period. A Total Of 71(48.6%) Patients Developed Transfusion Reactions With 59 Having Immediate Immune Reactions And 12 Having Delayed Hemolytic Transfusion Reaction. Of The Immediate Immune Reactions, Allergic Reactions Constituted 42%, Febrile Reactions 13%, Febrile Non Hemolytic Transfusion Reaction (FNHTR) 10%, Allergic Plus FNHTR 10% And Febrile Plus Allergic 8%. Antibody Screening Revealed 10 Patients Positive For Alloantibodies At The End Of The Study. Anti E Was The Commonest Antibody Found In 5 (50%) Patients. Autoantibodies Were Detected In 21 Patients Of Which 3 Had Warm And 18 Had Cold Agglutinins.

Conclusion: In The Present Study, It Was Found That Thalassemia Patients Suffer From A Number Of Complications Owing To Repeated Blood Transfusions. Thus Meticulous Monitoring Of Transfusions And Highly Accurate, Sensitive And Specific Investigations Must Be Carried In These Patients To Minimize Chances Of Adverse Transfusion Complications.

Abstract Number	AB23
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Therapeutic Plasma Exchange In Atypical Hemolytic Uremic Syndrome

Introduction : Hemolytic Uremic Syndrome Is A Thrombotic Microangiopathy, Characterized By Intravascular Hemolysis, Thrombocytopenia And Acute Renal Failure. HUS Is Classified As Typical (Caused By Shigatoxin Producing E.Coli), Atypical (Due To Uncontrolled Complement Activation) And HUS Secondary To A Coexisting Disease. Although The General Understanding Of HUS Has Increased Recently, Physicians Tend To Resort To Pharmacological Therapy Initially, And As The Patient's Condition Deteriorates, TPE Is Initiated. In This Case Report, We Would Like To Review The Effect Of TPE In A Patient With Atypical HUS.

Relevant Case Presentation : A 10 Year Old Female Child, Admitted With Fever, Elevated Blood Pressure, Thrombocytopenia, Anemia, Laboratory Evidence Suggestive Of Hemolysis Such As Elevated LDH, Schistocytes On Peripheral Blood Smear, Deranged Renal Function Tests, High Anti Factor-H Antibody Titre, Was Diagnosed As Atypical HUS. Patient Was Started On Prednisolone, Azathioprine, Cefotaxime.. As There Was No Improvement After 2 Days, TPE Was Initiated. Three TPE Procedures Were Done For The Patient, Starting From 3rd To 7th Day Of Admission. Plasma Was The Replacement Fluid Used And Replacement Was Done With 1 Total Plasma Volumes. Patient Tolerated The Cycles Well And No Adverse Events Were Recorded. Relevant Laboratory Investigations Done.

Discussion: Diagnosis And Management Of Atypical HUS Is A Challenge As It Is A Rare Disease Entity, With Lack Of Specific Confirmatory Test. TPE Is Considered As Empirical First Line Treatment For Ahus And When Combined With Immunosuppressive Drugs, Has Dramatically Altered The Course Of Disease And Improved Survival Rates Significantly. Treatment Decisions Are Mainly Based On Platelet Count And Serum LDH. Early Initiation Of TPE, Tremendously Improves The Outcome.

Abstract Number	AB24
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Revolutionising Neonatal Hyperbilirubinemia Management: The Role Of Double Volume Exchange Transfusion Using Reconstituted Whole Blood

Introduction: In Newborns With Hyperbilirubinemia, Exchange Transfusion Stays The Mainstay Of Treatment For Cases That Do Not Respond To Phototherapy, With Or Without Immunoglobulins. Double Volume Exchange Transfusion Removes Approximately 85% Of The Infant's Red Blood Cells.

Aims And Objectives: To Observe The Increase In Haemoglobin Levels And The Reduction In Serum Indirect Bilirubin Levels After Transfusion Of Reconstituted Whole Blood In Neonates. To Assess The Cause Of Hemolysis, Which May Be Due To Rhd Incompatibility, ABO Incompatibility, Or Other Blood Group Antigens.

Materials And Methods: This Cross-Sectional Study Was Conducted In The Department Of Transfusion Medicine At A Tertiary Care Centre In Indore. A Total Of 13 Neonates With Hyperbilirubinemia, Who Were Planned For Double Volume Exchange Transfusion With Reconstituted Whole Blood, Were Included.

Reconstituted Blood Was Prepared By Mixing Less Than 5-Day-Old, NAT-Cleared, Leucodepleted O Rh(D)-Negative Red Cell Concentrates (Rccs) Suspended In AB Positive Plasma At A Hematocrit Of 45%-60%, Depending On The Desired Result. After Reconstitution, Blood Was Crossmatched With Both The Mother's And The Baby's Plasma. Under Strict Aseptic Precautions, Exchange Transfusions Were Performed In The Neonatal Intensive Care Unit (NICU) Using The Continuous Technique, With Access Via An Umbilical Venous Catheter (For Blood In) And An Umbilical Arterial Catheter (For Blood Out). Blood Withdrawal Was Approximately 10 Ml/Kg At Each Cycle.

Results: Out Of 13 Cases, 10 Neonates Were Male And 3 Were Female. Seven Cases Were Due To Rh Incompatibility, And Six Cases Were Due To ABO Incompatibility. Nine Were Term Babies And Four Were Preterm Babies. The Average Post-Exchange Fall In Serum Indirect Bilirubin Was 51.47%, And The Average Rise In Haemoglobin Level Was 2.06 G/Dl.

Conclusion: Reconstituted Whole Blood Is Immunologically Safer And More Effective Than Whole Blood For Exchange Transfusion In Cases Of Haemolytic Disease Of The Foetus And Newborn. It Minimizes Transfusion Reactions And Better Achieves The Therapeutic Effects Of Exchange Transfusion.

Abstract Number	AB25
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Blood Transfusion Practices In Pediatric Cardiac Surgery: A Retrospective Analysis Of Transfusion Requirements And Practicesfusion Practices.

Introduction: Pediatric Cardiac Surgeries Are Associated With Significant Bleeding And Blood Transfusion Needs. Children Are At A Higher Risk Of Perioperative Bleeding Compared To Adults, With Blood Loss And Transfusion Volumes Ranging From 15 To 110 Ml/Kg. This Study Aims To Analyze Blood Transfusion Practices In Critically Ill Pediatric Patients Undergoing Cardiac Surgeries.

Aim And Objectives: The Aim Of This Study Is To Analyze And Present Blood Transfusion Practices In Critically Ill Pediatric Patients Undergoing Cardiac Surgeries.

Materials And Methods: A Retrospective Observational Study Was Conducted In The Department Of Immunohematology And Blood Transfusion At Nizam's Institute Of Medical Sciences, Hyderabad, Between July And October 2024. The Study Included All Pediatric Patients Scheduled For Elective Cardiac Surgeries During This Period.

Results: A Total Of 362 Blood Components Were Transfused Among 71 Pediatric Patients, With The Following Distribution: Packed Red Blood Cells (PRBC) 44.5%, Fresh Frozen Plasma (FFP) 36.2%, Random Donor Platelets (RDP) 25.8%, And Cryoprecipitate 2.1%. Patient Ages Ranged From 4 Days To 18 Years (Mean: 6.8 Years; Median: 8 Years). The Highest PRBC Usage Was Observed In Intracardiac Repair (ICR) Surgeries (32%), Followed By Ventricular Septal Defect (VSD) Repairs (20%), Atrial Septal Defect (ASD) Repairs (15%), And Valve Surgeries (10%). Other Procedures Accounted For 23% Of PRBC Usage. The Mean Preoperative Hemoglobin Was 13.1 ± 0.6 G/Dl, And The Mean Postoperative Hemoglobin Was 13.6 ± 0.4 G/Dl. The Average Crossmatch-To-Transfusion (C:T) Ratio Was 1.90, With A Transfusion Probability Of 95% And A Transfusion Index Of 2.4.

Conclusion: In Conclusion, Prbcs Were The Most Commonly Transfused Component, Followed By FFP. Advanced Techniques Such As Point-Of-Care Viscoelastic Testing Could Help Reduce Transfusion Requirements. Optimizing Patient Blood Management Strategies Is Essential To Meet The Unique Needs Of Pediatric Cardiac Patients.

Abstract Number	AB26
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Exchange Transfusion 'A Life Saving Intervention In A Case Of Suspected Gestational Alloimmune Liver Disease'

Introduction: Gestational Alloimmune Liver Disease (GALD) Is The Leading Cause Of Acute Liver Failure In The Neonatal Period. It Occurs Due To The Transfer Of Maternal Immunoglobulin G (Igg) Antibodies Across The Placenta, Which Target Fetal Hepatocyte Surface Antigens, Resulting In Severe Liver Dysfunction And Hemolysis. Exchange Transfusion (ET) Can Serve As A Therapeutic Approach To Eliminate These Reactive Antibodies And Prevent Further Hepatocyte Damage.

Case Details

An Outborn Male Was Admitted To The Neonatal Intensive Care Unit (NICU) At AIIMS Rishikesh At Few Hours Of Birth.On Admission, His Vitals Were Stable, But Physical Examination Revealed Jaundice, Reduced Activity, And Hepatomegaly. Laboratory Investigations Showed A Hemoglobin Level Of 13 G/Dl, Significant Hyperbilirubinemia, And Markedly Elevated Serum Ferritin (1605 Ng/Ml).

Despite Intravenous Immunoglobulin (IVIG) Therapy, The Patient's Condition Deteriorated, With Worsening Coagulopathy By Day 12 (D12) Of Hospitalization. Immunohematology Workup Did Not Indicate Hemolysis. Given The Refractoriness To IVIG And The Clinical Decline, A Double-Volume Exchange Transfusion (DVET) Was Performed On D12.

The Procedure Involved Reconstituting Two Units Of Fresh O Rh D-Negative Leucoreduced Packed Red Blood Cells (LR-Prbcs) And One Unit Of AB Rh D-Positive Fresh Frozen Plasma, Resulting In A Total Transfusion Volume Of 470 Ml And A Final Hematocrit Of 57%. The Patient Was Discharged Six Days Later Without Requiring Liver Transplantation.

Discussion And Conclusion

Gestational Alloimmune Liver Disease (GALD) Is A Leading Cause Of Neonatal Acute Liver Failure, Often Presenting With Severe Liver Injury Unresponsive To Conventional Treatments. This Case Study Focuses On A Neonate Diagnosed With Acute Liver Failure Suggestive Of GALD, Who Did Not Respond To Intravenous Immunoglobulin (IVIG) Therapy Alone. Exchange Transfusion (ET) Was Initiated As A Critical Intervention To Remove Maternal Alloantibodies (Igg) From The Neonate's Circulation Further Reducing Ongoing Liver Injury

Abstract Number	AB27
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Dental Considertaion In Hemoglobinopathies: Risk And Challenges

Hemoglobinopathies Are Inherited Disorders Of Red Blood Cells, Being An Important Cause Of Morbidity And Mortality And One Of The World's Major Health Problems. Thalassemia, Sickle Cell Disease And Variants Of Hemoglobin Are The Main Hemoglobinopathies Most Prevent In The Worldwide Population. When Dental Treatment Is Provided, The Dentist May Not Be Fully Aware Of The Implications Of Hemoglobinopathies On Dental Management Thus, Many General Dentists May Prefer Only Basic Dental Care And Refer These Patients To Either Specialist Dental Services, Or To Hospital-Based Specialized Dental Units, Especially When Invasive Procedures Are Required. Caution Should Be Exercised In Patients With Hemoglobinopathies Due To The Morbidity And Complications Related To Compromised Immunity, Altered Liver Function And Cardiovascular Issues. Hence, A Multidisciplinary Approach Should Be Followed Involving A Dental Specialist, Pediatrician, And A Hematologist To Treat These Patients.

Abstract Number	AB28
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Adverse Transfusion Reactions In Paediatric Patients: Experience From A Tertiary Care Academic Centre In India

Introduction: Literature On Adverse Transfusion Reactions (ATR) In Paediatric Patients Is Limited. The Present Study Aims To Describe The Incidence, Type And Associated Blood Components Of ATR In Paediatric Patients.

Methods: Retrospective Study Was Conducted At A Tertiary Care Academic Centre In India From 2020 To 2024. Data On Reported Cases Of Atrs In Patients Aged 0-12 Years Was Collected From Blood Bank Software And Records, And Compiled In Excel Sheet. Data Was Anonymized And Atrs Were Compared Between Components, And Patients.

Results: Total 71440 Components Transfused During Study Period, Comprising 26142 Packed Red Blood Cells (Prbcs), 43311 Platelets And 1987 Plasma Components. 45329 Units In Boys And 26111 In Girls. 45 Atrs Observed Overall (1 In 1587.5 Transfusions), 25 In Boys (1 In 1813 Transfusions) And 20 In Girls (1 In 1305 Transfusions). Most Common Component Involved Was Plasma (1 In 397.4 Plasma Transfusions) Followed By PRBC (1 Per 901.4 PRBC Transfusions) & Platelets (1 Per 3937.2 Platelet Transfusions). Allergic Reactions (62.2%) Were Commonest ATR, Followed By Febrile Non-Haemolytic Transfusion Reactions (26.6%), Transfusion Associated Dyspnoea (6.66%), Hypotensive Reaction (2.22%) And Transfusion Associated Circulatory Overload (2.2%).

Conclusion: ATR Rates Were Higher In Girls Compared To Boys. Similarly, Atrs In Paediatric Patients Were Observed To Be Higher Compared To Published Rates In Adults. Analysing These Reactions Is Essential For Improving Transfusion Safety. Plasma Components Are Commonly Associated With Atrs Though Transfused Less Frequently. Dedicated Hemovigilance For Paediatric Patients, Larger Studies, Active Surveillance, And Randomized Controlled Trials Are Needed To Accurately Assess These Reactions And Improve Preventive And Corrective Measures.

Abstract Number	AB29
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Survey To Assess The Quality Of Services Available For Thalassemia Diagnosis And Management In India

Introduction: There Is No Formal Mapping Of Services Although India Contributes To The Maximum Number Of Thalassemia Patients Globally. The Present Survey Conducted Over 10 Months, Was Done To Assess Facilities Available In India.

Methods: A Google-Form-Based Survey Was Shared Among Members Of INPHOG, PHO Chapter And Non-Governmental-Organizations Working In Thalassemia. Services For Diagnosis, Treatment, Prevention And Challenges Were Evaluated. Ethics Approval Was Received.

Results: 68 Centers Participated (Government 26, Private 28, Charitable 14). >85% Catered To Low-Income Families. The Survey Had Pan-India Presence Reporting A Total Of 11660 Patients With Maximum Centers From Maharashtra (14/68) And New-Delhi (11/68). 75% Reported Dedicated Daycare Centers With Manpower. 65 Offered HPLC For Diagnosis. Molecular Testing Was Available In 43 (63%). Serum Ferritin And Viral Markers Were Available In All. MRI T2* Was Offered In 34 Centers (50%). 60% Kept Threshold For First Transfusion As <7gm/Dl And 69% Reported Further Threshold Of 9.5-10.5gm/Dl. Leukodepleted Packed-Red-Cells Were Available In 57 Centers (84%) Which Was At-Source In 71%. Filters Were Purchased By The Patients In 41% Centers. Difficulty In Arranging Blood Donors Was Reported By 29%. Access To Chelation Was Available In 59 Centers (87%). 85% Centers Followed TIF Guidelines For Chelation. The First Chelating Agent Was Deferasirox In 82%. Desferrioxamine Was Used In 5-10% Of Patients. Challenges Faced Included Financial Constraints, GI-Intolerance And Non-Compliance. Access To Prenatal Diagnosis Was Reported By 42 Centers. 33 Centers Reported Provision For Allogeneic BMT. On Follow-Up Hypersplenism (46%), Growth Retardation (60%), Iron Overload Despite Chelation (75%) And Psychosocial Issues (37%) Were Reported. 43% Adolescent And Adult Patients Report Anxiety As Per Treating Physician. Multidisciplinary Care Was Available In 62% Centers.

Conclusion: Better Transfusion And Chelation, Early BMT Referral And Prenatal Testing Were Suggestions By These Centers. The Data Provided Here Is Crucial To Planning And Policy Making In India.

Abstract Number	AB30
Presenting Author Name And Affiliation	Dr Hari Gaire
Co-Authors Names And Affiliations	Dr Archit Pandharipande, Dr Anuj Singh, Dr Silky Jain, Dr Nita Radhakrishnan

Viral Hepatitis In Pediatric Patients With Hematologic And Oncologic Disorders: Insights From A Single-Center Study

Introduction And Aim: Pediatric Patients With Haematological And Oncologic Conditions Are Predisposed To Viral Hepatitis Due To Various Factors Including Frequent Injections, Blood Transfusions, Frequent Hospitalizations And Prolonged Use Of Immunosuppressive Therapies. The Data On Real-World Experience Of Viral Hepatitis In This Vulnerable Group Of Population Is Sparse.

Methods: All Pediatric Patients With Underlying Hemato-Oncologic Disorder Who Were Diagnosed With Viral Hepatitis B Or C In Past 12 Months Were Evaluated. Hepatitis Workup Was Done Either As Routine Screening In Transfusion Dependent Patients Or Upon Corroborative Symptoms. At Diagnosis, Liver Function Time And Prothrombin Time Was Assessed To Guide Treatment. Treatment Was Provided As Per Standard Guidelines. Treatment Provided Include Sofosbuvir-Velpatasvir In Hepatitis C And Tenofovir Or Entacavir In HBV. In Case Of Ongoing Immunosuppression As In Immune Deficiency, Treatment Was Prolonged.

Results: Within The Last 12 Months, 55 Pediatric Patients With Existing Haematological Or Oncological Conditions Were Diagnosed With Viral Hepatitis (14 Cases Of Hepatitis B, 38 Of Hepatitis C, And 3 Of Both Hepatitis B And C). Notably, 24 Patients Had Thalassemia, 11 Had Leukemia, 4 Had Lymphoma, 7 Had Hemophilia, 5 Had Aplastic Anemia, 2 Had Neuroblastoma, 1 Had Primary Immune Deficiency And 1 Case Of CAMT. High Viral Loads Prompted Antiviral Therapy Initiation In 9 Hepatitis B And 22 Hepatitis C Patients, While Others Were Closely Monitored For Reactivation Risk. No Significant Drug Toxicity Was Found Among Treated Cases. No Cases Had Acute Deterioration Requiring Extensive Support In This Cohort. Duration Of Treatment Ranged From 3 Months In Hepatitis C To More Than 1 Year In Hepatitis B Patients.

Conclusion: Due To The Heightened Risk Of Viral Reactivation, Viral Hepatitis In This Cohort Needs Vigilant Monitoring And Collaborative, Multidisciplinary Care. Comprehensive Strategies Including Vaccination, Screening, Safe Blood Product Use, Infection Control Practices Need To Be Implemented.

Abstract Number	AB31
Presenting Author Name And Affiliation	Dr Anuj Singh
Co-Authors Names And Affiliations	Dr Seema Dua; Dr Satyam Arora; Dr Archit Pandharipande; Dr Silky Jain; Dr Nita Radhakrishnan

Improving Outcome Of Severe Aplastic Anemia In Pediatric Population By Increasing Access To Hematopoietic Stem Cell Transplantation - A Single Center Experience From Public Hospital In India

Introduction: Severe Aplastic Anemia (SAA) In Pediatric Patients Is An Uncommon, Life-Threatening Disorder Characterized By Pancytopenia And Hypocellular Bone Marrow. Treatment Modalities Are Immunosuppressive Therapy (IST) And Hematopoietic Stem Cell Transplant (HSCT). Management Of SAA Is Challenging In LMIC Due To Delay In Diagnosis, Lack Of Supportive Care And Limited Resources For Definitive Therapy.

Objectives: To Study The Outcome Of Pediatric Patients With SAA Who Underwent HSCT In Two-Time Intervals T1: 2017 To 2021, T2: 2021-2024.

Methods: Retrospective Analysis Of The Patients With SAA Who Underwent HSCT During Study Period 2017 To 2024

Results: Fourteen Patients Underwent Total 16 Hematopoietic Stem Cell Transplant Over The Study Period. Median Age Of Study Population Was 13 Year (Range, 4-16), With M:F-13:1. Seven Patients Received Grafts From HLA Sibling, 2 From Matched Related Donor And 5 From Haploidentical Donors. Peripheral Blood Was The Source Of Stem Cells In The All Patients. Primary Graft Failure Was Observed In 3 Cases, And 2 Patients Underwent Second HSCT. The Incidence Of Acute GVHD Was 18%, Whereas Chronic GVHD Was Observed Only In 1 Patient. Median Follow-Up Was 2 Years (Range, 0.2–3.2). Cause Of Mortality Were Infection (4), Disease Progression (1), Regimen Related Toxicity (1), GVHD (1). 2-Year Overall Survival For Entire Cohort Was 50%.

Conclusions: Infections Are The Common Cause Of Mortality In Pediatric Severe Aplastic Anemia Patient Undergoing HSCT. Early Referral For Transplant After Diagnosis And Strategies To Treat Multidrug Resistant Bacterial Infection Are Crucial For Improving The Outcomes.

Abstract Number	AB32
Presenting Author Name And Affiliation	Dr. GANGA.R, Post Graduate Institute Of Child Health
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"Transforming Lives: Breakthrough Success In Autologous Peripheral Blood Stem Cell Collection And Transplantation Till Engraftment In Infant"

Introduction: Autologous Peripheral Blood Stem Cell (PBSC) Transplantation Is Essential In Paediatric Cancer Treatment, With Tandem Transplantation Benefiting Certain Malignancies. Collecting PBSC From Small Children Is Challenging Due To Factors Like Vascular Access, Extracorporeal Circuit Volume, And Blood Flow Rates Which Limit Successful Collection Due To The Child's Low Body Weight. HSCT Can Be Autologous (From The Patient) Or Allogeneic (From A Donor).

Abstract: A 7-Month-Old Female, Weighing 6.7 Kg Diagnosed With High-Risk Neuroblastoma Stage 4 At 3 Months, Underwent RAPID COJEC Chemotherapy And Gross Total Resection Of The Primary Mass. Autologous HSCT Was Planned. GCSF (75µg) Was Administered For 5 Days For Stem Cell Mobilization. A 6.5 Fr Femoral Dialysis Catheter Was Inserted, And Transferred To The Blood Centre With Stable Pre-Procedure Vitals. PBSC Collection Was Performed Using Spectra Optia, With A Calculated Total Blood Volume Of 530ml. Priming Was Done With 322 Ml Of O-Positive Crossmatch-Compatible Irradiated Blood. The Procedure Started At 10:00 AM, And The Patient Was Sedated With Midazolam And Ketamine For Irritability. The Collection Was Delayed Due To Issues With The Inlet, As The Baby Continued To Move Despite Sedation, Resulting In A Prolonged Interface Formation Even After Processing One TBV. A Total Of 4.5 TBV Was Processed With The Inlet Blood Flow Rate Of 10.6 Ml/Min, To Collect 100 Ml Of Product In 262 Minutes. The Dose Collected Was 4×10^6 CD34+/ Kg Recipients Body Weight. Calcium Gluconate Was Infused At 7 Ml/Hour. After Plasma Reduction, 50 Ml Of Product Was Cryopreserved With 6% HES, 22% Albumin, And >99.9% Sterile DMSO. Cultures Were Sent After Collection, Before Cryopreservation, And Prior To Issue, All Of Which Were Sterile. After Conditioning With Bu-Mel, PBSC Infusion Of 2.3×10^6 CD34+ Cells/Kg Was Administered Via PICC Line. PRBC And RDP Transfusions Given As Needed. G-CSF Was Administered Until Day 1 Of Neutrophil Engraftment. On Day -2, The Child Developed A Fever, With Cultures Growing Klebsiella, IV Antibiotics Were Started. Fever Resolved By Day+2, Repeat Cultures Were Sterile. Child Developed Throat And Gut Mucositis, Feeding Difficulties, And Loose Stools, Improved With Supportive Care. Neutrophil Engraftment Occurred On Day+10. The Child Is Stable And Discharged With Follow-Up Instructions.

Conclusion: Our Case Highlights That PBSC Can Be Safely Collected From Infants And Offered To Infants Requiring HSCT.

Abstract Number	AB33
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Co-Authors Names And Affiliations	Dr Kriti Batni, Dr Satyam Arora, Dr Seema Dua, Dr Nita Radhakrishnan, Post Graduate Institue Of Child Health, Noida

DAT Positivity In Transfusion Dependent Thalassemia Patients At A Tertiary Care Pediatric Institute In North India

Introduction: Transfusion Dependent Thalassemia Patients Receiving Regular Blood Transfusions May Develop Immune Abnormalities, Including The Formation Of Autoantibodies Targeting Various Tissues. Some Patients Experience Hyperhemolysis And Increased Transfusion Needs Due To Positive Direct Antiglobulin Tests (DAT). These Autoantibodies, Often Present With Alloantibodies, May Require Immunosuppressive Therapy If Symptomatic.

Aims And Objectives: This Study Aimed To Analyze The Incidence Of DAT Positivity In Transfusion-Dependent Thalassemia (TDT) Patients.

Materials And Methods: This Was A Prospective Observational Study In A Tertiary Pediatric Hospital From North India, Done On TDT Patients Registered At Our Centre Over 1 Year (7 Months Data Is Presented). The Tests Performed Were ABO And Rh-Typing, Direct And Indirect Antiglobulin Tests, Antibody Screening And Identification For Every Visit For Blood Transfusions.

Results: 102 Patients (67 Males, 35 Females, Aged 3 Months To 18 Years-Mean 6.19±5.02 Years) Were Enrolled. Among Them, 90 Had B-Thalassemia Major, 7 Had E/B-Thalassemia, And 5 Had Thalassemia Intermedia. 20 Patients (19.6%) Had Antibodies (-Allo And -Auto), And 5 (4.9%) Were Alloimmunized (All Rh). DAT Was Positive In 19 Patients (18.6%), With A Significantly Higher Rate In Alloimmunized Patients (80%) Compared To Non-Alloimmunized Ones (18.6%). DAT Positivity Was Highest In Thalassemia Intermedia (80%), Followed By E/B-Thalassemia (28.57%) And B-Thalassemia Major (14.44%).

Fifteen Patients Were Exclusively DAT Positive, With 5 Already Positive At Enrolment And 10 Developing DAT Positivity During The Study. They Received 68.5% Leucoreduced Units And 31.49% Non-Leucoreduced Units. 6 Out Of 10 Patients (60%) Had Reduced Transfusion Interval After Developing Positive DAT. Statistical Analysis Confirmed DAT Positivity Significantly Impacted Transfusion Requirements (Paired T-Test, 95% CI).

Conclusion: The DAT Positivity Rate Was 18.6%, With Higher Positivity In Alloimmunized Patients (80%). The Study Emphasizes The Importance Of Antigen Typing Before Transfusions And The Use Of Antigen-Matched Blood, Particularly For Rh Antigens.

Abstract Number	AB34
Presenting Author Name And Affiliation	Dr Jashim Debbarma, PGICH, NOIDA
Co-Authors Names And Affiliations	Dr. Satyam Arora, Asso Prof. , Dr. Seema DUA, HOD, Dept. Of TM, Dr. Ruchi Rai, HOD, NICU, PGICH

Immuno-Hematological Features In Newborns With ABO Blood Group Incompatibilities In Single Institution Of North India.

Introduction: ABO Major Incompatibility Between Mother And Newborns Occurs In About 10% Of Birth. Mothers With An O Blood Group May Form Igg Antibodies Against A And B Antigens, Which Pass Across The Placenta And Lead To HDFN In Newborns.

Aims & Objective: This Prospective Cohort Study Rated The Prevalence Of ABO-Incompatible Haemolytic Disease Of Fetus And Newborn In Our Institution Over 14 Months (1st July 2023 To 31st August 2024).

Material & Methods: All The Babies Admitted To NICU At PGICH, Noida Were Enrolled. Rh-Incompatibility Between Mother & Neonates Was Excluded From This Study. ABO & Rh-D Typing Of Mother & Neonates, Neonatal DAT & Maternal ICT Were Performed. The Maternal Anti-A & Anti-B Titres Was Also Done. Data Was Collected On Excel Sheet And Analyzed On Social Science Statistical Software.

Results: Total 778 Babies Were Enrolled, Among Them 9% (70/778) Neonates Had ABO Incompatibility. The Mean (SD) Weight Was 2.41 (± 0.6) Kg & Mean (SD) Haemoglobin Was 15.3(± 1.9) G/Dl In Aboi Neonates. The Mean (SD) Total Serum Bilirubin Was Significantly High In ABO-I HDFN; 12.1(± 3.9) Mg/Dl Compared To Those Had ABO Compatiblity; 9.7 (± 3.07) Mg/Dl, (P= <.00001) (T.Test). 8.5% Newborns Had Elute-Confirmed Positive Direct Antiglobulin Test And 5.7 % Neonates Requiring Exchange Transfusion In ABO-I HDFN. The Maternal Igg Anti-A Titre (Interquartile Range) 576 (320-896); Was Higher Than Igg Anti-B Titre; 256 (256-512). The Relative Risk Of Positive DAT Was Significantly Associated With Requirement Of Exchange Transfusion; Rs = 0.56 (P = 0.00008) (Spearman's Correlation).

Conclusion: The Overall Frequency Of ABO Incompatible HDFN Was 9% (70/778).ABO HDFN Is Usually A Self-Limiting Disease. A Small Number Of Neonates Require Invasive Treatments. The DAT Test Appears To Be Useful Tool For The Requirement Of Exchange Transfusion With ABO-I HDFN At PGICH In North India.

Abstract Number	AB35
Presenting Author Name And Affiliation	Dr RAHUL GMCH CHANDIGARH
Co-Authors Names And Affiliations	Dr Kshitija Mittal , Dr Ravneet Kaur , Dr Paramjeet Kaur , Dr Gagandeep Kaur

Therapeutic Plasma Exchange In Acute NMOSD: A Case Of Vision Recovery

Aim And Objectives. Role Of Therapeutic Plasma Exchange In A Patient Of NMOSD Failed To Respond To Immunomodulatory Drugs

Introduction: Neuromyelitis-Optica-Spectrum-Disorder (NMOSD) Is A Severe, Autoimmune Condition Primarily Targeting The Optic-Nerves And Spinal-Cord, Leading To Vision-Loss And Paralysis. Distinct From Multiple-Sclerosis, NMOSD Involves Pathogenic Autoantibodies Against Aquaporin-4, Causing Inflammation And Demyelination. Plasma-Exchange (PLEX) Plays A Crucial Role In Managing NMOSD, Especially In Acute-Attacks Unresponsive To Steroids. By Removing Pathogenic Antibodies, PLEX Effectively Reduces Inflammation, Helping Restore Neurological Function And Potentially Preventing Irreversible Damage In NMOSD Patients.

Case Summary: A 15-Year-Old-Female Presented With Complete Vision-Loss In Left-Eye And Pie In Sky Vision In Right-Eye, Accompanied By Nausea, Vomiting, And Headache For Two-Months. Initial Treatment By Local Practitioners Provided No-Relief, And Was Referred To Government-Medical-College, Chandigarh. Clinical-Findings And Radiological Evaluations Showed Bilateral-Optic-Nerve Inflammation With Grade 1 Disc-Edema And Serological Tests Confirmed The Presence Of Anti-Aquaporin-4 Antibodies, Diagnosing NMOSD. A Request Was Received For TPE And Procedures Were Started Immediately Following Patient Evaluation. Five TPE Procedures Were Done On Alternate Day Using Spectra-Optia (BCT, USA) Automated-Cell-Separator. One -1.5 Total Plasma-Volume Was Exchanged Using 0.9% Saline And 4% Albumin In Ratio Of 30:70. All The Procedures Were Completed With No Procedural Complications. After 1st Cycle Of TPE, Perception Of Vision Returned Back In Left-Eye And Blurry-Vision In Right-Eye. After 2nd Cycle Of TPE, She Regained Near-Vision And Could Read Newspaper-Headlines And Identify Person Standing Nearby. After 3rd And 4th Cycle Of TPE, Near-Vision Was Completely Normal And In Distant-Vision She Could Appreciate Time On Wall-Clock. After Completion Of 5th Cycle Of TPE Patient Was Discharged With Correction Of Refractive-Errors And Immunosuppressive-Medications And Follow-Up On Monthly-Basis

Conclusion: Therapeutic Plasma Exchange Led To Significant Vision-Improvement In This Case, Emphasizing Its Value In Managing Acute-Symptoms.

Abstract Number	AB36
Presenting Author Name And Affiliation	Dr.Arisha Khan
Co-Authors Names And Affiliations	Dr. Seema Dua, Dr. Satyam Arora, Dr. Kriti Batni, Dr. Anupa Pokrel

Incidence Of Direct Antiglobulin Test Positivity In Out Born NICU At A Dedicated Pediatric Care Center.

Introduction: Hemolytic Disease Of The Fetus And Newborn (HDFN) Poses A Critical Challenge, Affecting Pregnancies And Neonatal Outcomes. The Direct Antiglobulin Test (DAT) Is An Essential Diagnostic Tool To Identify Newborns At Risk For HDFN.
Aims And Objectives: This Study Aims To Retrospectively Analyze Data Over 10 Months, Focusing On Neonates With Positive DAT Results, Identifying Probable Causes, And Assessing Their Progression To HDFN.
Material And Methods: This Retrospective Study Included Neonates With Positive DAT Results. Data Were Collected From Hospital Files, Transfusion Medicine Databases, And Birth Records. Laboratory Parameters And Clinical Interventions Were Reviewed, And Neonates Were Categorized Into Four Groups: ABO Incompatibility, RH Incompatibility, Sepsis/Infection, And Miscellaneous Or Unknown Conditions. Data Analysis Was Conducted Using MS Excel.
Results: Among 444 Neonates (190 Females And 254 Males) Screened, 10 (2.3%, N=10) Were DAT Positive (1+ To 4+), Equally Distributed Between Females (N=5) And Males (N=5). Age Distribution Revealed 60% (N=6) Were 1–5 Days Old, 10% (N=1) Were 5–10 Days Old, And 30% (N=3) Were 10–20 Days Old. Probable Causes Included 20% (N=2) With ABO Incompatibility, 40% (N=4) With RH Incompatibility, 50% (N=5) With Sepsis/Infection, And 30% (N=3) With Miscellaneous Or Unknown Conditions. Treatment Outcomes Indicated That 20% (N=2) Required Exchange Transfusion, With A Mean Bilirubin Level Of 20.12 Mg/Dl, Highlighting The Severity Of Hyperbilirubinemia. Phototherapy Was Administered In 80% (N=8) Of Cases, Demonstrating Its Effectiveness As A First-Line Intervention. Despite These Efforts, The Significant Incidence Of Sepsis And Uncertain Outcomes Emphasize The Need For Enhanced Strategies To Improve Neonatal Survival And Care.
Conclusion: This Study Underscores The Multifactorial Nature Of DAT Positivity In Neonates, With Sepsis/Infection Being The Most Common Associated Condition. While Phototherapy Remains The Primary Treatment, Exchange Transfusion Is Critical In Severe Cases. These Findings Highlight The Importance Of Early Diagnosis, Targeted Therapy, And Robust Follow-Up Protocols To Improve Neonatal Care Outcomes And Reduce Uncertainty In Patient Management.

Abstract Number	AB37
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Co-Authors Names And Affiliations	Dr Ruchi Rai, Professor And Head, Department Of Neonatology, PGICH, Noida

Evaluation Of Clinical Outcomes And Associated Parameters In Neonates Undergoing Double Volume Exchange Transfusion - A Single Centre Study.

This Retrospective Single-Centre Study Evaluates The Clinical Outcomes And Various Parameters In Neonates Undergoing Double Volume Exchange Transfusion (DVET) For Severe Hyperbilirubinemia. Over A Period Of One Year, 11 Neonates Were Included, With Indications Ranging From ABO And Rh Incompatibility To Idiopathic Causes. The Mean Age At The Time Of The Procedure Was 5 Days, With Pre- And Post-Exchange Serum Bilirubin Levels Recorded To Assess The Efficacy Of The Intervention.

Key Parameters Analyzed Included:
- Demographic Details: Age, Weight, And Gestational Age At The Time Of DVET.
- Laboratory Values: Initial And Post-Procedure Bilirubin Levels, Hematocrit, And Platelet Counts.
- Clinical Outcomes: Reduction In Bilirubin Levels, Improvement In Neurological Symptoms, And Overall Survival Rates.

The Findings Emphasize The Importance Of DVET In The Management Of Severe Neonatal Hyperbilirubinemia And Provide Insights Into Optimizing Care To Minimize Risks.

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ABO	ABO*A1.01	+	+	-	-	-	-	-	-	-
	ABO*A2.01	+	+	-	-	-	-	-	-	-
	A variants, e.g. ABO*A3	-	+	-	-	-	-	-	-	-
	ABO*B.01	+	+	-	-	-	-	-	-	-
	B variants, e.g. ABO*B3	-	+	-	-	-	-	-	-	-
	ABO*O.01	+	+	-	-	-	-	-	-	-
	ABO*O.02	+	+	-	-	-	-	-	-	-
	O variants	-	+	-	-	-	-	-	-	-
RHD	RHD*01	-	-	+	-	-	E3, E5, E10	+	+	-
	RHD*01N.01 (RHD neg)	-	-	+	-	-	+	+	+	-
	RHD*DAU.01 (RHD pos)	-	-	+	-	-	+	+	+	-
	RHD variants by exon pattern	-	-	+	-	-	-	+	+	-
	RHD variants by SNPs	-	-	+	+	-	-	+	+	-
	Separation of RHD*DAU0 vs. other RHD*DAU variants	-	-	+	-	-	-	+	+	-
	Separation RHD*03 vs. RHD*04	-	-	-	-	-	-	+	+	-
	RHD*weak D types	-	-	-	+	-	-	+	+	-
	RHD*DEL	-	-	-	+	-	-	+	+	-
RHCE	RHCE*C	-	-	+	-	-	+	+	+	-
	RHCE*c	-	-	+	-	-	+	+	+	-
	RHCE*E	-	-	+	-	-	+	+	+	-
	RHCE*e	-	-	+	-	-	+	+	+	-
	RHCE*02.08 (Ce)	-	-	+	-	-	+	+	+	-
	RHCE*01.06	-	-	+	-	-	-	+	+	-
	RH:30 (V5)	-	-	+	-	-	-	+	+	-
	RH:10 (V)	-	-	-	-	-	-	+	+	-
Kell	KEL*01.01, KEL*02	-	-	-	+	+	+	-	-	-
	KEL*02.03 (Kpa) / KEL*02 (Kpb)	-	-	-	+	-	+	-	-	+
	KEL*02.06 (Jsa) / KEL*02 (Jsb)	-	-	-	+	-	+	-	-	+
Kidd	JK*01, JK*02	-	-	-	+	+	+	-	-	-
Duffy	FY*01, *02, *02N.01, *02N.02	-	-	-	+	+	+	-	-	-
MNS	GYPA*01, GYPA*02	-	-	-	-	-	+	+	-	-
	GYPB*03, GYPB*04	-	-	-	-	-	+	+	-	-
	*05N.01	-	-	-	-	-	+	+	-	-
	*08N.01	-	-	-	-	-	+	+	-	-
	*09N.01	-	-	-	-	-	-	+	-	-
Dombrock	DO*01, DO*02	-	-	-	-	-	+	+	-	+
	DO*02.04 (Gy)	-	-	-	-	-	-	+	-	-
	DO*01.05 (Hy)	-	-	-	-	-	-	+	-	-
Lutheran	LU*02, LU*02	-	-	-	-	-	-	+	-	+
Cartwright	YT*01, YT*02	-	-	-	-	-	-	+	-	+
Diego	DI*01, DI*02	-	-	-	-	-	-	+	-	+
	DI*02.03, DI*02.04	-	-	-	-	-	-	+	-	-
Colton	CO*01.01, CO*02	-	-	-	-	-	-	+	-	+
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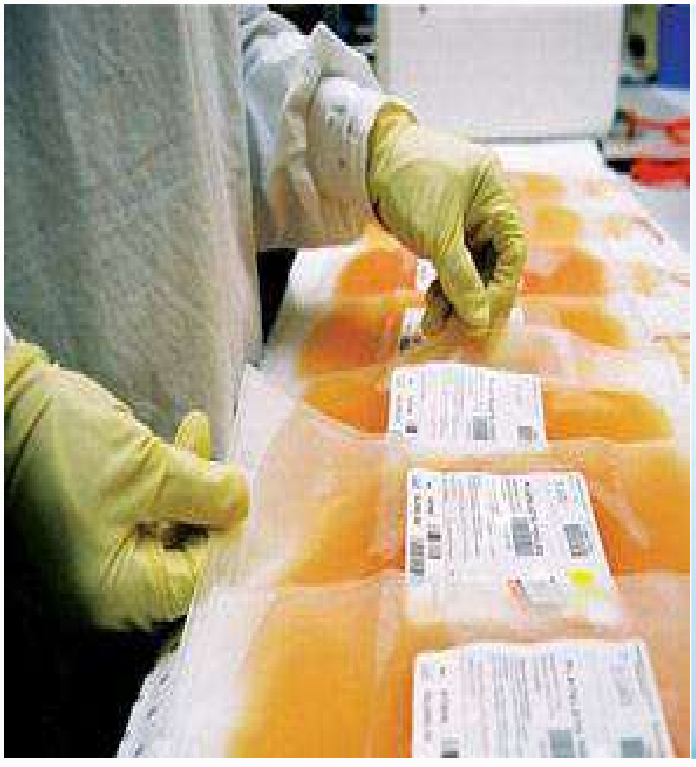

Thank you Blood Donors & Blood Centres

Where Safety Standards are Un-paralleled .....